

Institutional Convergence of Synergistic Strengths for Developing Women Agripreneurs

Rashmi Singh¹, M. S. Nain², J. P. Sharma³, J. R. Mishra⁴, Anjani Kumar⁵ and R. R. Burman⁶

ABSTRACT

A paradigm shift from agriculture being as a way of life for managing farm commercially on lines of an agribusiness is an essential pathway to revitalize Indian agriculture and to make farming a more attractive and profitable venture. Agripreneurship have the potential to contribute to a range of social and economic development. Agripreneurship has potential to generate growth, diversifying income, providing widespread employment and entrepreneurial opportunities in rural areas, though is an intricate process of mobilizing, stimulating needs, inculcating entrepreneurial competencies, facilitating linkages with other agencies, mentoring and hand holding. The study was conducted in *Hapur* district of Uttar Pradesh where three villages *Lalpur, Shyampur and Kania-kalianpur* were selected purposively being predominantly engaged in agriculture and having scope of agripreneurship development due to their proximity to National capital of Delhi. Ninety farm women, 30 each from three villages and 20 officials from institutions engaged in agripreneurship development in the area (three from all seven agencies) formed the sample size of the study. Farmers taking up entrepreneurial activities generally faced the problems in marketing of their products. Well developed effective linkages among all the stakeholders resulted in higher profits for producers and consolidated production sites for marketing and supply chain agencies. Several institutions engaged in agripreneurship development with respective strengths were found effective in synergizing actions and impacts by organizing interaction meets and focus group discussions to arrive at common programmes and activities in a collaborative manner.

Key words: Agripreneurship, entrepreneurs, entrepreneurial competencies.

INTRODUCTION

Agriculture is an important sector of Indian economy as it contributes significantly to GDP and provides employment to more than 60 per cent of its population. The food grain production has increased from 51 million tons in 1950-51 to 260 million tons during 2013-14. On 2.4 percent of world land India is managing 17.5 percent of world population. Agriculture and allied sectors are important sources of raw materials for industries and it consumes many industrial products particularly fertilizers, pesticides, agriculture implements and other consumer goods. But the sector is plagued by many challenges and problems. There is continuous fragmentation of land due to ownership multiplication and division of joint families into smaller nuclear families, resulting in low per capita availability of land. Due to low land man ratio, more and more farmers and their children are finding themselves out of work. In view of shrinking land base and rampant unemployment, there is need to commercialize and diversify Indian Agriculture in such a way that one can generate more income per unit of area and time and create agro-based employment opportunities (Sharma and Singh, 2006). For this to happen we need to convert agriculture into agribusiness.

agriculture has to move from subsistence culture to Agripreneurship for higher profits. Agri based enterprises are the need of the hour. Agri-based micro enterprises can help in poverty reduction, employment generation, empowerment and enterprise development as an end in itself. Dissemination of information regarding income and employment opportunities need to be stressed in agriculture, horticulture and related issue (Gondkar *et.al.* 2012, Nain *et al* 2013). A paradigm shift to commercial farm management and agribusiness orientation is needed at present. Also secondary agriculture and its derivatives inter-alia food processing and value addition has not been addressed adequately. Under traditional system, the post harvest losses are quite high *i.e.* 25-30 per cent is lost before reaching ultimate consumers (Anonymous,2014). Women play a significant role in agriculture, the world over. About 70 per cent of the agricultural workers, 80% of food producers, and 10 per cent of those who process basic foodstuffs are women and they also undertake 60 to 90% of the rural marketing; thus making up more than two-third of the workforce in agricultural production (FAO,1985). Thus if women are mobilized to take up agripreneurship, desired rural and agricultural transformation is possible. The present study was undertaken to examine the process of agripreneurship

^{1,2,3,4,& 6} Division of Agricultural Extension, ICAR-Indian, Agricultural Research Institute, New Delhi, ⁵ P.C. KVK (IARI), Shikohpur, Haryana

development among farm women and how various agencies can be linked to perform collaboratively developing a convergence strategy. For this study the two terms were conceptualized as:

Agripreneurs farmers who are innovators, progressive, opportunity seeker, persistent and moderate risk takers. An agripreneur (Agri+ Entrepreneur) undertakes a variety of activities in agriculture sector in order to earn maximum profits from his/her farm.

Agripreneurship Process of developing a profitable venture based on agriculture and it refers to agribusiness establishment in agriculture and allied sector.

METHODOLOGY

In order to investigate the entrepreneurship development process among farm women, an action research study was conducted in the district *Hapur* of Uttar Pradesh where three villages *Lalpur, Shyampur and Kania-Kalianpur* were selected purposively being predominantly engaged in agriculture and having scope of agripreneurship development due to their proximity to National capital of Delhi. The area is endowed with good infrastructure for crop production, value addition and marketing along with active facilitating agripreneurship agencies functioning in the area. Besides IARI, NABARD, RUDSETI, Agribusiness Systems International, Bharati Walmart, State Development Department and NGO *Laxmi Jan Kalyan Sewa Sansthan* were working for enhancing farm incomes in the area. Each institution had respective strengths which was synergized by organizing interaction meets and focus group discussions to arrive at common programmes and activities in a collaborative manner. Already established entrepreneurs were also engaged in action interventions which were helpful in giving them the practical tips to run their businesses and also helped in linking them with market. Farm women of the above mentioned three villages were mobilized to form Self Help Groups which further got organized under SHG Federation *Mahila Kisan Vikas Sanstha* by NABARD intervention. SHG federation is having about 1000 members which comprised of women from study villages and other villages of Hapur, Baghpat and Muradnagar areas. Identification along with microscreening was conducted to prioritise agrienterprises in these villages. A total of 90 women were provided training as per the training needs assessment. Pre training and post training data were collected by personal interviews using semi structured interview schedule. Thematic Apperception Test (TAT) was administered to examine their achievement motivation. Risk orientation and the analysis was done as

developed by Mishra (1979). Aspirations were studied using scale by Muthayya (1971). The data collected were scored, tabulated and categorized. Data were also collected from 20 officials of the above seven agencies by a semi structured interview schedule constructed for the purpose of exploring their roles and kind of collaboration extended for developing farm women as agripreneurs. These were subject to appropriate methods of analyses, viz, empirical, content and logical as per the overall objective of the study.

RESULTS AND DISCUSSION

Process of Agripreneurship Development

The study revealed that it is possible to build entrepreneurial competencies of our farm women through appropriate training interventions, mentoring and linking them with other agencies. As per the action interventions undertaken training course were organized, follow up and mentoring of the trained women were done and linkages initiated with supportive institutions and agencies. After training interventions, farm women have launched their pickle making, *dalia* making, wheat flour mill and grinding of spices enterprise named "*Sunhara Lalpur*" and "*Neelraj*". Handholding and mentoring activities were undertaken to establish their enterprises on a strong footing. Linkages with other agencies were established for finance requirements, marketing and certification purposes.

Under collaborative training course by IARI and RUDSET Institute, 90 women from three villages of Hapur were trained in baby corn cultivation and its processing, post-harvest processing of soyabean, bajra puffs, crackers *etc.*, value addition of vegetables/fruits and floriculture and dry flower technology for enterprise uptake. Convergence of Synergistic efforts of all stakeholders for farmer based agri enterprise development was taken up. Farm women entrepreneurs of Hapur villages were linked with all stakeholders in the process- IARI for mobilizing and mentoring, RUDSETI for training, Agricultural Systems India Ltd(ASI) and Bharati Walmart for marketing, NGO *Laxmi Jan Kalyan Sewa Sansthan* for grassroots mobilization and logistics and NABARD for financial support.

The process of Agripreneurship development was found to be a dynamic interplay of self sphere of the individual farm women and environmental sphere resulting in the profit making venture marked by higher profits, yields, innovative behaviour and brand establishment. As given in the fig.1, it was found that possessing entrepreneurial competencies like opportunity recognition, innovativeness, quality concern & need for

achievement in tandem with adequate technical knowledge gear up an entrepreneur to take advantage of available resources into a profitable venture. The findings are in agreement with earlier researches (Singh,2006 and Singh, 2011). Those, who bogged down by inhibitive factors present in environment, experienced failure whereas the others who capitalized the promotional factors available in environment and dodged the inhibitive factors accomplished their targets and achieved

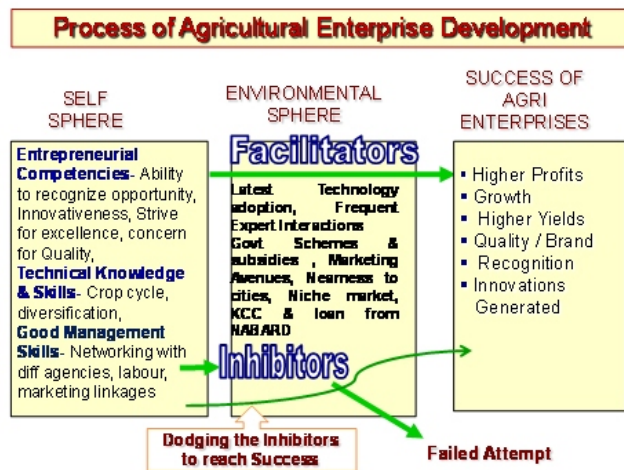


Fig.1. Agriprenurship Development Process among Farm Women

Goals and Motives

Majority of the sample (31%) had economics as their main concern i.e. earning more from farming. This when further probed revealed three different kinds of concerns. As many as 38.8 per cent of potential women entrepreneurs specified the goal as earning more money for family so as to supplement family income and make available those facilities or objects which would not have been possible with existing income.

Thus, these women basically wanted to take up entrepreneurship to improve the quality of life of their family and children. Only 4.5 per cent women entrepreneurs stated economic independence for self as the major goal. They wanted to prepare themselves against any exigencies of life where they might be required to fend for themselves. For 12.2 per cent of women entrepreneurs, converting available resources into profitable ventures was the major goal for venturing into entrepreneurship.

Table 1: Motivation for pursuing Agriprenurship

Motives	f	%
Earning more from farming	28	31.11
Do something new	14	15.55
Help the local farming community	10	11.11
Work for self	4	4.45
Attaching value to farming	4	4.45
Possessed skills & resources	10	11.11
Market demand	9	10.00
Converting abundant local resources into profitable ventures	11	12.22
Total	90	100.00

Need for Achievement

It was measured by subjecting the respondents to semi projective Thematic Apperception Test (TAT). Respondents were shown three pictures as cues to write imaginative stories, which were scored for achievement motive. The stories so written contained motivational cues if it indicated (1) Desire for excellence in life, (2) Unique accomplishment, (3) Competition with self and others, and (4) Long term involvement in pursuit of a set goal. Some of the respondents wrote stories which did not contain any of the above, thus they were termed as Unrelated Imagery (UI). The stories containing one or more of the above components were termed as Achievement Imagery (AI). Scoring of these stories was done as per the method standardized by Mehta (1989). Social achievement motivation was predominant followed by personal achievement motivation indicating their belief in social cooperation.

Motivational Status

About 13 per cent respondents wrote all the three stories with unrelated imageries, thus scoring 0. The remaining respondents were categorized into four quartiles based on the scores obtained by them.

Table 3: Motivational Status of the Respondents Need For Achievement

Quartiles	Scores	Total	
		Freq.	%
I	1 to 5	29	32.2
II	6 to 8	18	20.0
III	9 to 12	12	13.3
IV	13 to 27	05	0.55
	0	26	12.6
		90	100.0
Range	0 to 27		
Mean	8.44		
IQR	7.0		
t value	-2.42187		

The total obtainable score for each respondent could range from 0 to 27 with a mid value of 14. The actual scores obtained ranged from 0 to 24 with a mean value of 8.44. Thus the group's mean was much below the obtainable scores. In general, women entrepreneurs' motivational status was found to be on the lower side. Village wise, the need for achievement was highest for *Lalpur* (87.4 %) followed by *Shyampur* (75 %) and *Kania kalianpur* (66.6%). Data was collected and analysed for both pre training stage and post training stage. Table 4 reveals that there was an increase in their overall motivation levels after the training interventions. A narrow shift from 72.4 per cent to 73.2 per cent was recorded after the training.

Table 4: Shift in Need for Achievement after Training Interventions

Total number of TAT Stories		Unrelated Imagery		Achievement Imagery		N Ach (%)	
Pre Training	Post Training	Pre Training	Post Training	Pre Training	Post Training	Pre Training	Post Training
123	116	34	30	89	85	72.4	73.2

Aspirations: Aspirations are part of the motivational force driving entrepreneurs towards their goal. In a way these are goal statements concerning the future. Aspirations were voiced in terms of education to children, income enhancement, better living standard, economic surplus and percentage increase in their respective enterprises. Table 5 shows that majority of the potential entrepreneurs were having moderate to low level of aspiration, however, only few were with very high level of aspirations. Nearly a quarter were with low level of aspirations. It could be due to their environmental factors which may be hindering their viewpoints.

Table: 5. Aspiration level of the farm women

Villages	Lalpur		Shyampur		Kania-Kalianpura	
	Number	%	Number	%	Number	%
Upto 45 (Low)	15	50.0	13	43.3	1	8.3
45 to 49 (Moderate)	12	40.0	14	46.6	7	58.4
50-54 (High)	2	06.0	3	10.0	3	25.0
> 54(Very High)	1	03.0	1	03.0	1	8.3
Total	30	100.0	30	100.0	12	100.0

Risk Taking Behaviour: Risk taking behaviour was studied and assessed using scale of Mishra (1979). Table 6 shows that the concept of moderate calculated risk taking was inculcated with help of simulation exercises during the training programmes. There was a shift to categories of 20 per cent-50 per cent risk in their behaviour as examined with the scale after the conduction of training session on ring toss exercise.

Table 6: Risk taking behaviour of respondents

Probability of Risk	Pre Training		Post Training	
	f	Percentage	f	Percentage
No risk	15	16.7	4	4.4
20% risk	21	23.3	38	42.3
50% risk	39	43.3	42	46.6
80 % risk	15	16.7	6	6.6
100% risk	0	0.0	0	00.00
	90	100.0	90	100.0

Nature and Extent of Societal Support: Facilitators of the Process

Content analysis of literature collected from various organizations, and browsing of websites revealed that many programmes and schemes have been launched by various government and non-government organizations. The nature of support given to potential and established women entrepreneurs which acted as facilitators were : financial support in terms of loans, subsidy, sales tax waiver or special rates of interest on loans for women entrepreneurs; motivational support in terms of awareness generation programmes and entrepreneurial motivation programmes, special process and product EDPs for skill enhancement; special marketing avenues; infrastructural support in terms of priority industrial sheds and providing import licenses on priority ; mentorship and handholding and recognition / awards giving positive boost to their efforts.

Convergence for synergistic efforts of seven institutions for Agripreneurship Development

Besides IARI, National Bank for Agriculture and Rural Development (NABARD), Rural Development & Self Employment Training Institute (RUDSETI), Agribusiness Systems International, Bharati Wallmart, State Development Department and NGO *Laxmi Jan Kalyan Sewa Sansthan* were working for enhancing farm incomes in the area. Each institution had respective strengths (Table 7) which were synergized by organizing interaction meets and focus group discussions to arrive at common programmes and activities in a collaborative manner. Already established entrepreneurs were also engaged in action interventions which were helpful in giving them the practical tips to run their businesses and also helped in linking with market. Farm women of the three project villages were mobilized to form Self Help Groups which further got organized under SHG Federation named *Mahila Kisan Vikas Sanstha* by NABARD intervention. SHG federation is having about 1000 members which comprised of women from study villages and other villages of Hapur, Baghpat and Muradnagar areas.

Table 7: Roles and responsibilities of various Institutions involved

IARI	Technological know-how and inputs	Motivational Interventions for taking up Agribusiness ventures	Training Interventions for capacity building	Hand holding & Mentoring	Facilitation of Linkages with various agencies & coordination
RUDSETI	Developing Skills for Entrepreneurship and Creating a mindset for entrepreneurship		Training – on site & at their campus	Helping to develop a project report for enterprises	Helping the nascent entrepreneurs to avail small loans
NABARD	Financial help at launching stage	Mobilizing for Farmers' Club formation	Financial Support to NGO	Finance for Video-conference facility (Intel)	Finance for stall at Kumbh Mela & Travel expenses
ASI	Product Marketing Shops (3 outlets)	– Best Price	Multinational Supply Chain company providing huge marketing opportunities		
Bharati Wall mart	Providing outlet for sale	Collection Center at villages itself reducing post production losses & transportation costs	Bulk purchase from single production site		Multinational Supply Chain company providing huge marketing opportunities
Established Entrepreneurs	Experience Sharing, boosting morale	Providing prior established marketing channels	Product Refinement based on marketing demand of quality		Enlargement of network of producers for the benefit of established entrepreneurs
Laxmi Jan Kalyan Sewa Sansthaan	Mobilising farm women and youth	Day to day liaisoning with various agencies and farm women	Logistics of organisation of training and other intervention based programmes		Grassroots initiatives for activities of all agencies.

interest groups, farmers' societies/ cooperative societies, self- help groups etc. should be encouraged to capitalize the optimum resource utilization and maximization of food processing and value addition to address the multi faced issues underlying socio-economic development of farm households. The analysis revealed that besides impacts in terms of income enhancement and economic empowerment, there were also visible impact in form of social assets development and process of value addition ventures. Social assets are taken to be the social resources that people can use to pursue their livelihood objectives: networks and connections, membership of formalized groups, relationships of trust, reciprocity and exchange. The concept of livelihoods defined as the “capabilities, assets (including both material and social resources) and activities required for a means of living” (Chambers and Conway 1992: 7) provides the desired viewpoint for this research: that of the individual as an actor, in these cases: the entrepreneur. Livelihoods in this sense are holistic, encompassing not only income, the narrow meaning of the term often used in economic research and also in common speech, but all assets that can form the means to making a living, and assets that give a person the capability to act and to use resources.

Convergence literally refers to the alignment of issues, interests and therefore solutions across all institutions engaged in development of Agripreneurship. Thus convergence is not just collectivization, it is not referring to cooperation only but definitely more than collaboration. In fact, rather than just being episodic and event-driven, convergence actually implies constant shared commitment with recognized “wins” for all partners involved. Internationally, organizations such as Barclays, Care and Plan are working together on a large-scale local community finance project which aims to reach 300,000 to 500,000 people across Africa, Asia and South America in development sector. Similar mechanisms can be emulated nationally for Agripreneurship Development. The emergence of multistakeholder alliances between profit oriented companies, social enterprises, non-governmental organizations (NGOs) and government institutions collaborating in totality is an important solution to many of our problems plaguing agriculture sector. These trends are still at a relatively early stage. This structure calls for new ways of thinking crossing traditional organizational, functional and sectoral boundaries of various institutions. Also the most important thing being able to develop mechanisms for increased dialogues, shared learning and joint monitoring of outcomes as well as processes. Sociologically also, it is a new pragmatic trend toward shared value in capitalism as a whole. The convergent development models will resemble conventional social

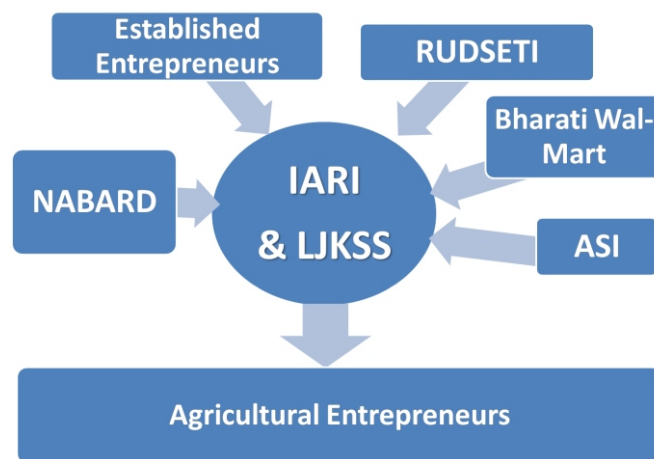


Fig. 2 : Diagrammatic representation of linkages developed for developing Agricultural Entrepreneurs

The case illustrates well established partnerships of women manufacturers of these value added products with established dealers and up-market channels. Farmers who have taken up entrepreneurial activities are often found facing problems in marketing of their products. Well developed effective linkages among all the stakeholders usually results in higher profits for producers and consolidated production sites for marketing and supply chain agencies. The group approach involving common

enterprises but they may or may not be profit-making; however, they are very likely to be profit-maximizing. Social businesses launched by Muhammad Yunus's Grameen organization in conjunction with multinationals "Grameen Danone Foods" are the best examples of convergence business models. Its dairy product aimed at combating infant malnutrition in Bangladesh was launched in 2006.

CONCLUSION

The food processing and value addition is an integral component of agriculture and contributes significantly to economic and social development of the country. However, its potential has largely been underutilized, leaving a huge opportunity and scope to develop and promote the sector. Farm women individually or in group can tap this immense opportunity and potential. There is a pertinent need for developing an effective and efficient strategy incorporating the issues like development of appropriate, location specific and need based production and processing technologies; strengthening infrastructural facilities; dissemination of technologies to the farmers; implementing capacity building and entrepreneurial interventions; developing effective and meaningful marketing linkages for serving the interest of the consumers to tackle the multi-dimensional problems of rural poverty, lower farmers' share in profit, unemployment and lesser income generation opportunities. Building entrepreneurial competencies of farm women and mobilizing women for group action to take up food processing and value addition agri-ventures for maximising farm profits. Experiences of institutional convergence of synergistic strengths in *Hapur* by the author herself and examples of international agencies quoted in the paper have illustrated that there is need for all working together in spirit and action for translating maximum benefits and sustainable growth. Agripreneurship development may be visualized as a process whereby individual's motivations and aspirations trigger it and their entrepreneurial competencies, adoption of best practices and facilitative socio-economic factors play sequential role in reaching agripreneurial success. It is the farmers' ability to effectively manage the inhibitive factors present in the rural environment which proves critical for achieving success. For developing agripreneurs, its essential that an effective network is built consisting of various stakeholders like input suppliers, mentors, technical experts, marketing and supply chain agencies.

Lessons from the cases of successful agri-entrepreneurs documented may be used to train other farmers to become entrepreneurial.

Paper received on : September 15, 2014

Accepted on : October 20, 2014

REFERENCES

Singh, Rashmi 2012 & 13., Enhancing Entrepreneurship among Rural Youth, IARI- P.I. Rashmi Singh *In Annual Report*, (2012-13 & 2013-14), IARI, New Delhi

Annual report 2011-12. Ministry of Food Processing Industries, <http://www.mofpi.nic.in>

Brockhaus, R. H. and Horwitz, P. S. 1986. The psychology of the entrepreneur (in D.L. Sexton and R. W. Smilor (eds.), *The art and science of entrepreneurship*. Ballinger publishing company, Cambridge, pp. 25-48.

Chambers R. and Conway G.R. 1992. *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*, Discussion Paper 296. Brighton, UK: Institute of Development Studies.

Dollinger, M. J. 2003 *Entrepreneurship Strategies and Resources*. Pearson International Edition, New Jersey.

FAO 1985. *Women in Developing Agriculture*. Human Resource Institution and Agrarian Reform Division. Rome, p.64.

Gondkar, Sachin, Sigh, B. K. and Kumbhare, N. V. Entrepreneurial Characteristics of Protected Cultivation Entrepreneurs in Pune District (Maharashtra) *Indian Journal of Extension Education* Vol. 48, No. 1 & 2, 2012 (91-94)

High Level Meeting Communiqué, (16 April 2014). First High-Level Meeting of the Global Partnership for Effective Development Co-operation: Building Towards an Inclusive Post-2015 Development Agenda Mexico [Http://en.wikipedia.org/wiki/Grameen_Danone](http://en.wikipedia.org/wiki/Grameen_Danone)

Mehta P. 1989. *Social achievement motivation: Needs, values and work organisations*. Concept Publishing Company, New Delhi.

Mishra S.P. 1979. *A study of farm entrepreneurship in backward district of Bihar*, Ph.D. thesis, IARI, New Delhi.

Muhammad Yunus : 2007, *Creating a World Without Poverty*, Public Affairs, New York.

Muhammad Yunus, 2010. *Building Social Business*. New York: Public Affairs. p. 226. ISBN 978-1-58648-824-6.

Muthayya B.C. 1971. Farmers and their aspirations: Influence of socio economic status and work orientation, National Institute of Community development, Hyderabad:24-50

Nain M.S. , Singh Rashmi, Sangeetha V., Chandel S.S., Kumar Parveen, Peer J. A. 2013 . Strategies for entrepreneurship development through fruit production in Jammu and Kashmir state. 33(3). *Agricultural Science Digest*.165-171

Sharma J.P. and Singh Rashmi 2006. Developing agripreneurs. *Journal of Community Mobilization and*

Sustainable Development. Vol.1(1):32-40.

Singh Rashmi 2006. Women Entrepreneurship Development (IN) Micro Enterprise Promotion in Agriculture- Indian Imperatives and Global Perspective (ed.) J.P.Sharma, C.B.Singh, M.Chaudhary and Rashmi Singh, Ambica Book Agency: 155-168.

Singh Rashmi, Sharma J.P., Rao D.U.M., Nain M.S. and Burman R.R. 2012: Entrepreneurship Development in Agriculture, Biotech Publishers.

A Study on Adoption of Improved Farm Practices by Hill Farmers of Almora District in Uttarakhand

M. L. Roy¹, Nirmal Chandra², H. L. Kharbikar³, Renu Jethi⁴ and Pratibha Joshi⁵

ABSTRACT

Adoption of improved farm practices is being encouraged amongst hill farmers for their socio-economic development. The present study was conducted in Almora, Uttarakhand by taking a random sample of 60 farmers. The objectives were to know the extent of adoption of improved farm practices; relationship of the factors with adoption; and the constraints of adoption. Data were collected during 2011-12 by personal interview through pre-tested structured schedule. Findings showed that majority of the farmers belonged to medium adopter's category (55.95%). The highest adoption was found in improved varieties of vegetables (71.67%) and least adoption was reported in mushroom production technology (1.67%). Risk bearing ability, change-proneness, level of aspiration, annual income and economic motivation were found to be most significantly correlated factors of adoption. The most serious constraint was identified as weather vagaries (83.33%). The findings of the study can help selecting suitable innovations to diffuse amongst hill farmers of this area.

Keywords: Adoption, improved farm practices, extent of adoption, factors of adoption, constraints of adoption.

INTRODUCTION

Several improved farm practices suitable for Uttarakhand are already available and efforts are still taken for further development and improvement on every aspect of hill farming systems. These technologies if used in a holistic manner are capable of providing sustainable livelihood, food and nutritional security to the hill populace. In spite of the availability of the basket of suitable technology, the agricultural productivity in hills is very low as compared to the plains. Apart from the climatic and geographical reasons, non-adoption of improved farm practices is one of the important factors responsible for this low productivity. Most of the farmers are still practising traditional way of farming and most of them are not able to meet their own requirements of food and livelihood. So adoption of improved farm practices is being encouraged amongst hill farmers for their socio-economic development. Hence there is a need to know the status of adoption of these technologies amongst the farmers. In this context, the present study was formulated with the following objectives: (1) to know the extent of adoption of improved farm practices by the hill farmers; (2) to ascertain the relationship of the factors with adoption; and (3) to identify the constraints of adoption.

METHODOLOGY

The study was conducted in Dhauladevi block of Almora district in Uttarakhand taking a random sample of 60 farmers from two villages namely Bhagar Tola and

Maniagar. The data were collected during 2011-12 by personal interview of farmers through a pre-tested structured interview schedule. Under each improved farm practice selected for study, several components for adoption were taken. For example: under "improved cultivation practices of cereals", the components for adoption were improved variety, seed treatment, line sowing, application of recommended doses of nutrients, herbicide application and plant protection measures. For scoring, score 1 was given for adoption of one technology and score 0 was given for no adoption. Suppose, if a farmer was found cultivating two improved varieties of cereals, he was given an adoption score of 2 under "improved cultivation practices of cereals". The scores of each component of a practice were summated to calculate the total adoption score of that practice for an individual farmer. The data thus obtained was subjected to appropriate statistical tests. Mean and standard deviation (SD) of the adoption scores of the sample farmers for each improved farm practice were calculated and respondents were placed in low, medium and high levels of adoption categories based on this calculation. Respondents whose adoption scores were found less than the value of (mean-SD), between the value of (mean-SD to mean + SD) and greater than the value of (mean + SD) were placed in low, medium and high level of adoption category, respectively. Adoption Index for each respondent was calculated by the following formula:

Adoption Index = (Obtained score/ Maximum obtainable score) X 100

^{1,3,4&5} Scientist, ² I/c Head & Principal Scientist, Social Science Section, ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora-263601, Uttarakhand

Pearson product moment correlation analysis was done to identify the factors correlated with adoption. Multiple regression analysis was done to know the degree to which the independent variables, individually or jointly contribute to the dependent variable.

RESULTS AND DISCUSSION

Extent of adoption of improved farm practices by hill farmers

The results show that (Table1) in case of "improved cultivation practices of cereals", 21.67 percent respondents belonged to high level of adoption category whereas most of the respondents (60.00%) belonged to medium level. In case of "improved cultivation practices of pulses", majority of the respondents (55.00%) showed medium level of adoption whereas 38.33 per cent of the farmers were belonged to low level of adoption category. It was found that pulses were mostly grown for only household consumption and most of the farmers used household seeds for sowing and traditional method of cultivation. Off-season vegetable cultivation is one of the major income generating sources of hill farmers. Most of the respondents (78.33%) were found to be medium (45.00%) and high (33.33%) adopters of vegetable cultivation technologies.

Table1: Extent of adoption of improved farm practices by hill farmers

Improved farm practices	Adoption category			Mean Adoption Index
	Low	Medium	High	
Improved cultivation practices of cereals	18.33	60.00	21.67	38.54
Improved cultivation practices of pulses	38.33	55.00	6.67	15.95
Improved cultivation practices of vegetables	21.67	45.00	33.33	40.44
Improved cultivation practices of millets	31.67	58.33	10.00	15.48
Growing of improved variety of fodder grasses and trees	26.67	48.33	25.00	32.5
Fruit tree plantation	26.67	58.33	15.00	32.5
Improved herd management	18.33	66.67	15.00	41.37
OVERALL	25.95	55.95	18.10	32.83

With respect to the "improved cultivation practices of millets", majority of the farmers were in medium and low level of adoption category (58.33% and 31.67%, respectively). Like pulses, it was also found that millets were mostly grown for only household consumption as an intercrop with soybean or *bhatt* (local black soybean) and most of the farmers used household seeds for sowing and traditional method of cultivation. In case of "growing of

improved variety of fodder grasses and trees", majority of the farmers were found to be in the category of medium level of adoption (48.33 %). It was observed that most of the hill farmers had local fodder trees like *baaz* and *bhimal* and some of the farmers planted improved variety of fodder grasses like hybrid napier. Majority of the farmers were found lying in medium and low level of adoption category in case of "fruit tree plantation" (58.33% and 26.67% respectively). Earlier hill farmers used to plant more fruit trees in their farms but in recent years this tendency has been drastically reduced due to severe monkey menace. In case of "improved herd management", 66.67 per cent of farmers were found to possess medium level of adoption in terms of rearing of high yielding milch animals, deworming *etc.*

The values of mean adoption indices clearly show that extent of adoption was found maximum in case of "improved herd management practices" (41.37%) followed by "improved cultivation practices of vegetables" (40.44%) and minimum in "improved cultivation practices of millets" (15.48 %) followed by "improved cultivation practices of pulses" (15.95 %). The overall extent of adoption was found 32.83 per cent.

In general the study revealed that majority of the farmers belonged to medium level of adoption category. Khatik (2001), Ranish *et al.* (2001), Roy *et al.* (2007), Singh and Chauhan. (2010), Singh *et al.* (2010), Singh and Varshney (2010) and Sivashankar and Shashidhar (2011) Singh and Singh (2012) in their respective studies reported majority of the respondents in medium level of adoption category. Five most and five least adopted technologies by the respondents are presented in Table 2.

Table 2: Five most and five least adopted technologies by the respondents

Technology	Percentage adopted	Rank
Five most adopted technologies		
Improved variety of vegetables	71.67	I
Improved variety of cereals	65.00	II
Improved variety of fodder	51.67	III
Water harvesting tanks	46.67	IV
Poly-house	43.33	V
Five least adopted technologies		
Mushroom production	1.67	I
Use of herbicides	18.33	II
Seed treatment	23.33	III
Line sowing	26.67	IV
Honey bee rearing	30.00	V

Improved variety of vegetables, improved variety of cereals, improved variety of fodder, water harvesting tanks and poly-house were found to be the five most adopted technologies ranking I, II, III, IV and V respectively. Five least-adopted technologies identified were mushroom production, use of herbicides, seed treatment, line sowing and honey bee rearing ranking I, II, III, IV and V respectively.

Relationship of the factors with adoption

It was found that out of the 14 factors studied, 11 factors *i.e.* category, occupation, landholding, annual income, material possessions, social participation, credit utilization pattern, change-proneness, level of aspiration, economic motivation and risk bearing ability were significantly correlated with adoption at 1 per cent level whereas the factor “ occupation” was found to be negatively correlated with adoption. Level of education was also significantly correlated with adoption at 5 per cent level. Age and farming experience of farmer were found to be non-significantly correlated with adoption.

reported landholding and annual income significantly correlated with adoption at 5 per cent level.

Influence of independent factors on adoption

Multiple regression analysis was done to know the degree to which the independent variables, individually or jointly contribute to adoption of improved farm practices.

It can be depicted from Table 4 that a farmer with larger landholding and high level of aspiration tends to adopt more numbers of improved farm practices. R^2 value being significant at 1 per cent level shows that combined effect of several other independent variables also significantly influence the adoption of improved farm practices. The factors showing negative influence on adoption were found to be occupation, farming experience and economic motivation. This may be because hill farming being relatively more labour intensive and less remunerative as compared to the other occupations and the aged farmers tend to adopt new farm practices in less numbers.

Table 3: Correlation between adoption and independent variables
n=60

Independent variables	Correlation co-efficient (r)
Age of farmer	0.030NS
Level of education	0.270*
Category	0.519**
Occupation	-0.394**
Landholding	0.481**
Farming experience	-0.071 ^{NS}
Annual income	0.635**
Material possessions	0.542**
Social participation	0.532**
Credit utilization pattern	0.423**
Change-proneness	0.667**
Level of aspiration	0.656**
Economic motivation	0.599**
Risk bearing ability	0.668**

*Significant at 5% level, ** Significant at 1% level, NS= Non-significant

Chauhan (1979), Sethy (1982) and Anuradha, G (1983) in their studies found that age was non-significantly correlated with adoption. Mazumder *et al.*, (2011) in their study reported that variables *viz.* education, landholding, social participation and income were significantly correlated with adoption at 1 per cent level. Roy *et al.* (2007) found education to be significantly correlated with adoption at 5 per cent level and landholding, annual income, risk orientation, economic motivation to be significantly correlated with adoption at 1 per cent level. Sivashankar and Shashidhar (2011)

Table 4: Multiple regression analysis between adoption and independent variables
n=60

Independent variables	Partial regression co-efficient (b)	“t” value
Age of farmer (X ₁)	0.103	0.461
Level of education(X ₂)	0.045	0.042
Category(X ₃)	0.591	0.212
Occupation(X ₄)	-3.446	-1.447
Landholding(X ₅)	0.245	2.438**
Farming experience(X ₆)	-0.189	-0.795
Annual income(X ₇)	0.000	0.698
Material possessions(X ₈)	0.204	0.497
Social participation(X ₉)	0.596	0.454
Credit utilization pattern(X ₁₀)	2.228	2.032
Change-proneness(X ₁₁)	0.128	0.131
Level of aspiration(X ₁₂)	1.196	2.464**
Economic motivation(X ₁₃)	-1.111	-1.425
Risk bearing ability(X ₁₄)	0.838	1.879

$R^2=0.796$, $F=12.29^{**}$

$$Y = -0.617 + 0.103 X_1 + 0.045 X_2 + 0.591 X_3 - 3.446 X_4 + 0.245 X_5 - 0.189 X_6 + 0.000 X_7 + 0.204 X_8 + 0.596 X_9 + 2.228 X_{10} + 0.128 X_{11} + 1.196 X_{12} - 1.111 X_{13} + 0.838 X_{14}$$

The findings of the study are to some extent in conformity with the study by Sagar (1983) where he found level of aspiration of the farmers significantly contributed to the farmers' productivity of major field crops.

Constrains of adoption

Constraints limiting the adoption of improved farm practices were identified based on the severity of the problem (Table 5).

Table 5: Constraints of adoption as perceived by the respondents

n=60		
Constraints	Percentage perceived	Rank
Weather vagaries	83.33	I
Lack of irrigation facility	73.33	II
Wild animal damage	68.33	III
Insect and disease attack	66.67	IV
Fragmented landholdings	55.00	V

Five most serious constraints were identified as weather vagaries, lack of irrigation facility, wild animal damage, insect and disease attack and fragmented landholdings. In the recent years farmers have been experiencing adverse climatic condition severely affecting their crops. During the main crop season severe draught conditions have become very common. The incidences of wildlife damage to agriculture have become very common and frequent. Due to lack of knowledge and awareness farmers face lot of difficulty in the control of insects and diseases. Due to unconsolidated landholdings it becomes very difficult to manage distantly located fields

Ranish *et al.* (2001) and Kumbhare and Singh (2011) in their studies identified inadequate irrigation facilities as one of the constraints. Singh and Varshney (2010) in their study reported pest and disease incidence as one of the constraints.

CONCLUSION

Animal rearing and off-season vegetable cultivation are major income generating sources of hill farmers. This could be the reason behind relatively higher adoption of improved herd management and vegetable cultivation practices. The study revealed that the variables like risk bearing ability, change-proneness, level of aspiration, annual income and economic motivation as most significantly correlated factors of adoption. The serious constraints of adoption were found to be weather vagaries, lack of irrigation facility, wild animal damage, insect and disease attack and fragmented landholdings. The findings of the study would be a guide to the change agents for selecting suitable innovation to diffuse amongst farmers of similar situation.

ACKNOWLEDGEMENT

The authors duly acknowledge the assistance obtained from HMNEH: MMI project "On Farm

Sustainable Production and Dissemination of Fruits and Vegetables based Farming System" (P.I. Dr. J.K. Bisht) for data collection and Dr. S.M. Feroze, Assistant Professor (Economics) of College of Post-graduate Studies, Central Agricultural University, Umiam, Meghalaya for helping in statistical analysis.

Paper received on : September 16, 2014
Accepted on : October 22, 2014

REFERENCES

- Anuradha, G. 1983. Entrepreneurial development under TRYSEM, Unpublished PhD Thesis, IARI, New Delhi.
- Chauhan, J. P. S. 1979. A study on some socio-personal, economic and entrepreneurial characteristics in relation to entrepreneurial role performance of milk producers of Karnal city, Unpublished M.Sc Thesis, Kurukshetra University, Kurukshetra.
- Khatik, G.L. 2001. Adoption behaviour of tribal farmers towards water conservation technologies on watershed basis, *Indian Journal of Extension Education*, XXXVII (1&2):30-34.
- Kumbhare, N.V. and Singh, K. 2011. Adoption behaviour and constraints in wheat and paddy production technologies, *Indian Research Journal of Extension Education*, 11(3): 41-44.
- Mazumder, G., Das, J.K., Pradhan, K. and Ghosal, R. 2011. Correlates of winter vegetable production in North 24 Paragana district of West Bengal, *Indian Research Journal of Extension Education*, 11(1): 27-31.
- Ranish, V.P., Malik, R.S., and Punia, R.K. 2001. Adoption of rapeseed-mustard production technology, *Indian Journal of Extension Education*, XXXVII (1&2):58-62.
- Roy, Shubhadeep, Bhagat, Rekha and Rao, D.U.M. 2007. Level of knowledge and extent of adoption of farmers on recommended gladiolus production practices, *Indian Research Journal of Extension Education*, 7(2&3): 69-71.
- Sagar, R. L. 1983. Study of agro-economic, socio-psychological and extension-communication variables related with the farmers' productivity of major field crops in Haringhata block, Unpublished Ph.D. Thesis, BCKV, Mohanpur, Nadia.
- Sethy, B. 1982. Study of the entrepreneurial

characteristics of the farmer of an agriculturally advanced district of Orissa, Unpublished PhD Thesis, IARI, New Delhi.

Singh, Bhagwan and Chauhan T.R. 2010. Adoption of mungbean production technology in arid zone of Rajasthan, *Indian Research Journal of Extension Education*, 10(2): 73-77.

Singh, Dhiraj Kumar, Singh, B.K., Yadav , V.P.S. and Singh, Lotan. 2010. Adoption behaviour of commercial vegetable growers in district Ghaziabad (UP), *Indian Research Journal of Extension Education*, 10(3): 66-70.

Singh, P.K. and Varshney, Jay G. 2010. Adoption level and constraints in rice production technology, *Indian Research Journal of Extension Education*, 10(1): 91-94.

Sivashankar, N. and Shashidhar, K.K. 2011. Adoption behaviour of jasmine cultivation in Bellary district of Karnataka state, *Indian Research Journal of Extension Education*, 11(1): 23-26.

A Study on Entrepreneurial Behaviour of Dairy Farmers

B. L. Pisure¹, B. M. Thombre² and C. R. Jamadar³

ABSTRACT

Taking into account the importance of developing entrepreneurial behaviour of dairy farmers, the present investigation was undertaken in Latur district of Maharashtra. A sample of 120 dairy farmers were selected from the district following a multistage random sampling procedure. It was observed that majority of the dairy farmers under study were from medium dairy farming experience having secondary school level of education along with semi-medium and medium land holding. Majority of the respondents had small family size medium level of annual income, herd size, social participation, extension contact, market orientation, and use of sources of information. Majority of the respondents were under medium level of entrepreneurial behaviour. On calculation of Entrepreneurial Behaviour Index (EBI) of the dairy farmers, majority of the respondents belonged to low category of entrepreneurial behavior.

Key words: Entrepreneurship, behaviour, profile, dairy farmers.

INTRODUCTION

The entrepreneurs are key persons of any country for promoting economic growth and technological change. Dairy Enterprise, next to agriculture, not only provides continuous income and improves dietary standards of family but also provides employment to a large number of the rural people. India owns the largest livestock population in the world, accounting for nearly 57 per cent of the world buffalo population and 16 per cent of the cattle population. India continues to be the largest producer of milk in the world. The activity of an individual to decide adopting certain enterprises to make profit is regarded as entrepreneurial behaviour. The future progress of dairy farmers in the country depends on the development of entrepreneurial characteristics among dairy farmers. So it is important to analyse the entrepreneurial behaviour of dairy farmers.

METHODOLOGY

The study was conducted in Latur district. Two tahsils and from each tahsil four villages were selected randomly. A list of dairy entrepreneurs (possessing minimum two milch animals such as cows/buffaloes/both) from these eight villages was obtained. From this list, fifteen respondents from each village were selected randomly for the study comprising the total sample of 120 respondents. In view with above objectives the multistage random sampling was used to select district, tahsil, village and dairy farmers. The data were collected with the help of pre-designed interview schedule by contacting the sample dairy farmers personally. The help of local leaders,

Gramsevaks, Talathies, Agricultural Assistants from State Department of Agriculture & Revenue was taken for approaching the dairy farmers with a view to develop rapport with them in order to get more reliable information.

Entrepreneurial behaviour of dairy farmers was measured in terms of six dimensions namely, innovativeness, achievement motivation, decision making ability, risk orientation, information seeking behavior and cosmopolitaness. On the basis of summing up the scores of all the six components of the entrepreneurial behaviour of the dairy farmers they were categorized into three categories namely low, medium and high on the basis of Mean and Standard Deviation. For the measurement of Entrepreneurial behaviour of dairy farmers, the scale developed by Chaudhari. (2006) was used. The formula for calculation of Entrepreneurial Behaviour Index (EBI) of the respondents is given below:

$$\text{Entrepreneurial Behaviour Index (EBI)} = \frac{\sum_{n=1}^6 T_n/M_n}{\sum_{n=1}^6 R_{cn}} \times 100$$

Where,

T_n = Total obtained score of the component "n"

M_n = Maximum obtainable score of the component "n"

R_{cn} = Scale value of the component "n"

n = Number of components which are six in this context

¹Ph.D Scholar, Department of Extension Education, College of Agriculture, Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra.

²Associate Dean & Principal, College of Agriculture, Ambajogai, Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra.

³M.Sc. Student, Department of Extension Education, College of Agriculture, Latur, Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra.

n1 = Innovativeness

n2 = Achievement motivation

n3 = Decision making ability

n4 = Risk orientation

n5 = Information seeking behaviour

n6 = Cosmopolitanness

The scale values of each component of the entrepreneurial behaviour was given by Chaudhari *et al.*, (2006) are as follows,

Table 1: Scale values of components of entrepreneurial behaviour.

Components	Scale values
Innovativeness	9.82
Achievement motivation	3.93
Decision making ability	6.60
Risk orientation	8.01
Information seeking behaviour	5.22
Cosmopolitanness	1.65

RESULTS AND DISCUSSION

Personal characteristics of dairy farmers : The study of personal characteristics was made with reference to dairy farming experience, education, family type, land holding, occupation, annual income, herd size, extension contact, market orientation, social participation and use of sources of information.

Table 2: Distribution of respondents according to their personal characteristics

Category	n = 120	
	Frequency (f)	Percentage (%)
Dairy Experience		
Low (Up to 7 years)	25	20.83
Medium (8 to 12years)	78	65.00
High (Above 12 years)	17	14.17
	Mean	9.68
	SD	2.8639
Education		
Illiterate (no education)	11	09.17
Primary School (1 st - 4 th Stds.)	10	08.33
Middle School (5 th - 7 th Stds.)	25	20.84
Secondary School (8 th -10 th Stds.)	46	38.33
Higher Secondary School (11 th and 12 th Stds.)	17	14.17
Graduate (more than 12 th Stds.)	11	09.17

Family size

Small (Up to 5 members)	44	36.66
Medium (6 members)	43	35.84
Large (7 and above members)	33	27.50
Mean		6.050
SD		1.4252

Land holding

Small (1.1 to 2.0 ha.)	14	11.66
Semi-medium (2.1 to 4.0 ha.)	53	44.17
Medium (4.1 to 10.00 ha.)	53	44.17

Occupation

Dairy + Agriculture	95	79.16
Dairy + Agriculture +Business	17	14.17
Dairy + Agriculture + Service	08	0667
Mean		1.275
SD		0.5792

Annual income

Low (Up to Rs. 2,33,467 /yr.)	27	22.50
Medium (Rs. 2,33,468 to 6,43,698 /yr.)	73	60.83
High (Rs. 6,43,699 and above /yr.)	20	16.67
Mean		4,38,583
SD		205116

Herd size

Small (Up to 3 milch animals.)	22	18.33
Medium (4 to 5 milch animals.)	70	58.33
Large (Above 5 milch animals.)	28	23.34
Mean		4.6
SD		1.2595

Extension contact

Low (Up 5.22)	28	23.33
Medium (5.23 to 9.09)	82	68.33
High (Above 9.10)	10	08.34
Mean		7.16
SD		1.94

Market orientation

Low (Up to 8.89)	21	17.50
Medium (8.90 to 11.65)	73	60.83
High (Above 11.65)	26	21.67
Mean		10.275
SD		1.3779

Social Participation

Low (Up to 5.78)	10	08.33
Medium (5.79 to 13.54)	93	77.50
High (Above 13.54)	17	14.17
Mean		9.6584
SD		3.8773

Use of Sources of Information

(A) Personal contacts

Low (Up to 10.52)	16	13.34
Medium (10.53 to 15.61)	87	72.50
High (15.62 and above)	17	14.16
Mean		13.075
SD		2.5541

(B) Group contacts		
Low (Up to 4.10)	35	29.17
Medium (4.11 to 7.11)	69	57.50
High (7.12 and above)	16	13.33
	Mean	5.6167
	SD	1.5128
C) Mass contacts		
Low (Up to 7.90)	10	08.33
Medium (7.91 to 10.81)	93	77.50
High (10.82 and above)	17	14.17
	Mean	9.3583
	SD	1.4540

It was noticed from Table 2 that majority of dairy farmers (65.00 %) had medium dairy farming experience. Regarding education, 38.33 per cent of dairy farmers were educated up to Secondary School level and 9.17 per cent of dairy farmers were illiterate. Majority of the respondents (36.66 %) were having small family size followed by 35.84 per cent of the respondents had medium family size.

It is also observed during the study that 44.17 per cent dairy farmers possessed semi-medium and medium land holding. As regards to occupation, majority of the respondents (79.16%) were engaged in dairy and agriculture enterprise. The findings also indicate that 60.83 per cent of dairy farmers had medium level of annual income and 22.50 per cent of dairy farmers had low level of annual income. More than half of the respondents (58.33%) were having medium herd size. It was also found that 68.33 per cent dairy farmers had medium extension contact with different extension personnel. As regards to market orientation, more than half of dairy farmers *i.e.*, 60.83 per cent had medium level of market orientation.

It was also noticed from Table 2 that, 77.50 per cent of the respondents had medium social participation and 14.17 per cent of the respondents were found in high category of social participation. Regarding the use of sources of information, more than half of the respondents *i.e.*, 72.50 per cent were having medium level of personal contacts. In relation to group contacts of the respondents, majority of the respondents (57.50%) were categorized under medium level of group contact category. While, relating to mass contacts, it indicates that more than half of the respondents *i.e.*, 77.50 per cent had high level of mass contacts.

Entrepreneurial behaviour of dairy farmers: The dependent variable *i.e.* entrepreneurial behaviour of dairy farmers was measured in terms of six dimensions namely,

innovativeness, achievement motivation, decision making ability, risk orientation, information seeking behavior and cosmopolitanness.

Table 3: Distribution of the respondents according to their individual entrepreneurial characteristics n=120

Categories	Frequency	Percentage
Innovativeness		
Low	13	10.83
Medium	05	04.17
High	102	85.00
	Mean	56.60
	SD	7.21
Achievement Motivation		
Low (Mean – SD)	40	33.33
Medium (Mean)	32	26.67
High (Mean + SD)	48	40.00
	Mean	10.275
	SD	1.3779
Decision Making Ability		
Poor (Mean – SD)	19	15.83
Moderate (Mean)	78	65.00
Good (Mean + SD)	23	19.17
	Mean	10.191
	SD	1.5840
Risk Orientation		
Low (Mean – SD)	17	14.17
Medium (Mean)	86	71.66
High (Mean + SD)	17	14.17
	Mean	9.0166
	SD	1.5663
Information Seeking Behaviour		
Low (Mean – SD)	31	25.83
Medium (Mean)	75	62.50
High (Mean + SD)	14	11.67
	Mean	15.5
	SD	1.8964
Cosmopolitanness		
Low (Mean – SD)	29	24.17
Medium (Mean)	68	56.66
High (Mean + SD)	23	19.17
	Mean	8.875
	SD	1.7079

Individual entrepreneurial characteristics of dairy farmers

Innovativeness:

Table 3 indicates that majority of the respondents (85.00%) had low innovativeness, followed by 10.83 per cent of the respondents having high innovativeness and only 4.17 per cent of the respondents had medium

innovativeness. The low innovativeness of small farmers might be due to their low education, smaller size of land holding and less social participation which leads to restricted information about new technologies. The findings are in the line with the studies conducted by Bhagyalaxmi *et al.*, (2003), Pandeti (2005) and Chaudhari (2006).

Achievement Motivation: It is apparent from the Table 3 that one third (33.33%) dairy farmers had low achievement motivation, whereas 26.67 per cent of dairy farmers belonged to medium achievement motivation category and 40.00 per cent of them were categorized under high achievement motivation category. The probable reason behind high achievement motivation may be due to their enthusiasm and zeal to become economically sound. The present findings are in inconformity with the studies conducted by Chaudhari (2006).

Decision Making Ability: The data from Table 3 show that, there were 65.00 per cent dairy farmers who had moderate decision making ability whereas, 15.83 per cent of dairy farmers belonged to poor decision making ability and 19.17 per cent of dairy farmers had good decision making ability. Majority of dairy farmers were in moderate decision making power. This might be due to their medium annual income, marginal and medium size of land holding and low education level as compared to other dairy farmers. The results of study are in the line with the findings of Chandrapaul (1998), Vijaykumar (2001), Chaudhari (2006) and Nagesh (2006).

Risk orientation: It is evident from Table 3 that 71.66 per cent of dairy farmers had medium risk orientation whereas, 14.17 per cent of dairy farmers belonged to each low and high category of risk orientation. The reason for majority of the respondents having medium risk orientation may be due to semi-medium and medium land holding category. Other possible reason for low and medium risk orientation of dairy farmers could be attributed that their old age and medium market orientation and annual income hinder them to take up the activities, which involve high risk. The findings of the study are in line with the studies of Subramanyam (2002), Bhagyalaxmi *et al.*, (2003), Suresh (2004), Nagesha (2005) and Chaudhari (2006).

Information Seeking Behaviour: It could be seen from Table 3 that majority of dairy farmers *i.e.*, 62.50 per cent of dairy farmers had medium information seeking behaviour, followed by 11.67 per cent of dairy farmers had high information seeking behaviour. However, 25.83 per cent of them had low information seeking behaviour.

The possible reason for majority of dairy farmers to fall in medium information seeking behaviour category might be due to their medium education and average financial conditions. The findings of Suresh (2004) and Pandeti (2005) are in the line of this result.

Cosmopolitanness: It is evident from Table 3 that 24.17 per cent of dairy farmers belonged to low level of cosmopolitanness followed by 19.17 per cent of respondents had high level of cosmopolitanness whereas, 56.66 per cent dairy farmers categorized under medium level of cosmopolitanness. Majority of the respondents were having medium cosmopolitanness as they were having medium annual income, size of land holding and unavailability of extension workers of public and private organizations locally. Low level of education may be the other reason behind such results. The findings of study are in the line with findings of Patel *et al.*, (2003), Suresh (2004) and Chaudhari (2006).

Overall entrepreneurial behavior: The perusal of Table 4 indicates that 17.50 per cent of dairy farmers belonged low entrepreneurial behaviour and 67.50 percent had medium, followed by 15.00 per cent of dairy farmers had high entrepreneurial behaviour. The possible reason for majority of respondents having medium entrepreneurial behaviour might be due to their medium financial condition, semi-medium size of land holding to take risk and late adoption of new technologies besides medium in innovativeness and medium information seeking behaviour. These are in the line with the results of Patil *et al.*, (1999), Nagesha (2005), Pandeti (2005), and Nagesh (2006), Gondkar *et al.*, (2012), who found that majority of the respondents had medium entrepreneurial behaviour.

Table 4: Distribution of the respondents according to their overall entrepreneurial behaviour Index

n=120		
Categories	Frequency (f)	Percentage (%)
Low (Up to 92.63)	21	17.50
Medium (92.64 to 115.56)	81	67.50
High (115.57 and above)	18	15.00
	120	100.00
	Mean	104.1
	SD	11.4659

Entrepreneurial Behaviour Index (EBI): It is evident from Table 5, that 36.67 per cent of dairy farmers belonged to low level category of entrepreneurial behaviour, followed by 33.33 per cent respondents had medium level of entrepreneurial behavior whereas, 30.00 per cent dairy farmers categorized under high level of entrepreneurial behaviour.

Table 5: Distribution of respondents according to their Entrepreneurial Behaviour Index (EBI)

n = 120		
Categories	Frequency (F)	Percentage (%)
Low (Up to 76.62)	44	36.67
Medium (76.63 to 95.59)	40	33.33
High (95.60 and above)	36	30.00
	120	100
	Mean	86.114
	SD	9.492

CONCLUSIONS

From the research it was found that, majority of the dairy farmers under study were from medium dairy farming experience and secondary school level of education along with dairy farming agriculture as their occupation and most of the dairy farmers possessed semi-medium and medium land holding. Majority of the respondents had small family size, medium level of annual income, herd size, social participation and extension contact, market orientation, and use of sources of information. It could be concluded from this study that majority of the respondents had medium level of entrepreneurial behaviour. The major indicators of the entrepreneurial behaviour *i.e.*, innovativeness, achievement motivation, decision making ability, risk orientation, information seeking behaviour and cosmopolitanism showed that they are good entrepreneurs. There is a need to standardize the practices to improve economic condition, information seeking behaviour, cosmopolitanism and other weak points of the dairy farmers. As most of the dairy farmers had low level of innovativeness, there is a need to expose the dairy farmers to new developments in agricultural dairy, and motivate them to adopt the new technologies by organizing group discussions, meetings, study tours and field trips. The fact that majority of the dairy farmers had medium entrepreneurial behaviour which is a clear indication of the progressiveness of the dairy farmers. Therefore, it calls for intensification of educational efforts and policy support to the dairy farmers by the field extension workers of the development departments, NGOs and private organizations.

Paper received on : September 19, 2014

Accepted on : October 23, 2014

REFERENCES

Bhagyalaxmi, K., Gopalakrishna Rao, V. and Sudarshanreddy, M 2003. Profile of the rural women micro-entrepreneurs. *Journal of Research*, Acharya N. G. Ranga Agricultural University, Hyderabad, 31(4): 51-54.

Chandrapaul, K 1998. A study on entrepreneurial behaviour of vegetable growers in Krishna district of Andhra Pradesh. M. Sc. (Agri.) Thesis, Acharya N. G. Ranga Agricultural University, Hyderabad.

Chaudhari Ratan Ranuji 2006. A study on entrepreneurial behaviour of dairy farmers. Ph.D Thesis (Unpub.), University of Agriculture Sciences, Dharwad.

Gondkar, Sachin, Sigh, B. K. and Kumbhare, N. V. Entrepreneurial Characteristics of Protected Cultivation Entrepreneurs in Pune District (Maharashtra) *Indian Journal of Extension Education* Vol. 48, No. 1 & 2, 2012 (91-94)

Nagesh 2006. Study on entrepreneurial behaviour of pomegranate growers in Bangalkot district of Karnataka, M.Sc.(Agri) Thesis, University of Agricultural Sciences, Dharwad.

Nagesha, P.N 2005. Study on entrepreneurial behaviour of vegetable seed producing farmers of Haveri district. M.Sc.(Agri) Thesis (Unpub.), University of Agricultural Sciences, Dharwad.

Pandeti, C.M. 2005. A study on entrepreneurial behaviour of farmers in Raichur district of Karnataka. M.Sc.(Agri.) Thesis, University of Agricultural Sciences, Dharwad.

Patel, M. M., Sanoria, Y. C. and Amit Chatterjee 2003. Communication factors and entrepreneurial behaviour of sugarcane growers. *Journal of Research*, Acharya N. G. Ranga Agricultural University, Hyderabad, 31(3): 62-67.

Patil, V. G., Mahadik, R. P. and Patil, A. S 1999. Entrepreneurial behaviour of little gourd growers. *Maharashtra Journal of Extension Education*, XVIII: 240-243.

Subramanyam, I 2002. A study on the impact of agricultural market yard committee level training programmes in Nellore district of Andhra Pradesh. M.Sc.(Agri.) Thesis, Acharya N. G. Ranga Agricultural University, Hyderabad.

Suresh 2004. Entrepreneurial behaviour of milk producers in Chittoor district of Andhra Pradesh A critical study. M. V. Sc. Thesis, Acharya N. G. Ranga Agricultural University, Hyderabad.

Vijaykumar, K 2001. Entrepreneurship behaviour of floriculture farmers in Ranga Reddy district of Andhra Pradesh. M.Sc.(Agri.) Thesis, Acharya N. G. Ranga Agricultural University, Hyderabad.

Consumption Pattern of Vegetables Among Rural Households in Moro Local Government Area of Kwara State, Nigeria

Kareem, O. W.¹, Oladipo, F. O.², and Kharde, P. B.³

ABSTRACT

Nutritional status of people in developing countries is not in good shape particularly the vulnerable (rural populace) and the situation needed urgent attention. Most rural households had uneven food intake pattern throughout the year based on season and affordability due to different income level of family. The present study conducted to determine vegetable consumption pattern and perceived benefits among rural dwellers in Moro Local Government area of Kwara State, Nigeria. A random sampling technique was used to select 102 respondents and well structured questionnaire was used for data collection. The result indicates that 44.1 per cent were male and 55.9 per cent were female. Majority (79%) of them was married and only 32.1 per cent had no formal education. There was a significant relationship between selected variables and personal characteristics of respondents. A significant difference also existed in the consumption pattern of vegetables among the consumers. The study however showed a low consumption rate for cucumber, cabbage and lettuce which are not just nutritious but also medicinal. The study recommended that nutrition education should be put in place especially in the rural areas.

Key words: Consumption pattern, vegetables, rural households.

INTRODUCTION

Consumption of food generally by the people is determined by the availability, accessibility and affordability of food at the people's locality throughout the year. According to Wright (1979) vegetables are perishable plant foods which exist in hundreds of variety consumed in different parts of the world. The variety accounting to Wright can be grouped as follow; the green vegetables which include lettuce, spinach, cabbage, bush okro (ewedu), water leaf, okro parsley, green beans *etc.*, the root and tubers, *i.e.* carrot, bed root, turnip, celeriac, yam, potatoes, cassava, cocoyam and bulbs as onion, garlic, lick *etc.*

Fruit vegetables are cucumber, tomatoes, pepper, avocado, pumpkin, garden egg *etc.* The stem vegetables are asparagus, celery *etc.*

The varied vegetables enjoyed different rate of consumption by people, because of their varied colours, texture and nutritive content. Vegetables improve the appetite of the consumer by stimulating the secretion of digestive enzymes which create urge for food and aid digestion of foods in carbohydrate, protein and fat (Mahan and Stump, 2004).

Vegetables when consumed frequently and of adequate quantity prevent digestive leucocytosis, an

inflammation process in the intestine when beginning meal with cooked foods often. Vegetables produce greater safety feeling than cooked foods with higher calorie content. These make vegetable desirable to loose or maintain weight. It possess these qualities because no vegetable is fattening except if fried (Pamplona-Roger, 2006). With these roles of vegetables in attaining sound health, it should not be considered a mess side dish to the “main dish” quite contrary.

Vegetables are able to carry out these roles because of the nutrient composition. Marison and Hark (1999) stated that though vegetables contain 80-95 per cent water, but this does not mean they are low in nutritional value. The remaining 5-20 per cent of solids contain substances of great biological and therapeutic value. The nutrients include calcium, potassium and iron which are most abundant. Potassium increases urine production and reduces arterial blood pressure. Calcium builds bone tissues and reduces cases of osteoporosis and other calcium deficiency disorders. Iron in vegetables makes it anti-anaemic and facilitate the production of red blood cells with the aid of Vitamin C (Pamplona-Roger, 2006). Other major nutrients in vegetables are pro Vitamin A (Carotinoids) in coloured vegetables, vitamin Bs and K. Provitamin A (plant Vitamin A) an antioxidant which also helps in tissue growth and repair, resistance to infection and good eye sight. Vitamin Bs are essential in carbohydrate and other nutrients metabolism Vitamin C

¹Department of Extension Education, Mahatma Phule Krishi Vidyapeeth (Agriculture University), Rahuri- 413722 District Ahmednagar, Maharashtra State, India. ²Department of Agricultural Extension and Rural Development, University of Ilorin, Kwara State, Nigeria.

promotes resistance to infection through its immunologic activity of leukocytes (white blood cells) and antioxidant which eliminates free radicals within the body system. Vitamin K in vegetables helps in blood clotting in case of injury or childbirth. The vitamin also helps in the formation of calcified tissues, (Mahan and stump, 2004). Fibre is also an important component of vegetables which is vital in the prevention of non-communicable diseases like cardiovascular diseases, overweight, obesity, diabetics etc. (Wardlaw and Kessel, 2002). Fibre also prevents constipation, increases the fecal volume and facilitates its passage through the digestive tract. This makes vegetables to have laxative effect (Pamplona-Rogers, 2006).

However, it is worth stating that in spite of all the nutritional and medicinal importance of vegetables the intake pattern is still very low, considering the increase in deficiencies of different nutrients derivable from vegetables. Therefore, this raises a great concern vis-à-vis the health status of rural people which may have negative effects on their production capacity. The specific objectives were;

1. To identify the personal characteristics of respondents.
2. To estimate the frequency of consumption of vegetables by the respondents.
3. To determine the relationship between selected personal characteristics of respondents and their consumption pattern of vegetables.
4. To examine the significance differences in the consumption pattern of the respondents.

METHODOLOGY

This research work was conducted in Moro Local Government Area of Kwara State, Nigeria. The sample was drawn using random sampling technique in the selected towns/villages which include Bode-Saadu, Shao, Molete, Jebba, Elemere, and Lanwa. In each of the six selected towns/villages, seventeen (17) respondents were each selected, thus making a total of one hundred and two (102) respondents used for the study.

Structured questionnaire was used to collect information from the respondents. Section A of the questionnaire contains information on personal characteristics of the respondents. Section B sought information about the frequency of vegetable consumption by the respondents using 5-point likert type

scale which was rated as follow; Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) and Strongly Disagree (1). Data collected were subjected to frequency counts, percentages, mean scores, Karl Pearson's correlation coefficient and ANOVA.

RESULTS AND DISCUSSION

Table 1: Personal characteristics of respondents

Characteristics	Frequency	Percentage	
Sex	Male	45	44.1
	Female	57	55.9
	Total	102	100
Marital Status	Single	12	11.8
	Married	79	77.5
	Divorced	05	04.9
	Widowed	06	05.9
Qualification	Total	102	100
	No formal education	33	32.4
	Primary	16	15.7
	Secondary	09	08.8
	NCE	05	04.9
	ND	18	17.6
	HND	06	05.0
	First Degree and Above	15	14.7
	Total	102	100
Occupation	Artisan	12	11.8
	Civil Servant	36	35.3
	Trading	42	31.2
	Private Sector	02	02.0
	Unemployed	02	02.0
	Farming	03	02.9
	Retired	05	04.9
Income	Total	102	100
	N10,000	20	19.6
	N1,000-15,000	28	27.5
	15,000-20,000	11	10.8
	≥ N30,000.00	26	25.5
Total	102	100	

The data presented in Table 1 showed that 55.9 per cent of the respondents were female while 44.1 per cent were male. Majority of them (79 %) were married. With this, following Anyakaoha and Eluwa (1991), who observed that married people most especially females are mindful of their intake, it follows therefore that the respondents stand to be mindful of their food intake. It is also shown that 32.4 per cent had no formal education while majority (67.6%) were literates, though with 15.2 per cent having just primary education. To this, Haselgrove and Scallan (1983) and Rogers (2003) have, stated that education enhances awareness and so awareness of the people particularly on the nutritional status stands to be enhanced

with their level of education. Also, occupation of people determines the consumption pattern of given items of food. The table also revealed that 41 per cent of the respondents were traders and therefore follows that this group may not necessarily mind the intake of vegetables. This is in line with the findings of Oguntona *et al.*, (1999) who stated that most traders majorly feed on street foods common in their locality which usually lack vegetables. Income is another variable that can significantly influence the intake of food. On this, the findings of this study revealed that 57.9 of the respondents have income level below N10,000.00 (naira) and N20,000.00 per month while below average (42.2%) were those with average income per month to be above N20,000.00. The low economic status of respondents also can influence their consumption pattern.

Table 2: Frequency of vegetable consumption within a week

Vegetables	Rank Position	Mean	SD
Spinach	6 th	2.4412	1.14817
Okro	8 th	1.45 ^o	1.26356
Broh Okro	4 th	2.8333	1.08165
Water leaf	11 th	0.9804	0.93322
Lettuce	14 th	0.4216	0.73708
Cabbage	13 th	0.5784	0.70971
Carrot	5 th	2.6667	1.02767
Onion	2 nd	3.5392	0.80434
Garlic	10 th	1.2157	1.26356
Potato	9 th	1.2353	0.90298
Cucumber	12 th	0.6667	0.94746
Tomatoes	1 st	3.8039	0.56357
Pepper	3 rd	3.2157	1.28685
Garden Eggs	7 th	1.7255	1.28323

The data presented in table 2 showed that tomatoes, onions and pepper had highest consumption in a week and rated 1st, 2nd and 3rd respectively. Other vegetables with low consumption rate were cucumber, cabbage and lettuce rated 12th, 13th and 14th positions with other vegetables. The low rate of consumption of these highly nutritious vegetables could deprive them from benefits that could enhance good health. Supporting this Attah (2002) and Olaniyi (2008) reported that these leafy vegetables are not only nutritious, but also medicinal; as some are blood builder, prevent diseases like diabetes *etc.*

Table 3: Perceived benefits of vegetables

Factors/Benefits	Mean	SD
Available throughout the year	3.6373	1.2331
Affordability	4.2255	.96377
Accessibility	4.0392	.90018
Attractive Colour	3.6275	1.27366
Easy toileting	4.0392	.90018
Maintaining weight	3.3039	1.39155
Improving health	4.0196	1.25722
Cultural beliefs	2.5196	1.59660

Table 3 revealed that factors such as affordability and accessibility with mean values of 4.22 and 4.03 respectively have higher benefit than availability and attractive colour with lower mean values of 3.64 and 3.63 respectively. This is in line with the findings of Wardaw and Kessel (2002) and Tewe *et al.*, (2001) who opined these factors affect even the most favoured vegetables. In addition, colour of the vegetables do not play significant role in the consumption pattern of the people bearing in mind respondents with non-formal education with trading as majority's occupation in the study area. Also, as revealed in the table as per the perceived benefits, majority of the respondents accepted vegetable roles of easy toileting and improving health status with mean values of 4.03 and 4.01 respectively. Others like maintaining weight and cultural beliefs have mean values of 3.30 and 2.51 respectively, showing respondents' non-conviction on those factors. In relation to this, Mitchell *et al.*, (2005), opined that vegetables help in improving health and prevent the incidence of cardiovascular and related diseases, removing cholesterol from the digestive tract before been absorbed.

Table 4: Relationship between respondents personal characteristics and pattern of vegetable consumption

Personal Characteristics	Linear by Linear Association	'r' value
Sex	65.800	.856**
Occupation	76.097	.936**
Income	92.904	.972**

**Significance level = 0.01

The date table 4 showed that there was significant relationship between the selected personal characteristics of the respondents and their vegetable consumption pattern. This is in line with Oladipo (2006) and Rogers (2003) whose findings revealed a significant relationship of personal characteristics of respondents and some independent variables like attitude to innovation, adoption of recommended technology *etc.*

Table 5: Anova table showing the differences in the consumption pattern of vegetables among respondents

Variable	N	X	Sd	Df	F-Cal	F-tab
Intake pattern among respondents	102	26.77	12.38644	101	21.831	1.64

The data presented in table 5 it is showed that the F-calculated (21.83) against the tabulated value of 1.64. and as such, the null hypothesis is rejected. This implies that there exist differences in the consumption pattern of vegetable among respondents. The difference could be adduced to the fact that different people have different choices for food, either as a result of educational exposure, degree of cosmopolites, cultural background, availability and accessibility of the food within the locality, occupation and income level of individuals. This confirmed with the view of Fakayode *et al.*, (2008) who stated that occupation is a primary determinant of the level of consumers income and that income in turn determines the household level of consumption (i.e consumption is usually hypothesized to be a function of disposable income). Talukdar *et al.*, (2012) mentioned the knowledge about cutting of vegetables just before cooking and that the cut should be a small one.

CONCLUSION

The findings of this study revealed low consumption pattern for majority of the highly nutritious and medicinal leafy vegetables though with high consumption rate for some common vegetables such as tomatoes, onions and pepper. The low consumption level could be ascribed to seasonality of vegetables which affects its accessibility and affordability by the consumers. The findings as perceived by consumers confirmed the health benefits attached to vegetables such as ease toileting and maintaining healthy body structure. To improve the health of the respondents serious nutrition education of respondents is a necessity. This will enlighten them on the health benefits they stand to gain by varied vegetables consumption and thereby reducing the nutritional diseases in our society. To cap it all, formulation of favourable policies by the government that will encourage the farming of vegetable throughout the year and provision of modern storage and preservation technology for accessibility, affordability and availability should be put in place.

Paper received on : September 15, 2014

Accepted on : October 20, 2014

REFERENCES

Anyakoha, E. U and Eluwa, M.A. 1991. Home management for schools and colleges Onitsha, Africana-

Fep Publishers Ltd.

Atta, K. B. 2002. Power of garlic. Cardiovascular diseases prevention association (CVDA) Osu-Accra Ghana pp. 9-30.

Clarke, D and Herbert, E. 1988. Food Facts Hong Kong Macmillan Education Ltd.

Duyer 1996. Is there a need to change American diet? Dietary phytochemical in cancer prevention and treatment. J. America Dieticians Association 3:1-7.

Fakayode, S.B., Omotosho O.A. and Omoniwa A.E. 2008. Economic analysis of vice consumption patterns in Nigeria. Journal of rural development 27 (4). P. 616.

Mahan, Z.K. and Stump, E.S. 2004. Krause's Food, Nutrition and Diet Therapy U.S.A. The Curtis Centre.

Mitchell, C., Baildam, E., Bull, D. Clemonds, A. and Marshall, D. 2005. Vibrant Health. England. The Stanborough Press Ltd.

Oguntona, R.B. and Tella, T.O. 1999. Street food and dietary intake of Nigerian Urban market women. International Journal of Food Sciences and Nutrition. 50: 385-390.

Oladipo, F.O. 2006. Construction and Standardization of a Socio economic status scale for tonal male farmers in Kwara State, Nigeria. Unpublished Ph.D Thesis, University of Ilorin, Ilorin.

Olaniyi, J.A. 2008. Your Health. Nigeria Tribune Tuesday 4th November, 2008. www.tribune.com.org.

Pamplona-Roger, M.D. George, D. 2006. Encyclopedia of Foods and their Healing Power. A guide to food science and diet therapy Madrid. Spain Talleres Grafices Penalara.

Rogers, E.M. 2003. Diffusion of innovation 5th Edition New York, Free Press.

Tewe, O.O. Abu, O.A., Ojeniyi, E.T. and Nwokocha, N.H. 2001. Sweet Potato Production, Utilization and Marketing in Nigeria.

Wardlaw, G.M. and Kessel, M.N. 2002. Perspective in Nutrition 5th Edition, New York. McGraw Hill.

Wright, O. 1979. The student's Cookery Book: Second Edition, New York. London Oxford University Press Ltd.

Atta, K. B. 2002. Power of garlic. Cardiovascular diseases prevention association (CVDA) Osu-Accra Ghana pp. 9-

Some Diseases. *Indian Journal of Extension Education* Vol. 48, No. 3 & 4, 2012 (61-64)

Talukdar, Pallavi and Sarmah, Juliana. Assessment of Nutritional Knowledge of Nurses Regarding Diet in

Self Help Group: An Effective Approach for Empowerment of Women

Lakhwinder Kaur¹, R. K. Kalra² and R.K.Dhaliwal³

ABSTRACT

The present study focussed on the economic, social and managerial impacts of self help groups on empowering women. The study was conducted in three cultural zones of Punjab. A sample of 200 members of self help groups belonging to these zones were the respondents of the study. An interview schedule was used to document the impact of self help groups. The findings of the study clearly revealed economic empowerment of rural women. The economic benefits gained from enrolling in the groups were 'higher price of their products instead of selling individually' (91%) and 'understood banking operations to avail credit facility' (81.50%). A large number of women in Punjab developed 'courage to think independently' (99.50%), 'understood group activities' (96%) and 'managed group activities' (95.50%) after joining the group. Furthermore the social empowerment of the members in terms of team spirit (97%), talking freely within family (94%), confidence in dealing with people (95.50%) were enhanced. It indicates that self help groups bring economic upliftment, leadership skills in managing the group and inculcate great confidence in the members of selected groups to succeed in their day to day life.

Keywords : Social, economic and managerial empowerment, self help groups

INTRODUCTION

Punjab, a small state in the northern part of India, makes up 1.5 per cent of the country's geographical area, produces an important portion of India's food grain and contributes a major share of the wheat and rice stock held by the Central Pool. Punjab state has earned the name "Food Basket of country" and "Granary of India". It leads the other states by contributing 61 per cent of wheat and 30 per cent of rice. Punjab state has been awarded "National productivity Award for Agriculture Extension services for consecutive 10 years from 1990-91 to 1999-2000. Although there was unprecedented increase in production, yet, for a decade, the yield of major crops has been stagnant. In recent years, a drop in productivity has been observed mainly due to falling fertility of the soil and excessive use of fertilizers and pesticides and rapidly falling water table (Bhardwaj 2014). As with the rest of the country, farms in Punjab are getting smaller, mainly due to expansion of towns and cities; industrial development and the breakup of larger traditional family structures into smaller nuclear families, with an associated redistribution of land into smaller parcels. (Anonymous 2009). Moreover villages faced with problems related to poverty, illiteracy, lack of skills and poor health. These are problems that cannot be tackled individually but can be better solved through group efforts. Farmer organizations or self-help groups can play an important role in maximizing productivity and profitability, as well as underpinning the longer term

social and ecological sustainability of farming. These groups can play a significant role in many core aspects of farming, such as increasing production at a reduced cost; providing expert technical guidance; purchasing inputs; marketing products; training; credit or equipment; representing members' interests; building influence, fundraising and carrying different projects. A study conducted by Lokhande (2013). Found that on an average, the monthly saving amount before joining the group was ₹ 75.38 per respondent which rose to ₹ 132.87 per respondent after joining the group. It was interesting to note that 78.57 per cent respondents had used borrowed funds for the intended purpose *i.e.* for income generating activities whereas 21.43 per cent had used funds for other purposes such as marriages, housing repairs, repayment of old debt and other purposes. It was noteworthy that after joining the groups, more than 80 per cent of the respondents felt respected by family members and others and 60.39 per cent of the respondents expressed the feeling of security due to financial and social support extended by joining the groups while Kumari *et al.*, (2013) reported that self help groups also increased self confidence and covered risk bearing capacity (62.50%) and intensified the desire to earn and make better living (58.33%). Keeping into consideration the importance of self help groups in empowerment of women, the present investigation was undertaken to study the impact of self help groups on economic, managerial and social empowerment of women. Devi and Jain (2012) reported lack of education as the major social constraint followed

¹ Ph.D. Scholar, ² Professor Department of Extension Education, College of Agriculture and ³ Director Student's Welfare, Punjab Agricultural University, Ludhiana, Punjab, India.

by lack of mutual understanding among members lack of motivation and lack of support from family and for enhancing the effectiveness of SHGs it is essential to conduct need assessment based trainings and capacity building interventions (Monika *et. al.* 2012)

METHODOLOGY

The study was conducted in Punjab. The selection of self help groups was made from a list of women self help groups operating in different parts of Punjab; collected from different sources viz. regional office of National Bank for Agriculture and Rural Development (NABARD) Chandigarh, regional office Milkfed Chandigarh and self help groups formed under Agricultural Technology Management Agency (ATMA). Multi stage sampling design was used for selection of respondents. At first stage, three cultural zones i.e. *Majha, Malwa and Doaba* were selected. At the second stage, 2 districts from each cultural zone viz Pathankot and Amritsar (*Majha*), Jalandhar and Hoshiarpur (*Doaba*), Moga and Ludhiana (*Malwa*) were selected randomly. At the third stage, from these 6 selected districts, 12 functional women self help groups were selected by using probability proportion to number (PPS) of self help groups in each district. A sample of 200 women belonging to the selected self help groups namely Mian Mamli (20), Nari Shakti (15), Amar Das (18), Guru Ram Das (14), Maha Laxmi (15), Durga (15), Chetna (15), Sada Shiv Modern (30), Assal (15), Veer Honey (14), Baba Budha (16) and Bibi Rajni (13) were selected by using probability proportion to number (PPS) of members in each group. The data were collected with the help of interview schedule. In depth study was undertaken to determine impact of self help groups.

RESULTS AND DISCUSSIONS

Impact of self help groups were studied in terms of economic, managerial and social empowerment.

Economic empowerment of women self help group:

An overview of the monthly income revealed that overall as many as sixty one per cent members of the three cultural zones of Punjab increased their income in the range of ₹ 1000-1500 per month before and after joining the groups. This might be due to the fact that all the groups were functional and grown up enough for applying continuous efforts to organise various entrepreneurial activities. These groups initiated the development projects to get grants from the government. The results are in consonance with findings of (Naidu *et al* 2006; Suja 2012 and Kondal 2014).

Table 1: Income generation and monthly savings of women of selected self help groups

Increase in monthly income (₹/month)	Majha (n=62)		Malwa (n=58)		Doaba (n=80)		Overall	
	f	%	f	%	f	%	f	%
500-1000	8	12.90	9	15.51	16	20.00	33	16.50
1000-1500	39	62.90	37	63.79	47	58.75	123	61.50
1500-2000	15	24.19	10	17.24	16	20.00	41	20.50
2000-2500	-	-	2	3.44	1	1.25	3	1.50
Increase in monthly savings (₹/month)								
50-100	25	40.32	20	34.48	33	41.25	78	39.00
100-150	27	43.54	26	44.82	33	41.25	86	43.00
150-200	10	16.12	10	17.24	13	16.25	33	16.50
200-250			2	3.44	1	1.25	3	1.50

It can be noted from the data given in Table 1 that there was increase in monthly savings after joining the group. As many as eighty two per cent of members had increased monthly savings to the tune of ₹ 50-100 while nearly 60 per cent of members in all the groups had increased monthly savings to the tune of ₹ 100-200. The results of the study pointed out that the incremental income not only enhanced the productive expenditure of family but also promoted the savings. The findings were in tune with studies conducted by various researchers (Ramachandran and Seilan 2005; Venkatesh and Kala 2010; Arya and Tiwari 2001; Bhatia and Bhatia 2000; Tita *et al* 2011; Reddy and Reddy 2012 and Kondal 2014) who observed that there had been perceptible changes in living standard of SHG members in terms of increase in income and savings as well.

It can be noted from the data given in Table 2 that monthly income and savings of members of self help groups before and after joining the group belonging to *Majha, Malwa and Doaba* region were found to be significant at 1 per cent level. It indicates that members of all the groups significantly increased their income as well as savings after joining the group. It is due to the fact that the group members were actively involved in various economic projects such as candle making, processing of fruits and preparation of pickles, squashes and vermicelli. The findings were in line with the studies conducted by various researchers on impact of self help groups (Tita *et al*, 2011; Reddy and Reddy 2012 and Kondal 2014)

Table 2: Monthly income and monthly savings of women of selected self help groups before and after joining the group

Region	Monthly income				Monthly savings			
	Before	After	Mean difference	t-statistics	Before	After	Mean difference	t-statistics
Majha	1375	2681.45	1306.45	14.75*	85	197.90	112.90	12.65*
Malwa	1285	2578.10	1293.10	12.35*	70	189.83	119.83	14.75*
Doaba	1390	2652.50	1262.50	16.25*	95	208.75	113.75	10.65*
Overall	1320	2605.00	1285.00	14.35*	90	205.25	115.25	11.84*

* Significant at one percent level

An investigation regarding economic empowerment further reported that a majority (91%) of the members of self help groups of three zones received higher price of their products instead of selling individually while 81.50 per cent had developed ability to understand banking operations after joining the group. It is remarkable to report that members of Sada Shiv Modern (*Doaba*) had contributed money in purchasing mobile phone (3.75%) and AC (1.25 %). It indicates that now-a-days women working in the SHGs are also be respected by the family as they are independent in earning the income and contributing to family income, expenditure and savings. As a results of which family got economically empowered (Table 3). Bera (2011) found that the family expenditure has increased due to positive change in the self help group member's income.

Table 3: Empowerment of members of selected self help groups in various economic aspects

Aspects related to economic empowerment	Majha (n=62)		Malwa (n=58)		Doaba (n=80)		Overall	
	f	%	f	%	f	%	f	%
Investment on books	16	25.80	14	24.13	29	36.25	59	29.50
Paying Fee of children	25	40.32	24	41.37	30	37.5	79	39.50
Spare time for teaching child	14	22.58	21	36.20	22	27.5	57	28.50
Increased use of milk intake	12	19.35	17	29.31	13	16.25	42	21.00
Understand banking operations	55	88.70	48	82.75	60	75	163	81.50
Higher price for products	57	91.93	55	94.82	70	87.5	182	91.00
Purchased mobile phone					3	3.75	3	1.5
Contributed money towards purchase of								
Tractor	1	1.612903	1	1.724138	5	6.25	7	3.5
Tata Sumo/Bolero	2	3.22	2	3.44	1	1.25	5	2.50
A.C					1	1.25	1	0.50

*Multiple response

It is further depicted from the data in Table 3 that two-third members of *Malwa* region had increased the use of milk intake and could spare time for teaching child at home instead of sending to tuition as compared to *Mazha* (42%) and *Doaba* (44%). It indicates that women of self help groups of *Malwa* region are more conscious about health and education of their children (Sidhu, 2007).

Managerial empowerment of women in selected self help groups

Managing the group is a special art, important for effective working of the groups. Managerial empowerment of members of self help groups is presented in Table 4. For measuring managerial empowerment, various aspects were studied. Based on the opinion given by the selected members of self help groups, the data indicated that very high percentage of the

members of all the groups of three zones developed courage to think and act independently (99.50%), understood group goal (96%), realized their potentials (95.50%), managed various activities of groups such as acquiring finance, indentifying raw materials, marketing the produce (95.50%) and enhanced the ability to take risk (93.50%). It shows that all these groups were actively involved in management process and were responsible for different activities of the group. It is further indicated that large majority of the members (90%) of *Doaba* region properly utilized their time and resources for managing the group as compared to *Majha* (75.80%) and *Malwa* (79.31%). It is attributed to the fact that people of *Doaba* region are very strong in family ties that help to tie members into the group (Sidhu 2007).

Table 4: Managerial empowerment of women in selected self help groups

Aspects related to managerial empowerment	Majha (n=62)		Malwa (n=58)		Doaba (n=80)		Overall	
	f	%	f	%	f	%	f	%
Helped in input procurement	19	30.64	15	25.86	32	40	66	33.00
Proper use of time and resources	47	75.80	46	79.31	72	90	165	82.50
Enhanced the ability to take risk	60	96.77	50	86.20	77	96.25	187	93.50
Increased my contacts with officials from different sources	28	45.16	17	29.31	34	42.5	79	39.50
Learnt to try new ventures	18	29.03	19	32.75	22	27.5	59	29.50
Improved performance in the task	40	64.51	48	82.75	64	80	152	76.00
Able to manage various activities of groups	60	96.77	57	98.27	74	92.5	191	95.50
One's unique potential	59	95.16	54	93.10	78	97.5	191	95.50
Understand group goal	59	95.16	55	94.82	78	97.5	192	96.00
Courage to think and act independently	62	100	57	98.27	80	100	199	99.50

*Multiple response

Social empowerment of women of selected self help groups

It is quite clear from the data placed in Table 5 that majority of the respondents in all the 12 groups reported that 'team spirit' (97%), 'confidence in dealing with people' (95.50%), 'confidence in talking within family' (94%), 'ability to aspire for a better future' (93.50%) and 'developed social relationships' (92.50%) had been increased. This may be due to the fact that socialization in small groups provides opportunities to express freely, develop team spirit, change the attitude of member that are socially acceptable and thereby increasing self confidence among the members of self help groups. The results were in track with the findings of Bera (2011), Singh and Kaur (2012) and Murthy (2013) who also reported that self confidence of members of self help groups was improved after joining the group. A small change was observed regarding organizing social functions (4%) and social recognition (4.50%).

Table 5: Social empowerment of women of selected self help groups

Aspects of social empowerment	Majha (n=62)		Malwa (n=58)		Doaba (n=80)		Overall	
	Improved	Remained the same	Improved	Remained the same	Improved	Remained the same	Improved	Remained the same
	f	f	f	f	f	f	f	f
Confidence in dealing with people	59 (95.16)	3 (4.83)	55 (94.82)	3 (5.17)	77 (96.25)	3 (3.75)	191 (95.50)	9 (4.50)
Confidence in dealing with different organizations	38 (61.29)	24 (38.70)	21 (36.20)	37 (63.79)	48 (60.00)	32 (40.00)	107 (53.50)	93 (46.50)
Talk freely within family	58 (93.54)	4 (6.45)	58 (100)	0	72 (90.00)	8 (10.00)	188 (94.00)	12 (6.00)
Shunning of inhibitions	49 (79.03)	13 (20.96)	42 (72.41)	16 (27.58)	65 (81.25)	15 (18.75)	156 (78.00)	44 (22.00)
Leadership skill	50 (80.64)	12 (19.35)	51 (87.93)	7 (12.06)	64 (80.00)	16 (20.00)	165 (82.50)	35 (17.50)
Social relationships	61 (98.38)	1 (1.61)	54 (93.10)	4 (6.89)	70 (87.50)	10 (12.50)	185 (92.50)	15 (7.50)
Breaking societal taboos/values	40 (64.51)	22 (35.48)	24 (41.37)	34 (58.62)	61 (76.25)	19 (23.75)	125 (62.50)	75 (37.50)
Team spirit	57 (91.93)	5 (8.06)	58 (100)	0	79 (98.75)	1 (1.25)	194 (97.00)	6 (3.00)
Social recognition	2 (3.22)	60 (96.77)	1 (1.72)	57 (98.27)	6 (7.50)	74 (92.50)	9 (4.50)	191 (95.50)
Improvement in personal health	46 (74.16)	16 (25.80)	40 (68.96)	18 (31.03)	59 (73.75)	21 (26.25)	145 (72.50)	55 (27.50)
Organizing social functions	3 (4.83)	59 (95.16)	4 (6.89)	54 (93.10)	1 (1.25)	79 (98.75)	8 (4.00)	192 (96.00)
Ability to aspire for a better future	59 (95.16)	3 (4.83)	55 (94.82)	3 (5.17)	73 (91.25)	7 (8.75)	187 (93.50)	13 (6.50)
Power to influence	25 (40.32)	37 (59.67)	19 (32.75)	39 (67.24)	49 (61.25)	31 (38.75)	93 (46.50)	107 (53.50)
Free from cheating from money lenders	53 (85.48)	9 (14.51)	42 (72.41)	16 (27.58)	57 (71.25)	23 (28.75)	152 (76.00)	48 (24.00)

*Multiple response

Figures in parentheses indicate percentages

It is remarkable to point out that social empowerment of *Doaba* region in terms of confidence in dealing with people (96.25%), talking freely within family (90%), shunning of inhibitions (81.25%) was enhanced more than *Malwa* and *Majha* region. The figures in Table further depicted that team spirit (100%) and leadership skill (87.93%) were improved much in *Malwa* region as compared to other two regions.

Impact of SHGs on empowerment of women of selected groups in Punjab

Economic empowerment was studied in terms of monthly income, savings, investment on books, fee of children, banking operations, price for products and contribution of money towards purchase of assets. A scrutiny of data in Table 6 revealed that economic empowerment was higher in case of *Majha*, *Malwa* and *Doaba* regions of Punjab. It may be due to the reason that the selected groups were functional and working for

improving their livelihood. The results were in line with the findings of (Ramachandran and Seilan 2005; Naidu *et al.*, 2006; Venkatesh and Kala 2010; Arya and Tiwari 2001; Bhatia and Bhatia 2000; Tita *et al.*, 2011; Reddy and Reddy 2012; Suja 2012 and Kondal 2014).

Aspects related to managerial empowerment like input procurement, use of time and resources, ability to take risk, contacts with officials from different sources, new ventures, performance in the task, manage various activities of the group, understand group goal and courage to think and act independently were taken in to account. It was also found that more than sixty per cent of the respondents had medium managerial empowerment. The members of *Majha* (74.19) were having higher managerial empowerment as compared to *Malwa* (71%) and *Doaba* (62.5%) regions.

It may be due to the fact that people of *Majha* region are more practical than other regions (Sidhu, 2007). The findings were in tune with Venkatesh and Kala 2010; Dwarkanath 2002; Arya and Tiwari 2001; Bhatia and Bhatia 2000 and Tita *et al.* 2011.

Table 6: Impact of SHGs on empowerment of women of selected groups in Punjab

Socio-personal Characteristics	Category	Majha (n=62)		Malwa (n=58)		Doaba (n=80)		Overall (n=200)	
		f	%	f	%	f	%	f	%
Economic empowerment	Low (4-6)	12	19.35	10	17.24	16	20	38	19.00
	Medium (6-8)	15	24.19	19	32.75	23	28.75	57	28.50
	High (8-10)	35	56.45	29	50.00	41	51.25	105	52.50
Managerial empowerment	Low (4-6)	9	14.51	12	20.68	12	15	33	16.50
	Medium (6-8)	46	74.19	41	70.68	50	62.5	137	68.50
	High (8-10)	7	11.29	5	8.62	18	22.5	30	15.00
Social empowerment	Low (8-10)	13	20.96	21	36.20	24	30	58	29.00
	Medium (10-12)	32	51.61	22	37.93	40	50	94	47.00
	High (12-14)	17	27.41	15	25.86	16	20	48	24.00

Regarding social empowerment, various aspects viz. confidence, shunning of inhibitions, leadership skill, social relationships, societal taboos, team spirit, personal health, organization of social functions, ability to aspire for better future and social recognition were studied. Social empowerment was found to be medium. However social empowerment of *Majha* (52%) and *Doaba* (50%) was higher than *Malwa* (38%). Bera (2011), Singh and Kaur (2012), Murthy (2013) and Kasthuri *et al.*, (2014) reported that self confidence of members of self help groups was improved after joining the group.

CONCLUSION

The study highlighted that majority of the members of all the self help groups increased their income and savings in the range of ₹1000-1500 and ₹ 50-100 per month for the economic upliftment. The other economic

benefits availed by the members from joining the group were received higher price for the product and understanding of banking operations. Among the managerial empowerment, courage to think and act independently, understood goal of group and realized their full potentials emerged as the major aspects derived by the respondents. It may be due to large contribution by all the members in group activities. It could be further indicated from the study that social empowerment in relation to team spirit, confidence in dealing with the people and talk freely within family were also promoted. The study recommended that economic, managerial and social aspects of self help groups are important for evaluating progress of any self help groups and these three are inter-related with each other and cumulative effects of these aspects need to be taken into consideration.

Paper received on : September 15, 2014

Accepted on : October 20, 2014

REFERENCES

- Anonymous 2009. Agriculture in Punjab. In *Human Development Report Punjab* Ed. Punjab Human Development report. Pp: 168-178. The Government of Punjab. India.
- Arya H P S and Tiwari, M. K. 2001. Critical factors in the functioning of successful and unsuccessful milk producers' cooperative societies in Bareilly District of U.P. *Indian Coop Review* 39: 153-59.
- Bera, S. K. 2011. Study of SHG-Microfinance initiative in Purbo Midnapore district of West Bengal. *Economic affairs* 56:107-116
- Bhardwaj, S. 2014 Punjab. Retrieved from <http://www.britannica.com/EBchecked/topic/483563/Punjab> on 2.5.2014
- Bhatia, N. and Bhatia, A. 2000. A lending to groups. *Yojana* 5: 18.
- Kondal, K. 2014. Women Empowerment through self help groups in Andhra Pradesh, India. *Int. Res. J. Soc Sci.* 3:13-16. Retrieved from www.isca.in on 3.3.2013
- Murthy, P. 2013. Economic empowerment of rural women by self help group through micro credit. Retrieved from <http://papers.ssrn.com/sol3/papers.cfm?abstractid=2203040> on 10.2.2014
- Naidu, M. C., Jayaraju M and Dasaathaamaiah, K. 2006. Women Empowerment through DWCRA-Empirical study. *Social Welfare.* 51: 32-38.
- Ramachandran, T. and Seilan, A. 2005. Socio-economic empowerment and self help groups. *Social Welfare.* 52: 3-7
- Reddy, K. R. and Reddy, C. S. 2012. Self help groups in India: A study on quality and sustainability Retrieved from: <http://www.microfinancegateway.org/p/site/m/template.rc/1.9.60645/> on 5.6.2013
- Savitha. 2004. Women empowerment on decision making in agriculture- an economic study in Mysore district, Karnataka. M.Sc.(Agri.) Thesis. University of Agricultural Sciences, Bangalore.India
- Sidhu, P. K. 2007. Malwa versus Majha. Retrieved from <http://punamsidhu.blogspot.in/2007/03/malwa-versus-majha.html> on 6.4.2014
- Singh, S. and Kaur, S. 2012. Impact of self help groups on empowerment of women. *J Comm Mob and Sus Devp.* 7: 255-258
- Suja, S. 2012. Women Empowerment through self-help group- An evaluative study. *Sona Global Management Review.*8:68-80
- Tita D F, Haese M, Degrande A, Tchoundjeu Z and Damme, P. 2011. Farmers' satisfaction with group market arrangements as a measure of group market performance: a transaction cost analysis of Non Timber Forest Products' producer groups in Cameroon. *Forest Policy and Econ* 13:545-53.
- Venkatesh, J. and Kala, K. 2010. Empowering rural women all the way through self help groups. *Int J Mgt.* 1:156-163.
- Devi, Ganga and Jain, D.K. 2012. Constraints Faced in Functioning of Self Help Groups by the Members under Rajasthan Condition *Indian Journal of Extension Education. Vol. 48, No. 1 & 2, 48-51*
- Wason Monika, Singh, Premlata, Padaria, R N and Vijayaragavan K. 2012. Assessment of Training Needs of Self Help Group Members *Indian Journal of Extension Education Vol. 48, No. 1 & 2, (84-86)*

Impact of Personality Traits on the Academic Achievement of Male and Female Adolescents: A Study of Block Keller of District Shopian (J&K)

Heena Qadir¹

ABSTRACT

The totality of qualities and traits, as of character or behavior, that are peculiar to a specific person constitute personality. The personality of males and females differs considerably due to inherent differences in biological traits that consequently affect other dimensions of their behavior. Their personalities along with specific associated traits get reflected in various spheres of their lives and perform differently. Like other facets, personalities play a significant role in the learning abilities and influence the educational status of males and females. Males and females possess different capabilities to learn on account of their inherent differences. Thus, it is in the interest of educational psychology to evaluate different personality traits of males and females and the respective impact on their performances in the field of education to utilize their potential properly. This will help educationists in general and teachers in particular to come up with promising strategies of teaching best suited to both the genders. The present study is conducted to investigate the impact of varying personality traits on the academic achievement of male and female adolescents. The present study employs descriptive method of research. It was conducted at block Keller of District Shopian in the state of Jammu and Kashmir where from a sample of 80 male and female adolescent students was selected through random sampling method from different Government and Private schools with equal proportion of gender. The primary research tool administered to the respondents included in the selected sample was the Cattell's High School Personality Questionnaire (HSPQ). The findings of the study reveal that the impact of different personality traits of male and female adolescents on the academic performance in Mathematics and General Science subjects is significant while as it is insignificant for subjects Urdu, Social Science, English and Value and Moral education.

Keywords: Personality, education, learning, trait, adolescent, gender.

INTRODUCTION

Personality is frequently used in our present day context to refer to man's totality of behavior, cognition and emotions. The totality of qualities and traits, as of character or behavior, that are peculiar to a specific person constitute personality. Behavior can be described in terms of the functioning of various traits or factors that make personality. The personality of males and females differ considerably due to inherent differences in biological traits that consequently affect other dimensions of their behavior. Thus, these two opposite genders get differential opportunities to develop their personality. Their personalities along with specific associated traits get reflected in various spheres of their lives and perform differently. Like other facets, personalities play a significant role in the learning abilities and influence the educational status of males and females. Açıkgöz, (2007) asserts that each person has his or her own learning patterns in the course of learning. Every person can learn if the appropriate learning atmosphere is supplied to them. Moreover learners differ in respect to their learning types, speed and capacity. Thus males and females possess different capabilities to learn on account of their inherent differences. Learning patterns is a factor which is usually

confronted from kindergarten to university for each level of students and plays a decisive role in the educational status of an individual. Learning styles is one of the most important subjects of individual differences. It is often used as a metaphor for considering the range of individual differences in learning.

Thus, it is in the interest of educational psychology to evaluate different personality traits of males and females and the respective impact on their performances in the field of education to utilize their potential properly. When individual differences of males and females are taken into consideration, effective instruction can be provided to them by teachers. Their differential learning styles need to be taken into consideration to attain success in the system of education. By understanding different personality dimensions of male and female adolescents and by applying specific reading-teaching strategies, significant improvement in learning outcomes as compared to other strategies for reading instruction may lead to recommendations being made for developing a curriculum to prepare future teachers to master a wide variety of appropriate reading-teaching strategies. This will help educationists in general and teachers in particular to come up with promising strategies of

¹ Doctoral Student, Discipline of Sociology, School of Social Sciences, IGNOU, New Delhi

teaching best suited to both the genders. In the present scenario this area of study is gaining much significance in the academic circles in general and literature of education in particular.

The present study is conducted to investigate the impact of varying personality traits on the academic achievement of male and female adolescents. It aims to identify their general academic performance and their performance in different subjects of learning.

METHODOLOGY

The present study employs descriptive method of research. It was conducted at block Keller of District Shopian in the state of Jammu and Kashmir where from a sample of 80 male and female adolescent students was selected through random sampling method from different Government and Private schools with equal proportion of gender. The primary research tool administered to the respondents included in the selected sample was the Cattell's High School Personality Questionnaire (HSPQ). The investigator scored the questionnaire as per the manual of the test. The sample includes adolescent boys and girls of age group 14-16 years. Personality traits refer to the dominant set of traits as measured by Cattell's HSPQ.

RESULTS AND DISCUSSION

The data was analyzed by applying T-Test in order to find the impact of personality traits on the academic achievement of male and female adolescents. The findings of the present study and their relevant discussion in light of the objectives and variables under study are presented below:

Table 1: Academic achievement in mathematics

Subject	Group	Mean Value	S.D	T-Test	Level of Significance
Mathematics	Male	5.72	1.59	3.05	Significant at 0.01 level
	Female	4.65	1.56		

Source: Primary data

Mean value in subject Mathematics for male adolescents is 5.72 with standard deviation of 1.59 at 0.01 level of significance. On the other hand, mean value for female adolescents is 4.65 with standard deviation of 1.56 at 0.01 level of significance.

Thus table 1 show that the difference regarding the impact of personality traits on the academic achievement of male and female adolescents in mathematics is significant at 0.01 level. Mathematics subject shows a significant difference between male and female

adolescents. It is because of the fewer tendencies of girls to learn mathematics. The girls were more critical with lower mental capacity. They were unable to handle abstract problems, lacking creativity and do not give more mind to solve mathematical problems. It was also observed that girl students remain busy with other affairs at their homes.

Table 2: Academic achievement in Urdu

Subject	Group	Mean Value	S.D	t -Test	Level of Significance
Urdu	Male	4.72	1.70	1.36	Insignificant
	Female	4.20	1.77		

Source: Primary data

The data presented in Table 2 given above reflects the performance of male and female adolescents with different personality traits in subject Urdu. In this case both the assessed genders were keeping same attitude of learning and same academic performance.

Here the level is insignificant that clearly shows no difference or relation in the impact of personality traits on the academic achievement of male and female adolescents in subject Urdu. Block Keller is hilly area where Gujjar and Pahari people live in large proportion. Both male and female adolescents have equal inclination with the Urdu subject. They are socially as well as culturally linked with the subject and speak this language at their homes as well.

Table 3: Academic achievement in science

Subject	Group	Mean Value	S.D	t -Test	Level of Significance
Science	Male	6.07	1.86	2.85	Significant at 0.01 level
	Female	7.07	1.26		

Source: Primary data

The data presented in Table 3 indicated that the mean comparison of male adolescents is 6.07 with Standard deviation of 1.86 and the mean value for female adolescents is 7.07 with standard deviation of 1.26 at 0.01 level of significance.

The male and female adolescents differ significantly in the academic performance in Science subject due to difference in their personality traits. Both male and female adolescents are comparatively poor in science subject.

Table 4: Academic achievement in social science

Subject	Group	Mean Value	S.D	t -Test	Level of Significance
Social Science	Male	5.72	1.93	0.51	Insignificant
	Female	5.92	1.60		

Source: Primary data

The data presented in Table 4 given above reflects the performance of male and female adolescents with different personality traits in subject Social Science. In this case both the assessed genders were keeping same attitude of learning and consequently same academic performance. Here it is insignificant that clearly shows no difference or relation in the impact of personality traits on the academic achievement of male and female adolescents in subject social science. The cramming power of both male and female adolescent being very high makes no positive difference between them in learning this subject.

Table 5: Academic achievement in english

Subject	Group	Mean Value	S.D	t -Test	Level of Significance
English	Male	4.90	2.02	0.83	Insignificant
	Female	5.25	1.73		

Source: Primary data

The data presented in Table 5 reflects that the mean values for male and female adolescents are 4.90 and 5.25 respectively where as the standard deviations for males are 2.02 and for females is 1.73. Similarly the t-Test score (0.83) indicates that it is insignificantly related to the performance of male and female adolescents in English subject. English being the general subject for all students makes no impact of personality traits for learning this subject among adolescent boys and girls.

Table 6: Academic achievement in value and moral education

Subject	Group	Mean Value	S.D	t -Test	Level of Significance
Value and Moral Education	Male	5.20	1.80	0.76	Insignificant
	Female	5.52	2.01		

Source: Primary data

The data presented in Table 6 given above reflects the performance of male and female adolescents with different personality traits in value and moral education. In this case both the assessed genders were keeping same attitude of learning and consequently same academic performance. Here it is insignificant that clearly shows no difference or relation in the impact of personality traits on the academic achievement of male and female adolescents. Both males and females have been found emotionally suitable, assertive, adventurous, tender minded and like group actions. They have also been found reserved, affected by feelings, shy, timed and restrained. However, boys have been observed talkative, frank and alert.

CONCLUSION

The present study is conducted to investigate the impact of varying personality traits on the academic achievement of male and female adolescents. It employs descriptive method of research. The study was conducted

at block Keller of District Shopian in the state of Jammu and Kashmir where from a sample of 80 male and female adolescent students was selected through random sampling method from different Government and Private schools with equal proportion of gender. The primary research tool administered to the respondents included in the selected sample was the Cattle's High School Personality Questionnaire (HSPQ). The findings of the study reveal that the impact of different personality traits of male and female adolescents on the academic performance in Mathematics and General Science subjects is significant while as it is insignificant for subjects Urdu, Social Science, English and Value and Moral education.

Paper received on : September 26, 2014

Accepted on : October 25, 2014

REFERENCES

- Açıkgöz, K. Ü. 2007. Etkiliöğrenmeveöğretme. İzmir: BilişYayıncılık
- Boydak, H. A. 2008. Öğrenmestilleri. İstanbul: BeyazYayımları
- Butler, K. A. 1987. Learning and teaching style in theory and practice (Rev. ed.). Columbia, CT: The Learner's Dimension.
- Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. 2004. Should we be using learning styles: What research has to say to practice. London: Learning and Skills Research Centre.
- Demirbaş, O. O., & Demirkan, H. 2007. Learning styles of design students and the relationship of academic performance and gender in design education. Learning and Instruction, 17(1), 345-359.
- Felder, R. M., & Silverman, L. K. 1988. Learning and teaching styles in engineering education. Engineering Education, 78(7), 674-681.
- Grasha. F. A. 1996. Teaching with style. Pittsburg, PA : Alliance.
- Johassen, D. H., & Grabowski, B. L. H. 1993. Handbook of individual differences, learning and instruction. USA: Lawrence Erlbaum Associate.
- Kefee, J. W., & Jenkins, J. M. 2000. Personalized instruction: Changing practice. Larchmant NY: Eye on Education Inc.

- LeFever, M. D., 1995. Learning styles: Reaching everyone God gave you to teach. USA: David C. Cook.
- Messick, S. 1976. Individuality in learning. San Francisco: Jossey-Bass.
- Nunan, D. 1995. Language teaching methodology. London: Prentice Hall.
- Price, L. 2004. Individual differences in learning: Cognitive control, cognitive style and learning style. Educational Psychology, 24(5), 681-698. Retrieved December from Taylor and Francis database.
- Uzun, A., & Şentürk, A. 2008. Assessing learning styles of students at Uludağ University, Faculty of Education. 8th International Educational Technology Conference, Eskişehir.

Constraints Analysis of MAHAGRAPES Farmers

Nikam Vinayak Ramesh¹, Premlata Singh², Shiv Kumar³ and Rakesh E.S.⁴

ABSTRACT

Mahagrapes is a marketing partner to a group of grape growers' cooperative societies in Maharashtra. It helps grape growers in exporting their produce to European countries. The study was aimed at analysing constraints faced by *Mahagrapes* members during production and export of grapes. Nashik, Sangli and Pune districts of Maharashtra were purposively selected for data collection. Data were collected by focused group discussion and personal interview of members and constraints were ranked using Garrett's ranking technique. The study revealed that major constraints faced by farmers were difficulty in following recommended practices, absence of produce procurement policy, lack of price policy for grapes by the Government, non-availability of labour during peak season and more incidence of pests and diseases.

Key words: *Mahagrapes*, constraints, marketing partner, grape grower's cooperative societies, export.

INTRODUCTION

India has large varieties of fruits in the basket and accounts for ten per cent of world's total fruit production with second rank. Grape is one of the important fruit crops in India. The area under grape cultivation in India is about 111,000 ha, with annual production of about 12.35 lakh metric tons. Maharashtra, Andhra Pradesh and Karnataka are the major grape producing states in India. Maharashtra occupies the top slot in cultivation and production of grapes in the whole country having 86,000 ha area under cultivation (about 62 % of the country) with production of 7.74 lakh metric tons. Out of total production only seven per cent is exported to the Europe and other countries (NHB-2012).

A successful model that has helped in increasing export of grapes in India is Mahagrapes. Mahagrapes is the organization which helps in linking small and marginal farmers to export market. It was formed in January 1991 with the objective of elimination of middlemen in marketing process and also encouragement and development of agricultural export. It acts as a marketing partner to the group of sixteen producers cooperatives in Maharashtra state of India. Mahagrapes negotiates better prices for its members and also provides technical assistance, inputs and information to the farmers to enable them in meeting stringent quality requirement of export markets (Working Group Report, Planning Commission, GOI, 2007).

Mahagrapes performs different functions for its members such as: to source and develop worldwide

markets, to provide quality control in post harvest activities, supply and supervise branded packaging. Besides this, it also provides extension services and logistic support to members of co-operatives for production of export quality grapes. It also aims to encourage and develop agricultural export, maximize foreign exchange earnings, update the farmers on the latest technology in farming and accept global challenge with a commitment to quality *etc.* It has also helped in growth of co-operative movement.

Mahagrapes is considered as a success story because it has shown acumen as well as agility and has linked grape growers to international markets and has compressed the supply chain. In doing so, it has assumed barometric role. It is pioneer in bringing pre-cooling technology and array of post harvest operations resulting in better handling of produce. All these operations have pulled the farmers upwards in the supply chain (Roy and Thorat, 2008).

Mahagrapes has been exporting grapes to European markets for past sixteen years. In keeping with the international trend of fruit growers becoming exporters, the grape growers from Maharashtra entered international market with the help of *Mahagrapes*. However, during production and marketing of grapes, members face different constraints. Therefore, the present study was conducted to analyze the constraints faced by Mahagrapes farmers.

¹Scientist, CSSRI, RRS Bharuch, Gujarat-392012, ²Professor, Division of Agril. Extension, IARI, New Delhi-110012, ³Principal Scientist, ICAR, New Delhi-110012 and ⁴Ph.D Scholar, Division of Agril. Extension, IARI, New Delhi-110012

METHODOLOGY

Ex-post facto research design was used for the study. The study was conducted in Nashik, Sangli and Pune districts of Maharashtra state of India as these districts comprise most of *Mahagrapes* members. From each district, 30 *Mahagrapes* farmers were selected. Thus, the sample size for the study was 90. A well structured interview schedule was designed and data were collected by focused group discussion and personal interview with the farmers. Garrett's ranking technique was used to rank the constraints. Garrett's formula for converting ranks into per cent is given below:

$$\text{Percent position} = 100 * (R_{ij} - 0.5) / N_j$$

Where,

R_{ij} = Rank given for i^{th} factor by j^{th} individual

N_j = Number of factors ranked by j^{th} individual

The per cent position of each rank was converted into scores referring to the table given by Garret and Woodsworth (1969). For each factors, the scores of individual respondents were added together and divided by the total number of the respondents for whom scores were added. These mean scores for all the factors were arranged in descending order, ranks were given and most important factors were identified.

RESULTS AND DISCUSSION

Mahagrapes members faced many constraints at various stages right from production to export. These constraints have been sub-divided into technical constraints, labour related constraints, economical constraints, marketing constraints, and general constraints.

Technical constraints

The data presented in Table 1 showed the technical constraints faced by members of *Mahagrapes*. It was found that difficulties in following the recommended practices was ranked first constraint by majority of farmers. This was because very stringent norms like EUROPEGAP and Codex standards need to be followed for producing export purpose grapes, particularly to European countries.

Lack of technical guidance regarding improved technologies and lack of adequate extension support/ technical guidance are ranked second and third, respectively. Patil (2008) in his study on constraints analysis of grape growers of Maharashtra also found that 46 per cent of respondents reported lack of technical guidance as major constraints.

Table 1: Technical constraints faced by *Mahagrapes* members n=90

Constraints	Garrett mean score	Rank
Difficulties in following the recommended practices	73.20	1
Lack of technical guidance regarding improved technologies	70.13	2
Lack of adequate extension support/ technical guidance	58.27	3
Unavailability of sprayers, dusters	55.53	4
Lack of availability of literature	50.40	5
Lack of care during storage period	35.67	6
Lack of varieties suitable for export purpose	33.07	7
Lack of storage facility	23.73	8

Constraint relating to 'lack of storage facility' was ranked last by farmers with Garrett mean score of 23.73. This may be attributed to cold storage chains established by *Mahagrapes* at each grape growers cooperative society. Members ranked constraints related to lack of varieties for export purpose and care during storage as least important constraints. Also, members did not perceive constraints related to availability of literature, sprayers, dusters etc. as important constraints and ranked them at medium level.

Labour constraints

The data presented in Table 2 show that non-availability of labour during peak period was the major constraint faced by members under labour constraints with Garrett mean score of 62.67. High cost of labour ranked second, while lack of technical skill of the labours in harvesting and processing was ranked third. Pagire and Jadhav (1992-93) in their study in Maharashtra found that 83.2 per cent farmers faced the problem of non-availability of skilled labour.

Table 2: Labour constraints faced by *Mahagrapes* members n=90

Constraints	Garrett mean score	Rank
Non-availability of labour during peak season	62.67	I
High cost of labour	48.73	II
Lack of technical skill of the labour in harvesting, processing.	38.60	III

Economic constraints

Economic constraints faced by *Mahagrapes* farmers are depicted in Table 3. 'Lack of price policy for grapes by the Government' ranked first by majority of farmers. This is mainly attributed to the fluctuation in price of grapes every year. This finding is supported by the study of Govinda Gowda (2002) on sustainable grape cultivation, wherein he found that important constraint in grape marketing was no fixed price to grapes. Constraints

related to insurance ranked second, while high cost of plant protection was third important economic constraint.

Table 3: Economic constraints faced by Mahagrapes members n=90

Constraints	Garrett mean score	Rank
Lack of price policy for grapes by the Government	72.67	I
Crop insurance is not covered for grape	64.40	II
High cost of plant protection chemicals	54.20	II
High cost of fertilizers	45.80	IV
Unawareness of credit facilities	31.60	V
High cost of planting material	31.33	VI

Marketing constraints

Under the marketing constraints, lack of procurement policy of the Government, was the major constraint faced by farmers (Table 4). Apart from procurement policy of Government, other constraints like heavy price fluctuation, lower price at harvesting stage, transportation problem, inadequate physical facilities in market were ranked second, third, fourth and fifth respectively. As *Mahagrapes* was involved in packing and grading operations, farmers perceived this as less important constraint.

Table 4: Marketing constraints faced by Mahagrapes members n=90

Constraints	Garrett mean score	Rank
Absence of produce procurement policy by the government	71.13	I
Heavy fluctuation in prices every year	66.80	II
Lower price at the harvesting stage	50.07	III
Problems of transportation	47.47	IV
Inadequate physical facilities in market	37.27	V
Non-availability of packing and grading facility	28.27	VI

General constraints

In general constraints (Table 5), 'incidence of pest and diseases' was ranked first with Garrett mean score of 75.47. 'Lack of insurance support' was ranked 2nd major constraint by farmers with Garrett mean score of 69.67. This was followed by lack of soil and water testing facilities, lack of mechanization, fragmentation of land holdings etc. From Table 5, it can be seen that members perceived constraints related to irrigation water and electricity as least important. These findings are supported by Patil (2008). In his study on constraints analysis of grape exporting farmers from Maharashtra, he found that most of the respondents (89%) were facing the problem of severe pest and disease attack and irregular supply of electricity (79%).

Table 5: General constraints faced by Mahagrapes members n=90

Constraints	Garrett mean score	Rank
More incidence of pest and disease	75.47	I
Lack of insurance support	69.67	II
Lack of soil and water testing facilities	59.20	III
Lack of mechanization	51.40	IV
Fragmentation of land holdings	49.47	V
Irregular supply of electricity	42.33	VI
Lack of irrigation facilities	30.00	VII
Irregular supply of canal water	23.47	VIII

CONCLUSION

The study conducted in Nashik, Sangli and Pune districts of Maharashtra, was aimed at analyzing the constraints faced by *Mahagrapes* members. Technical, labour related, economical, marketing, and general constraints, were studied and ranked using Garrett's ranking technique. Among technical constraints difficulty in following recommended practices was ranked highest by *Mahagrapes* members. Absence of produce procurement policy was the highest ranked constraint among marketing constraints, while lack of price policy for grapes by the Government was ranked highest among economic constraints. In case of labour constraints, non-availability of labour during peak season was the major constraint. More incidences of pests and diseases was ranked highest under general constraints by *Mahagrapes* members.

Paper received on : September 15, 2014

Accepted on : October 20, 2014

REFERENCES

- Garret and Woodsworth 1969. Statistics in Psychology and Education, 3rd edn.:New York
- Govinda Gowda, V. 2002. A study on sustainable grape cultivation practices adopted by Bangalore blue and Thompson seedless growers in Bijapur and Bangalore rural districts in Karnataka. Ph. D. Thesis, University of Agricultural Sciences, Bangalore.
- Indian Horticulture Database 2012. National Horticulture Board, Ministry of Agriculture, Government of India.
- Pagire, B.V. and Jadhav, M. S. 1992-93. Problems in marketing of grapes in Maharashtra. Drakshvritta Souvenir 1998, pp. 137-140.
- Patil A. 2008. A Study on constraints analysis of grape exporting farmers of Maharashtra State. Ph.D thesis,

University of Agricultural Sciences, Dharwad.

Roy, D. and Thorat, A. 2008. Success in high value horticultural export markets for the small farmers: the case of *Mahagrapes* in India. *World Development*, 36(10): 1874-1890.

Working Group Report 2007. Agricultural marketing infrastructure and policy required for internal and external trade, Agriculture Division, Planning Commission, Government of India.

Relationship of Socio-economic Profile of *Gujjars* (Pastoralists) with Knowledge and Adoption of Improved Animal Husbandry Practices

R. Jeelani¹, S. A. Khandi², M. Y. Beig³, P. Kumar⁴ and M. S. Bhadwal⁵

ABSTRACT

Gujjars are one of the major pastoral communities of India. The study was conducted in Jammu district of Jammu and Kashmir, with a view to find out the relationship of knowledge level and adoption of *Gujjars* regarding improved animal husbandry practices. The data was collected from 120 *Gujjar* respondents belonging to R.S Pura and Bishnah block of Jammu district with the help of structured interview schedule containing selected dependent and independent variable, through personal interview technique. The independent variables except age, occupation, herd size and land holding were positively associated with the dependent variables i.e. knowledge and adoption. Age and occupation were negatively and significantly related to the knowledge level and adoption. Herd size was negatively and insignificantly related to knowledge level, but significantly associated with adoption. Knowledge level of respondents was negatively and significantly related with land holding however it was insignificantly associated with adoption. Education, social participation, mass media exposure, risk orientation and exposure to training were significantly and positively associated with both the knowledge level and adoption of respondents. On the other hand, extension contact and economic motivation were positively and significantly associated with the knowledge level but insignificantly related to the adoption.

Key words: Knowledge, adoption, correlation, *gujjar*, pastoralists, improved animal husbandry.

INTRODUCTION

Tribals constitute 8.6 per cent of the total population of India (Census, 2011). *Gujjars* are one of the major pastoral communities of the state, predominantly rearing buffaloes, which play a crucial role in their economy and social status. They practice transhumance pastoralism that involves cyclical movements from lowlands to highlands, to take advantage of seasonally available pasture at different elevation in the Himalayas (Bhasin, 1988). The life of *Gujjars* revolves around buffaloes which plays a crucial role in their economy and social status (Singh, 1993). The *Gujjars* of Jammu district are mainly dependent on dairy business and are called *Banihara* or *Dodhi Gujjars*. The *Dodhi Gujjars* of Jammu district are hard working, spend all of their time with their livestock, and provide 'milk and milk products' to domestic households and almost all the famous sweets shops of Jammu city. The current level of productivity of milch cattle of *Gujjars* remains an area of concern as the productivity of their livestock is very low, when compared to the large number of animals they keep. There is poor management and ratio of dry, pregnant and milking animals in their livestock herds and the income they receive from marketing the milk and milk products is mostly spent on feeding of the animals. The price of milk and feed are contrary to each other and they find it very difficult, to make the both ends meet. It has drastically

affected the economic condition of *Dodhi Gujjars* and they are in the same position in which they were hundreds of years before (Anonymous, 2007). This makes a strong case for regional strategies to be planned, to pursue the goal of higher milk production, for the elevation of economic status of this tribal community and to make the district self sufficient in milk production which could be done by increasing the knowledge level and adoption of improved animal husbandry practices. The increase of knowledge and adoption is supposed to contribute to raising the socio-economic standard of this tribal community and so this study was undertaken to find the relationship of knowledge and adoption with the socio-economic profile of *Gujjars*.

METHODOLOGY

District Jammu falls in sub-mountainous region, at the foothills of the Himalayas and is approximately 600 kilometres away from the national capital, New Delhi. Jammu district comprises of eight blocks. The population of *Gujjars* is more or less equal in all the blocks of the district. Two blocks were selected from the district by following simple random method. The selected blocks were R. S. Pura and Bishnah. A comprehensive list of villages of the selected blocks was prepared. Two villages were selected purposefully from each of the two selected blocks having predominantly *Gujjar* population. Thus, a

¹Rizwan Jeelani, M.V.Sc Scholar, Division of Veterinary and Animal Husbandry Extension Education, Faculty of Veterinary Sciences and Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (J&K), India ²Shafkat Ahmad Khandi, Assistant Professor, ³Mohd Younas Beig, M.V.Sc Scholar, ⁴Pranav Kumar, Assistant Professor, ⁵Mohinder Singh Bhadwal, HOD and Associate Dean,

total of four villages were selected in all. A list of *Gujjars* practicing dairy farming was prepared in each village and respondents were then selected by systematic random sampling method. Thirty *Gujjars* were selected from each of these 4 selected villages, constituting a total sample size of 120 respondents. Keeping in view the objectives of the study, literature was reviewed thoroughly and discussions were held with the faculty members of the division of Veterinary and Animal Husbandry Extension Education, to select the independent variables. Following variables were selected and operationalised in the study: age, education, occupation, social participation, extension contact, herd size, mass media exposure, land holding, risk orientation, economic motivation and exposure to training. A schedule was developed to measure the knowledge and adoption of *Gujjars*, maximum score being 100 in each. The schedule consisted of four areas i.e. management, feeding, breeding and healthcare. The management component was further divided into two parts; general management and clean milk production practices. The data was coded, classified, tabulated, analyzed using the software Statistical Package for the Social Science (SPSS 17.0). Frequencies, percentage, mean, standard deviation and correlation were worked out for meaningful interpretation.

RESULTS AND DISCUSSION

A brief account of the general background profile of the respondents is presented in the table 1.

Majority of the respondents were middle aged with mean age of about 44 years. The observed range of age was 15-78 years which indicates that the *Gujjar* respondents of all age groups were adequately represented in the study. The respondents had poor formal education with mean value of 1.44 which indicates that the majority of *Gujjars* were illiterate. None of the respondents had formal education, up to graduation level or higher, which is in consonance with finding of Khandi *et al.* (2008) regarding perception of *Gujjars* towards modern animal husbandry practices. Majority of the respondents were landless and with small land holdings as is being depicted by their mean value of 0.77. The respondents in general had poor social participation. Most of the respondents were engaged in caste occupation (mean value 1.49). Bhat *et al.* (1984), Hassan (1989), Samajadar (2000) and Khandi *et al.* (2010) have earlier reported that the main family occupation of *Gujjars* was livestock rearing. Most of the respondents had medium herd size of 15-54 dairy animals with mean herd size of about 35 animals. Further, the scores of the respondents indicate that they had poor extension contact, mass media

exposure and risk orientation. However, scores obtained by the respondents in case of economic motivation were fairly high (mean value 21.59). Similar findings were reported by Khandi *et al.* (2010) in his study regarding knowledge level of *Gujjars* of Jammu district. Most of the respondents (65.8 per cent) had no exposure to trainings regarding improved practices of animal husbandry.

Table 1: General background profile of respondents

Independent variable	Possible range	Observed range	Mean \pm Standard error	Standard deviation
Age	-	15-78	44 \pm 1.28	13.97
Education	0-6	0-5	1.44 \pm 0.17	1.82
Occupation	1-4	1-3	1.49 \pm 0.58	0.64
Social participation	0-4	0-4	0.85 \pm 0.08	0.83
Extension contact	0-32	5-12	7.06 \pm 0.17	1.92
Herd Size	-	8-100	35 \pm 1.77	19.43
Mass media exposure	0-18	2-7	3.43 \pm 0.13	1.48
Land holding	0-6	0-3	0.77 \pm 0.09	0.95
Risk orientation	6-30	8-20	11.43 \pm 0.28	3.04
Economic motivation	6-30	19-27	21.59 \pm 0.21	2.34
Exposure to training	0-4	0-4	1.12 \pm 0.15	1.68

The correlation estimates between the dependent and independent variables are presented in table 2.

The independent variables were classified into categories (table 3) and the results are discussed below:

Age

In the present study it was found that majority of the respondents (63.3 %) were middle aged with mean age of 44 years, followed by young (20 %) having mean age of 37.0 years (table 3). It was further observed that young respondents were having significantly higher knowledge than the respondents in old age category. The age was negatively and significantly related with both the knowledge and adoption scores of the respondents (table 2). Thus with increase in age of respondents there was decline in both their knowledge levels regarding improved animal husbandry practices and their adoption. Similar finding has earlier been reported by Mahipal (1983), for knowledge but on the contrary, he reported that the age was having positive but insignificant relationship with the overall adoption of dairy innovations by medium category farmers. Deepak *et al.* (2004) studied the knowledge level of rural women in Haryana and found that, age played an important role in influencing the knowledge level of rural women about feed and fodder practices for buffaloes. Chugh *et al.*, (1996) also found age, to be significantly affecting the adoption level. This can probably be attributed to the fact that the respondents of old age group differ in knowledge acquisition behaviour in comparison to the young respondents. Further the young age group respondents in general have higher curiosity levels, better formal

education and higher mass media exposure as compared to old age respondents. Studies to establish the cause of different knowledge levels are advocated. Anyhow, it is suggested that emphasis should be given to old age group and middle age group, to increase their knowledge level by simplifying the information of complex animal husbandry practices and by conducting training programmes periodically to impart knowledge about improved techniques.

Education

It is a well known fact that education results in all round development of an individual. In the present study it was found that majority of the respondents (51.7%) had low level of education, followed by medium level category (26.7%). The respondents with higher education levels comprised only 21.6 per cent of the total respondents (table 3). Similar findings were reported by Khandi *et al.* (2010), while stating the fact that *Gujjars* mainly remain engaged in nomadic lifestyle and right from childhood they are taught to rear livestock and drive the flocks in pastures for grazing. Further, education was observed to have a positive and significant association with knowledge and adoption scores of the respondents (table 2). Similar results were reported by other workers. Raghavendra *et al.* (1984) conducted a study on factors associated with adoption of recommended dairy management practices in Bengaluru and reported that education was positively and significantly associated with the adoption of recommended practices. Kolgi and Anand (1985) studied the adoption of dairy innovations among selected Tibetan refugees of Karnatka and found education to be significantly and positively correlated with adoption of dairy farming practices.

Similarly, Verma and Tyagi (1993) in their study about adoption behavior of dairy farmers in Haryana found education to have significant bearing on adoption. Education and knowledge had positive and significant relationship with the extent of adoption by dairy owners as reported by Sawarkar *et al.*, (2001) in their study about awareness, adoption and constraints of dairy owners of Vidharba region. Also, Bhakar *et al.*, (2006) revealed that education had positive and significant correlation with adoption of improved animal husbandry practices. Kumar *et al.*, (2011) conducted a study on prediction potentialities of socio-personal attributes on adoption level of dairy farmers in Patna district of Bihar and revealed a wide variation in prediction potentialities of selected variables. Cosmopolitaness followed by education emerged as potential predictors of adoption. They recommended enhancing the level of education of milk producers along with providing better opportunities

of information sources other than they have, in order to enhance the adoption level of improved animal husbandry practices. This can probably be hypothesized here that the respondents with higher formal education have increased capabilities of deciphering the complex animal husbandry information. Further the respondents with higher education status scored higher in mass media exposure and social participation, which could have played a role in higher scores observed.

Occupation

Majority of the respondents (58.3%) were engaged in caste occupation while 41.7 per cent of the respondents were engaged in diversified occupation activities (table 3). Bhat *et al.* (1984) conducted study on *Gujjars* of Jammu and Kashmir and found that their main family occupation was livestock rearing. Hassan (1989) stated that a large number of the *Gujjars* still stick to their ancestral profession of buffalo keeping and selling of milk and milk products. Samajadar (2000) reported that *Gujjars* were engaged exclusively in their traditional occupation of buffalo rearing in the forest areas for sustenance with total dependence on it as the only source of their family income. Khandi *et al.*, (2008) studied the perception of *Gujjars* towards modern animal husbandry practices and found that *Gujjars* were mostly involved in caste occupation. Significant negative association of occupation with knowledge and adoption scores of respondents was observed (table 2). Hamdani (2008) conducted a study on the adoption pattern of improved dairy farming practices in Jammu district and found occupation to be positively and significantly related with both knowledge and adoption. Khandi *et al.*, (2010) studied the correlates of *Gujjars* attitude towards modern animal husbandry practices and found that knowledge level of *Gujjars* was positively and significantly associated with occupation. It is assumed here that the *Gujjars* engaged in diversified occupational activities could have higher mobility, diverse social interaction, different attitudinal sets and less time devotion for animal husbandry, which in turn might have contributed to the differences observed. Decrease in knowledge and adoption of improved animal husbandry practices with diversification of occupation can also be attributed to the perception of *Gujjars* regarding their caste occupation being less profitable and more risky venture than other means of earning.

Social participation

The majority of respondents (43.3%) in the present study were having medium level of social participation, whereas 37.5 per cent had low level and only 19.2 per cent

of the respondents had high level of social participation (table 3). Positive and significant association of social participation with knowledge scores of the respondents was observed. On the other hand, social participation was observed to have positive but insignificant association with adoption scores of the respondents (table 2). The extent of social participation seems to have positively affected the adoption scores of the respondents. A thorough review of literature reveals similar reports about the association of social participation with the knowledge and adoption scores of respondents. Chugh *et al.*, (1996) reported that social participation does not significantly contribute towards the adoption level. Contrary to this, Kolgi and Anand (1985) studied the adoption of dairy innovations among selected Tibetan refugees of Karnatka and found social participation to be significantly and positively correlated with adoption of dairy farming practices. Verma and Tyagi (1993) reported social participation to be significantly associated with the level of adoption both in members and non members of cooperative society, in their study about adoption behavior of dairy farmers in Haryana. Yadav and Yadav (1997) studied the different levels of adoption of buffalo husbandry practices among farmers of different levels of social participation and found that social participation was found to have a strong association with the level of adoption of housing, feeding, breeding, disease prevention, and sale-purchase practices.

Extension contact

In the present study, majority of the respondents (49.2%) were in medium category of extension contact, followed by high category (34.1 %) (table 3). Extension contact was observed to have positive and significant association with knowledge scores but positive and insignificant association was found with adoption scores (table 2). Lal *et al.* (2007) studied the correlates between the personal traits and training needs of dairy farmers regarding improved dairy farming practices in Karnal Haryana and reported that the increase in extension contact decreases the training needs of farmers by increasing the knowledge level. The overall extension contact of the respondents in general was poor with a mean value of 7.06, while the maximum possible score was 32 (table 1). Similarly, Hamdani (2008) found poor extension contact of dairy farmers of Jammu district and Khandi (2008) reported the low extension contact of *Gujjars* of Jammu and Kashmir. Bhakar *et al.*, (2006) has also reported that extension contact had positive and significant correlation with adoption of improved animal husbandry practices. It can be hypothesized that the extension contact is so meager that it fails to make any dent in the adoption. Nevertheless, it is a pointer to the

urgency with which reforms in the present extension systems are required. The organization and performance of local extension systems could have been responsible for diverse reports. In this regard studies to evaluate the efficacy of present extension system are strongly advocated.

Herd Size

In the present study, majority of the respondents (75%) were having medium herd size of 15-54 dairy animals followed by large category (15 %) with more than 54 milch animals. Remaining 10 per cent of the respondents were having small herd size of less than 15 dairy animals (table 3). Khatra and Sharma (1992) have reported that range of herd size among nomadic *Gujjars* was 11.60 to 13.73, and that they utilized their saving from buffalo keeping, increasing the herd size at the cost of their standard of living. Khandi (2008) also reported about the large herd size of the *Gujjars* of Jammu and Kashmir. Herd size was observed to have negative and insignificant relation with knowledge (table 2). This is in agreement with the findings of Chugh (1986), who reported that herd size did not influence adoption as well as awareness knowledge of dairy farmers in his study about sustainability of dairy farming technology and factors affecting knowledge and adoption in dairy farmers of Pantnagar. Kherde *et al.*, (1986) also reported knowledge to be insignificantly associated with herd size. In the present study herd size was found to have significant negative association with adoption scores of respondents with a correlation coefficient of -0.376, which means that adoption was less in respondents having larger herd size. Hamdani (2008), while studying the adoption pattern of improved dairy farming practices by the dairy farmers of Jammu district found herd size to be positively but insignificantly associated with the adoption of recommended practices, with a correlation coefficient of 0.194. This can be attributed to the fact that respondents with more number of animals perceive higher risk in adopting new technologies while the economic factors cannot be taken for granted to observe this association.

Mass media exposure

Majority of the respondents (64.2 %) in the present study were having medium mass media exposure followed by the low category (23.3 %). Remaining 12.5 per cent of the respondents constituted the high category (table 3). Mass media exposure was positive and significant in its association with knowledge and adoption of improved animal husbandry practices (table 2). Similar findings were reported by Sohal and Tyagi (1978) as they found positive and significant relationship between mass

media exposure and knowledge about dairy technology. Patil (1981) also found mass media exposure was to be significantly related to the knowledge and adoption of dairy practices in his study regarding impact of intensive cattle development project on dairy development in milk shed area of Miraj in Maharashtra. Verma and Tyagi (1993) reported that mass media exposure was significantly associated with the level of adoption both in members and non members of cooperative society, in their study about adoption behavior of dairy farmers in Haryana. Thus it can be concluded here that mass media has pronounced effects on the knowledge and adoption of respondents. It is therefore suggested that mass media as an extension tool has a great potential. However, overall mass media exposure of the respondents in the present study was poor, with a mean of 3.43 out of maximum possible score of 18 (table 1). Similarly Khandi (2008) while studying the perception of *Gujjars* of Jammu and Kashmir reported about the poor mass media exposure and positive significant association with the knowledge level of his respondents. Appropriate steps to enhance the overall mass media exposure should form the first step prior to using mass media as an extension tool. This can perhaps be done by improving the quality and extent of mass media programmes.

Land holding

In general, majority of the respondents were from landless category (57.5 %), while 42.5 per cent of the respondents were having some land holding (table 3). This is probably because of the nomadic mode of lifestyle as stated earlier by and Khandi (2008). The land holding was observed to have significant negative effect on knowledge level but had insignificant association with adoption scores (table 2). The results of knowledge and adoption score are in agreement with the findings of number of workers. Raghavendra *et al.* (1984) in his study on factors associated with adoption of recommended dairy management practices in Bengaluru found that farm size was not significantly associated with the adoption of recommended dairy practices. Similarly, Chugh *et al.*, (1996) studied the suitability of dairy farming technology and factors affecting knowledge and adoption among dairy farmers in Uttaranchal and reported that land holding does not significantly contribute towards the adoption level. Thus, it can be hypothesized that resourcefulness of respondents exerts limited influence on the knowledge of animal husbandry practices. Interactive mixed crop livestock farming appears to be on decline. However, this needs to be substantiated before arriving at it conclusively. Decrease in adoption of improved animal husbandry practices with land holding can be postulated to perception of *Gujjars* regarding

improved animal husbandry practices being less profitable and more risky venture than agriculture.

Risk orientation

Majority of the respondents (74.2 %) were found to have medium level of risk orientation followed by the respondents (17.5 %) who had low level of risk orientation (table 3). This indicates that the respondents in general were not willing to take risk related to adoption of improved animal husbandry practices. Hamdani (2008) reported that majority of his respondents (42 %) were having medium level of risk orientation, followed by high (30 %) and low (28 %) categories. Khandi (2008) in his study regarding perception of *Gujjars* of Jammu and Kashmir towards modern animal husbandry practices found that his respondents in general were willing to take risk.

He observed positive significant association between risk orientation and knowledge. Risk orientation and knowledge had positive and significant relationship with the extent of adoption by dairy owners as reported by Sawarkar *et al.*, (2001) in their study about awareness, adoption and constraints of dairy owners of Vidharba region. In the present study, positive and significant association was observed between the risk orientation and knowledge scores of the respondents, whereas it was positive though insignificant with adoption scores (table 2). This is a pointer to the view, that the dairy farmers willing to take risk were able to acquire their knowledge about improved animal husbandry practices, making it an active effort. However, their adoption remained unaffected. Probably the respondents were not convinced to translate the knowledge obtained into actual practice. It cannot be ruled out, that the additional knowledge acquired was difficult to fit with the system of livestock rearing practices of *Gujjars* of Jammu district. However, definite reasons behind this phenomenon remain concealed, and studies to understand this variation should be undertaken in future.

Economic motivation

In the present study, majority of the respondents (56.7%) had medium level of economic motivation followed by the respondents with high economic motivation category (24.1 %) of the respondents (table 3). The association of economic motivation with the knowledge and adoption scores of the respondents was positive but insignificant (table 2). With the increase in the economic motivation of respondents there was increase in the knowledge level, but adoption of the respondents regarding improved animal husbandry

practices was insignificant in relation to economic motivation scores. Presumably it can be hypothesized that the respondents with high economic motivation do not perceive animal husbandry in general as a lucrative option. Similarly, Hamdani (2008) reported that economic motivation was having positive but insignificant association both knowledge and adoption levels of the dairy farmers of Jammu district. The findings are in contrast, to the reports of Tyagi and Sohal (1984) and Kolgi and Anand (1985), who observed positive and significant association of economic motivation with animal husbandry practices. Positive significant association between economic motivation and knowledge was observed by Khandi (2008). However, Sawarkar *et al.*, (2001) found economic motivation to be negatively associated with the adoption. There perhaps is no uniform pattern of association between economic motivation and knowledge and adoption of improved animal husbandry practices. Perhaps the sustained growth of economy, especially the service sector provides suitable remunerative avenues to the people in general. Adoption of feeding practices was high in assured irrigated areas. Milk production, attitude towards dairy training and feeding constraints ascertained for maximum variation in adoption of feeding practices in assured irrigated areas (kumar and singh, 2012).

Exposure to training

Most of the respondents (65.8 %) had not received any training regarding improved animal husbandry practices in the recent past, while only 34.2 per cent of respondents had some exposure to training (table 3). Exposure to training was having positive and significant association with both knowledge and adoption of improved animal husbandry practices by the respondents. Sankhala and Chand (1999) conducted study on knowledge status of tribals regarding improved dairy farming practices in Rajasthan state and found that the trained tribal farmers were having significantly higher knowledge than the untrained farmers about improved dairy farming practices. It is presumed here that the extension agencies offering such trainings have limited coverage of areas where *Gujjars* live. It is suggested that major enhancement of training activities of the concerned departments should be there to cover a sizeable number of *Gujjars*. In the absence of such trainings improvements in terms of higher knowledge and adoption are difficult to achieve. Sagar (1991) stated that for high milk production, it is essential for the milk producers and livestock owners to have the basic knowledge required for adoption of animal husbandry practices which can be achieved through conducting training programmes.

Table 2: Correlation of selected dependent and independent variables

Independent variable	Dependent variable	Management practices	Feeding practices	Breeding practices	Health care practices	Total of all practices
Age	Knowledge	-0.260**	-0.087	-0.187*	-0.251**	-0.223*
	Adoption	-0.190*	-0.189*	-0.181*	-0.291**	-0.276**
Education	Knowledge	0.541**	0.408**	0.429**	0.547**	0.542**
	Adoption	0.419**	0.242**	0.171	0.367**	0.428**
Occupation	Knowledge	-0.307**	-0.323**	-0.114	-0.257**	-0.310**
	Adoption	-0.254**	-0.225*	-0.055	-0.224*	-0.274**
Social participation	Knowledge	0.290**	0.225*	0.273**	0.257**	0.294**
	Adoption	0.124	0.221*	0.120	0.133	0.203*
Extension contact	Knowledge	0.493**	0.257**	0.502**	0.518**	0.477**
	Adoption	0.087	-0.019	0.010	0.038	0.049
Herd size	Knowledge	-0.005	-0.079	0.110	-0.059	-0.019
	Adoption	-0.287**	-0.285**	-0.132	-0.428**	-0.376**
Mass media exposure	Knowledge	0.607**	0.396**	0.471**	0.546**	0.578**
	Adoption	0.288**	0.180*	0.086	0.238**	0.288**
Land holding	Knowledge	-0.240**	-0.230*	-0.158	-0.267**	-0.254**
	Adoption	-0.191*	-0.120	-0.004	-0.154	-0.176
Risk orientation	Knowledge	0.599**	0.358**	0.376**	0.525**	0.547**
	Adoption	0.108	0.191*	0.124	0.141	0.186*
Economic motivation	Knowledge	0.512**	0.337**	0.513**	0.461**	0.505**
	Adoption	0.067	0.040	0.015	0.074	0.069
Exposure to training	Knowledge	0.505**	0.449**	0.316**	0.483**	0.511**
	Adoption	0.319**	0.304**	0.164	0.420**	0.406**

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 3. Classification of independent variables into various categories

Independent variable	Category	Frequency (%)	Knowledge Score (%)	Adoption Score (%)
Age	Young (<30)	20.0	54.6	35.3
	Middle (30-58)	63.3	49.6	32.9
	Old (>58)	16.7	49.0	32.1
Education	Low (0)	51.7	47.8	31.9
	Medium (1-3)	26.7	46.3	32.2
	High (4-6)	21.6	62.0	38.0
Occupation	Caste (1)	58.3	52.9	34.3
	Diversified (2-4)	41.7	47.1	31.8
Social participation	Low (0)	37.5	47.9	32.2
	Medium (1)	43.3	49.0	33.2
	High (2-4)	19.2	58.7	35.5
Extension contact	Low (<5.14)	16.7	46.8	32.1
	Medium (5.14-8.98)	49.2	48.8	33.9
	High (>8.98)	34.1	54.6	33.0
Herd size	Small (<15)	10.0	52.9	36.6
	Medium (15-54)	75.0	50.3	33.4
	Large (>54)	15.0	49.4	30.2
Mass media exposure	Low (0-2)	23.3	49.0	33.8
	Medium (3-5)	64.2	47.8	32.2
	High (6-7)	12.5	66.9	38.1
Land holding	Landless (0)	57.5	53.1	34.4
	Land holding (1-6)	42.5	46.9	31.8
Risk orientation	Low (<8.39)	17.5	50.6	32.8
	Medium (8.39-14.47)	74.2	48.1	33.1
	High (>14.47)	8.3	71.5	35.7
Economic motivation	Low (<19.25)	19.2	50.6	36.8
	Medium (19.25-23.93)	56.7	47.4	31.7
	High (>23.93)	24.1	57.6	34.1
Exposure to training	Without training (0)	65.8	47.4	31.4
	With training (1-4)	34.2	56.4	36.8

CONCLUSION

The present study showed that the young respondents had significantly higher knowledge level and adoption than the old respondents, as also the respondents with higher education status, high exposure to training and higher mass media. Whereas, the respondents practicing

caste occupation had higher knowledge level and adoption than those involved in diversified occupational activities. The respondents with large herds had significantly low adoption than the respondents with small herds, while that did not have any significant effect on knowledge level. Respondents with higher social participation, higher extension contact, higher economic motivation and higher risk orientation had comparatively higher level of knowledge than the respondents with lower scores in these respective variables. However, this had less effect on the adoption of respondents regarding improved animal husbandry practices.

Paper received on : September 15, 2014
Accepted on : October 20, 2014

REFERENCES

- Anonymous. 2007. Gujjar economy. Tribal Research and Cultural Foundation. Retrieved March 17, 2014, from <http://www.jktribals.page.tl/Gujjar-Economy-.htm>
- Bhakar, S., Malik, J. S., Singh, S. and Dahiya, S. 2006. Adoption level of farmers regarding improved animal husbandry practices in watershed and non-watershed villages. *Journal of Dairying, Foods and Home Sciences*, 25(1): 51-54.
- Bhasin, V. 1988. Himalayan Ecology: transhumance and social organization of Gaddis in Himachal Pradesh. Kamal Raj Enterprise, New Delhi.
- Bhat, M. Y. and Mattoo, A.M. 1984. Anthropological study of Kashmir Gujjars, their racial affinity, culture and dermatoglyphics. Ph.D. thesis. University of Kashmir, Jammu and Kashmir.
- Census of India. 2011. Ministry of Home Affairs, Government of India.
- Chugh, D. S. 1986. Suitability of dairy farming technology and factors affecting knowledge and adoption. M.Sc. thesis. G. B. Pant University, Pantnagar, Utrakhand.
- Chugh, M., Ramchand and Chand, R. 1996. Adoption of dairy farming practices by ex-servicemen. *Indian Journal of Dairy Science*, 49(8): 507-510.
- Deepak, Singh, S. P. and Sangwan, S. S. 2004. Knowledge level of rural women about improved feed and fodder practices of buffalo in Haryana. *Haryana Veterinarian*, 43: 34-37.
- Hamdani, S. A. 2008. Adoption pattern of improved dairy farming practices in Jammu district. M.V.Sc. thesis. Sher-e-Kashmir University of Agricultural Sciences and technology of Jammu, J&K.
- Hassan, A. 1989. Elements of caste among the Hindu converts to Islam - a case study of Muslim Gujjars of Uttar Pradesh. *The Eastern Anthropologists*, 47(1): 51-57.
- Khandi, S. A. 2008. Perception of Gujjars towards modern animal husbandry practices. M.V.Sc. thesis. Sher-e-Kashmir University of Agricultural Sciences and technology of Jammu, J&K.
- Khandi, S. A., Gautam, Mandal, M. K., and Hamdani, S. A. 2010a. Knowledge level of Gujjars about modern animal husbandry practices. *Environment and Ecology*, 28(2B): 1257- 1260.
- Khandi, S. A., Gautam., Mandal, M. K., and Hamdani, S. A. 2010b. Correlates of Gujjars attitude towards modern animal husbandry practices. *Environment and Ecology*, 28(2B): 1261- 1264.
- Khatra, P.S. and Sharma, V. 1992. Socio-economic issues in the development of nomadic Gujjars. *Indian Journal Agricultural Economics*, 47(3): 448-449.
- Kherde, R. L., Mishra, S. P. and Malik, B. S. 1986. Dairy farming training for human resource development. *Indian Journal of Extension Education*. 22(3and4): 54.
- Kolgi, S.D. and Anand, U. 1985. Adoption of dairy innovations among selected Tibetan refugees of Karnataka. *Dairy Guide*, 7(6): 37-41.
- Kumar, P., Rajak, S. K. and Meena, M. S. 2011. Prediction potentialities of socio-personal attributes on adoption level of dairy farmers. *Indian Research Journal of Extension Education*. 11(1): 122-123.
- Lal, B., Sankhala, G. and Meena, R. 2007. Correlates between the personal traits and training needs: KVK training on improved dairy farming practices. *Rajasthan Journal of Extension Education*, 15: 76-79.
- Mahipal, 1983. A study of socio-economic and psychological correlates in adoption of dairy innovations in the ORP area of NDRI, Karnal. Ph.D. thesis. NDRI, Karnal, Haryana.
- Patil, B. P. 1981. Impact of ICDP on dairy development in milk shed area Miraj of Maharashtra. M.Sc. thesis. NDRI, Karnal, Haryana.

- Raghavendra, Byrareddy, H. M. and Rao, M. K. S. 1984. Factors associated with adoption of recommended dairy management practices around Bangalore north taluk. *Mysore Journal of Agricultural Science*, 16(4): 474-478.
- Sagar, M.P. 1991. An impact study of transfer of technology programme on livestock owners. M.Sc. thesis. IVRI, Izatnagar, Uttar Pradesh.
- Samajadar, T. 2000. Forest based dairy husbandry practices of van Gujjars: A case study in Nanital district. M.V.Sc. thesis. IVRI, Izatnagar, UP.
- Sankhala, G. and Chand, R. 1999. Knowledge status of tribals towards improved dairy farming practices. *Prasarika Rajasthan Journal of Extension Education*, 7: 69-71.
- Sawarkar, S. W., Borker, M. M., Upadhye, S. V. and Jadhao, S. B. 2001. Characteristics of dairy owners, their awareness, adoption and constraints in adoption of A.I. practices in Vidharba region. *Indian Journal of Dairy Science*, 54(4): 194-202.
- Singh, H. 1993. Gujjar living hand to mouth. *The Hindustan Times*, New Delhi, Tuesday, Nov. 9, pp 5.
- Sohal, T. S. and Tyagi, K. C. 1978. Role of knowledge in adoption of dairy innovations. *Indian Journal of Extension Education*, 14(3and4): 16-25.
- SPSS Inc. 2008 SPSS Statistics 17.0, SPSS Inc., Chicago IL.
- Tyagi, K. C. and Sohal, T. S. 1984. Factors associated with adoption of dairy innovations. *Indian Journal of Extension Education*, 20(3and4): 1-8.
- Verma, O. P. and Tyagi, K. C. 1993. Adoption behaviour of dairy farmers. *Indian Dairymen*, 45(6): 233-236.
- Yadav, B. L. and Yadav, M. C. 1997. Different levels of adoption of buffalo husbandry practices among farmers of different levels of social participation. *Indian Journal of Animal Sciences*, 67(5): 445-449.
- Kumar, Rupendra and Singh, Jogender. Comparative Analysis of Adoption of Improved Dairy-animal Feeding Practices in Assured and Less Irrigated Areas of Uttar Pradesh. *Indian Journal of Extension Education* Vol. 48, No. 3 & 4, 2012 (8-12)

Preparation of Interactive CD-ROM on Poultry farming and Assessment of Its Effectiveness

Shalini Asrani¹, Sushma Kaushik², K. K. Yadav³ and R. K. Asrani⁴

ABSTRACT

Interactive CD-ROM using flash was prepared as per standard procedures. Accuracy, Coverage, Objectivity, Content presentation, Layout and Suitability of pictures, write up and compatibility of CD was perceived high for all the messages on all the parameters. Thus it clearly indicates that all the messages were clearly stated, self explanatory and information appeared to be valid and well researched.

Key words: Interactive CD-ROM, effectiveness, poultry farming.

INTRODUCTION

It has been observed that there is a lot of scope for backyard poultry in the villages. Backyard or family poultry, with tiny investments is seen as an ideal plank for ensuring livelihood security and also providing nourishment to poor households in the rural hinterland. In the nutritive value, poultry egg rank second to cow milk. Agriculturists and nutritionists have generally agreed that developing the poultry industry is the fastest means of bridging the protein deficiency gap presently prevailing in the country.

But Indian poultry industry is flourishing in and around urban areas while villages remain untouched. Unlike other agricultural commodities such as milk, wheat and rice, most of the egg and meat production takes place in urban areas. It is obvious that villagers cannot adopt scientific approach to poultry farming because of lack of proper knowledge or training and resources (Khare, 2001).

Computer is being used in every sphere of life. Its uses are increasing day by day. There is not even a single field that is beyond the grip of computer. It is because of this invention that world has reduced to a global village. CD ROM is a vehicle for bringing our clients to a new level of acceptance for information (Gupta, 2000). CD-ROM technology offers a wonderful opportunity for presenting material such as “tree bytes.” One disk can spot large value of text along with hundreds of photographs (Rogers, 2001). Therefore present study has been planned to prepare interactive CD-ROM on backyard poultry farming which can be used by trainers as well as trainees for self learning.

METHODOLOGY

A. Selection of messages

To prepare an interactive CD ROM on poultry farming, first of all a list of various messages and sub messages was prepared with the help of reviews and available literature. These messages were subjected to 20 experts for their response mainly in three categories 'most needed', 'needed' and 'least needed' (Table 1). Out of the list, ten messages having weighted mean score of more than 2.00 were finally selected for the preparation of media while those five having weighted mean less than 2.00, were dropped (Table 1). Table 1 depicts selection of messages related to poultry. It is clear from the table that a total of ten messages were finally selected.

Table 1: Expert opinion on selection of messages for Preparation of CD-ROM on poultry farming n=20

Messages	Most needed	Needed	Least needed	Total weighted mean
History of poultry farming	3	5	12	1.55
Importance of poultry farming	12	8	0	2.60*
Incubation	2	4	14	0.70
Important breeds of poultry birds	10	6	4	2.30*
Free range & Yarding technique	4	6	10	1.70
Housing system for poultry farming	8	8	4	2.20*
Rearing of poultry birds	7	7	6	2.05*
Seasonal effect on poultry	8	7	5	2.15*
Feed requirements of poultry birds	7	9	4	2.15*
Waterfowl	3	5	12	1.55
Prevention/control of diseases & vaccination	7	8	5	2.10*
Raising the Home Duck Flock	3	4	13	1.50
Preservation of poultry products	8	8	4	2.20*
Economics of poultry farming	12	8	0	2.60*
Problem solutions	7	9	4	2.15*

* Selected messages

¹Department of Extension Education and Communication Management, COHS, CCS HAU, Hisar, ²Department of Animal Nutrition, College of Animal Science, CCS HAU, Hisar (Haryana), ³Department of Veterinary Pathology, DGCN COVAS, CSK HPKV, Palampur (HP)

B. Preparation of CD-ROM

Following steps were followed for preparation of CD-ROM.

a) Planning: Planning is the most important part of any communication process and to make CD ROM most effective, due consideration was given from the infancy stage. At this stage planning was done regarding format, title, number of slides/pages, number of photographs etc. It was decided to prepare CD ROM in Flash Programme (Microsoft) form so as to present comprehensive and easy to access information.

b) Research: After planning stage, research was conducted to collect information regarding the subject poultry. The faculty from the Department of Animal Breeding, College of Animal Sciences, College of Veterinary Sciences and the Department of Extension Education, College of Home Science, CCS Haryana Agricultural University, Hisar and the faculty from the College of Veterinary and Animal Sciences, CSK HPKV, Palampur was consulted. The information was also collected from a number of poultry farms in and around Hisar and Palampur to study and cover the practical aspects of the subject. Library and internet were also explored to gather relevant information. Relevant text material, pictures and illustrations were collected.

c) Treatment: It was decided to make CD ROM in Hindi language for easy understanding of the audience. Keeping in mind the perceived need and problems by respondents, relevant messages were designed and every effort was made to make CD ROM easy to understand and capable of attracting attention and sustain interest of the audience.

d) Outline: The selected ten messages were broken down into subsequent critical sub messages. After each chapter self instructional exercises were given to make the learners test their knowledge gained on the subject. A list of 'Frequently Asked Questions' ((FAQs) was developed with the help of experts and it was added as a separate chapter at the end for better clarity on the subject.

e) Sequencing: Once outline was prepared, then sequencing was worked out to introduce the reader to the subject and take him step by step towards the end.

f) Review: To make improvements in the written text, it was given to scientists of the College of Animal Sciences and Home Science Extension Education, CCS HAU, Hisar for reviewing.

g) Publishing: Only after reviewing and corrections, the final text was published and recorded in CD ROM.

The cover page of CD included title of CD, details about project, details about team and printable version of CD ROM. Hyper linkage was established between home page, all the messages, sub-messages and exercises. The effectiveness of the prepared media package was assessed by showing them to 20 judges comprising extension workers, teachers and scientists. The effectiveness of CD was measured through modified scale of Midha (2001). Parameters such as accuracy, coverage, objectivity, contents presentation, illustrations, linking, compatibility, understandability etc. were used for measuring effectiveness. Schedule for the same was developed. All components had subcomponents which were scored on a three-point rating scale such as high, moderate and low having scores of 3, 2 and 1 respectively. Weighted mean scores of all the components were calculated. After incorporating improvements as suggested by judges, final media was prepared.

RESULTS AND DISCUSSION

1. Accuracy of various poultry messages

Accuracy of poultry messages was assessed under six attributes of accuracy. Table 2 indicates that accuracy in terms of 'understanding of the title', 'free from grammatical spelling and other typographical errors', 'clarity of printing', 'size of typing', 'appropriateness of language', 'clarity of directions', was perceived to be high for all the messages viz., 'Problem solutions' (M_{10}); 'Importance of poultry' (M_1); 'Seasonal effect on poultry' (M_5); 'Housing system for poultry farming' (M_3); 'Knowledge on feed requirements' (M_6); 'Prevention/control of diseases & vaccination' (M_7); 'Important breeds of poultry birds' (M_2); 'preservation of poultry products' (M_8); 'Rearing of poultry birds' (M_4) and 'Economics of poultry farming' (M_9). Accuracy in terms of 'understanding of the title' was found perfect for M_1 , M_2 , M_3 , M_6 , M_7 , & M_{10} . Regarding 'free from grammatical spelling and other typographical errors' maximum score was given to M_3 and M_5 , while least score was given to M_6 . This may be because of the presence of technical words in the message. 'Clarity of printing', 'size of typing' and 'appropriateness of language' was perceived high for all the messages. 'Clarity of directions' scored maximum for M_{10} and the least for M_9 . Overall weighted mean score showed that accuracy of CD was perceived to be high for all the messages on all the parameters. Maximum score was 2.87 for M_{10} , followed by 2.86 for M_1 , 2.85 for M_5 .

2. Coverage and objectivity of various poultry farming messages

The data presented in Table 3 reveals that coverage of information on poultry farming was found to be high for all the messages and the mean score for ten messages ranged between 2.81 to 2.97. M₁, M₂ & M₁₀ scored highest for coverage of various topics followed by M₃ and M₇. Other messages M₉, M₅, M₄, M₆, and M₈ also scored high for coverage. Thus, it clearly indicates that contents related to these messages were covered properly for all the topics.

Table 2: Accuracy of various poultry farming messages for CD perceived by judges

Attributes of Accuracy	Weighted mean score									
	Messages									
	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Understanding of the title	3.0	3.0	3.0	2.98	2.94	3.0	3.0	2.85	2.87	3.0
Free from grammatical spelling and other typographical errors	2.84	2.86	2.89	2.76	2.89	2.67	2.75	2.85	2.69	2.86
Clarity of printing	2.98	2.87	2.78	2.69	2.88	2.94	2.85	2.69	2.92	2.87
Size of typing	2.56	2.43	2.45	2.46	2.55	2.48	2.43	2.45	2.47	2.59
Appropriateness of language	2.87	2.76	2.89	2.87	2.96	2.94	2.84	2.95	2.88	2.96
Clarity of directions	2.94	2.87	2.86	2.96	2.89	2.87	2.98	2.95	2.85	2.98
Over all mean score	2.86	2.79	2.81	2.78	2.85	2.81	2.80	2.79	2.78	2.87

Maximum mean score is 3.00
 Low : 1-1.66 Medium : 1.67-2.32
 High: 2.33-3.00.

Table 3: Coverage and objectivity of various poultry farming messages for CD as perceived by judges

Attributes of Coverage and Objectivity	Weighted mean score									
	Messages									
	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Coverage										
All topics covered the concept of poultry	3.0	3.0	2.98	2.86	2.87	2.83	2.95	2.82	2.92	3.0
Objectivity										
Write up of all topics/messages clearly stated/self explanatory	2.95	2.85	2.76	2.89	2.84	2.94	2.87	2.97	2.68	2.97
Information appears to be valid and well researched	2.78	2.89	2.76	2.97	2.88	2.67	2.98	2.79	2.85	2.96
Over all mean score	2.91	2.91	2.83	2.90	2.86	2.81	2.93	2.86	2.81	2.97

Maximum mean score is 3.00
 Low : 1-1.66 Medium : 1.67-2.32
 High: 2.33-3.00.

As regarding objectivity, high scores were obtained for 'write up of all the messages clearly stated/ self explanatory' for all the messages, maximum for M₈ & M₁₀ and minimum for M₉. Similarly 'information appears to be valid and well researched' also scored high for all the messages.

It is further revealed from Table 5 that overall coverage and objectivity of the CD was perceived to be high for all the messages and the overall mean score for all the ten messages was high. M₁₀ was found to be having highest scores followed by M₁, M₂ and M₇. Thus it clearly indicates that write up of all the messages was clearly stated, self explanatory and information appeared to be valid and well researched.

3. Content presentation of various poultry messages

Overall mean scores related to content presentation are presented in Table 4. The data clearly indicates that as far as judges' opinion on its attributes was concerned they reported that the attribute viz. 'material managed in a logical sequence and grouping', scored high score for all the messages, maximum for M₆, M₉ & M₁₀. 'Usefulness of the information' and 'searching the links of files easily', were perceived to be high because these two parameters attained maximum mean score value (ranging 2.85 to 2.98) for all the messages indicating that no change was required as far as these parameters were concerned.

Table 4: Content presentation of various poultry farming messages for CD perceived by judges

Attributes of content presentation	Weighted mean score									
	Messages									
	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Material managed in logical Sequence and grouping	2.97	2.96	2.94	2.86	2.93	2.98	2.96	2.84	2.98	2.98
Usefulness of information	2.99	2.97	2.94	2.98	2.96	2.98	2.97	2.85	2.95	2.99
Ease in reading	2.96	2.95	2.97	2.12	2.96	2.30	1.95	2.76	2.32	2.96
Links of files easily searchable	2.97	2.98	2.97	2.95	2.94	2.96	2.92	2.96	2.94	2.93
Over all mean score	2.97	2.96	2.95	2.72	2.94	2.80	2.70	2.90	2.79	2.96

Maximum mean score is 3.00
 Low : 1-1.66 Medium : 1.67-2.32
 High: 2.33-3.00.

As far as ease in reading was concerned, comparatively medium mean scores were achieved for M₇, M₄, M₉, and M₆. It may be due to the reason that messages like 'prevention/ control of diseases & vaccination' and 'Knowledge on feed requirements' were more scientific and had technical information thus slight modification was done to increase its effectiveness in terms of readability. The overall mean scores revealed

that M₁ ranked highest in terms of content presentation followed by M₂ & M₁₀, M₃, M₅, M₈, M₆, M₉, M₇ and M₇.

4. Illustrations of various poultry farming messages

Table 5 clearly indicates that overall effectiveness in terms of illustration of various messages related to CD was perceived to be high (ranging from 2.80 to 2.96) for all the messages. Though comparatively low weighted mean score was achieved by M₇, M₅ and M₁₀ i.e. 'prevention/ control of diseases & vaccination', 'seasonal effects on poultry' and 'Problem solutions' which indicated that layout of pictures, illustration, suitability of pictures and illustrations to content need to be modified. Thus, modification was done for this message. The table thus clearly reveals that both layout and suitability of pictures was perceived high for all the ten messages. However as far as overall mean scores are concerned, M₁ scored highest in terms of illustrations followed by M₆, M₂, M₉, M₃, M₈, M₄, M₁₀, M₇ and M₅.

Table 5: Illustrations of various poultry farming messages for CD as perceived by judges

Attributes of illustrations	Weighted mean score									
	Messages									
	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Layout of pictures/illustrations/ graphics is appropriate	2.98	2.92	2.89	2.78	2.79	2.94	2.98	2.86	2.98	2.86
Suitability of pictures/illustrations to contents	2.95	2.92	2.94	2.91	2.86	2.95	2.98	2.85	2.87	2.83
Over all mean score	2.96	2.92	2.91	2.84	2.82	2.94	2.98	2.85	2.92	2.84

Maximum mean score is 3.00
Low : 1-1.66 Medium : 1.67-2.32
High: 2.33-3.00.

6. Writing style and compatibility of various poultry farming messages

Regarding writing style it can be observed from Table 6 that majority of the judges observed that main points in CD were emphasized and all the headings were also differentiated from each other. It may be due to the reason that all heading and sub headings were properly linked with home page and in different colours resulting in ease in searching the related contents. Majority of the judges opined that repetition of words (2.76-2.98) was avoided carefully and 'topic or information of messages are simple in nature'. Overall mean score for all the messages ranged from 2.89 to 2.97 which indicates that CD was perceived to be highly effective in terms of writing style. Maximum score was given to message M₁ followed by M₅, M₁₀, M₈, M₂ and M₁₀. So modification was done to make the language simpler.

Table 6: Writing style and compatibility of various poultry farming messages for CD perceived by judges

Attributes of writing style and compatibility	Weighted mean score									
	Messages									
	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇	M ₈	M ₉	M ₁₀
Writing style										
The main points were more emphasized	2.98	2.96	2.94	2.95	2.92	2.96	2.98	2.89	2.92	2.91
All the topics/main headings are differentiated from each other	2.94	2.93	2.97	2.93	2.98	2.95	2.99	2.94	2.93	2.98
Topics or information of messages are simple in nature	2.99	2.97	2.95	2.98	2.97	2.82	2.75	2.92	2.82	2.96
Repetition avoided	2.98	2.84	2.76	2.79	2.96	2.92	2.95	2.97	2.92	2.98
Over all mean score	2.97	2.92	2.90	2.91	2.95	2.91	2.91	2.93	2.89	2.95
Compatibility										
Presentation of various messages is according to audience background	2.98	2.95	2.92	2.94	2.98	2.91	2.95	2.92	2.99	2.98

Maximum mean score is 3.00
Low : 1-1.66 Medium : 1.67-2.32
High: 2.33-3.00.

Compatibility of CD was also found to be high for all the messages (above 2.91), maximum for M₉ and minimum for M₆. Thus it clearly indicates that presentation of material on various messages is according to audience background needs, interest, customs and value system.

In the same way Harvelt (1987), Kumar and Singh (1987) also reported that compact discs are low cost storage medium for the dissemination of information CD-ROM holds great promise for developing countries, especially in the farm publication and data base distribution applications. Gupta, (2000) and Rogers, (2001), Anuradha *et.al.*, 2012, also stated that CD ROM is a vehicle for bringing our clients to a new level of acceptance for information and remarked that CD-R technology offers a wonderful opportunity for presenting material such as "tree bytes." One disk can spot large value of text along with hundreds of photographs. Asrani (2006) also developed CD ROM on beekeeping and found it effective on all the parameters.

CONCLUSION

Prepared media was found effective and overall weighted mean score showed that Accuracy, Coverage, Objectivity, Content presentation, Layout and Suitability of pictures, write up and compatibility of CD was perceived high for all the messages on all the parameters. Thus it clearly indicates that all the messages were clearly stated, self explanatory and information appeared to be valid and well researched.

Paper received on : September 16, 2014
Accepted on : October 22, 2014

REFERENCES

- Asrani, S. 2006. Development and Testing of Electronic Media on Beekeeping. M. Sc. Thesis, CCS Haryana Agricultural University, Hisar.
- Gupta, P.S. 2000). Consumerism: Energy Challenges and Opportunities: Consumer conf., 7 (3): 2-11.
- Harvelt, J. H. W. Van. 1987. Advantages of CD-ROM for Local Access to Computerized Data Base in Developing Countries in Comparison with Traditional Bibliographic Services: Suggested Pilot Projects. IAALD quarterly bulletin 32 (3): 161-168.
- Kumar, B. and Singh, K. 1988. Video Technology and Changing Development Scenario: A Third World Perspective. *Interaction* 6(1-2): 38-47.
- Khare, A. 2001. Poultry: A Green Pasture. *Yojana*. 45 (4): 42-43.
- Midha, A. 2001. Standardized Food Safety Data Base for Potential Users. Ph.D. Thesis. CCS Haryana Agricultural University, Hisar.
- Rogers, M. 2001. Adults Learning for Development, London; Casell.
- Anuradha and Singh, Archana Raj. Effectiveness of the Developed Video Compact Disc (VCD) in Knowledge Dissemination, *Indian Journal of Extension Education* Vol. 48, No. 1 & 2, 2012 (81-83)

Knowledge of Gujjar and Bakarwals Regarding Improved Livestock Management Practices

P. S. Slathia¹, Narinder Paul², Lyaqat Ali³ and Rakesh Kumar⁴

ABSTRACT

Gujjar and Bakarwal constitute the two major nomadic tribal groups of Jammu and Kashmir. Both these tribal groups have livestock rearing as the prime vocation. Whereas, Gujjars possess large herds of buffaloes, Bakarwals are associated with goat and sheep rearing. Both these tribal group play a crucial role in meeting the requirement of milk and meat for the cities and towns and hence contribute significantly to the livestock sector of the state. Traditionally both these tribes are nomadic in nature. They have seasonal migration from the plains of Jammu region to the upper reaches of Kashmir valley. The study has revealed that fropal population lack knowledge regarding various aspects like identification of disease, clean milk production improved breed of cattle, importance of mineral supplementation *etc.*

Key words : Tribal communities, seasonal migration, snowfall

INTRODUCTION

Number of tribal communities are found in Jammu and Kashmir, who have settled down in every nook and corner of this hilly countryside. In Jammu and Kashmir, numerically they are the third largest ethnic group and are spread throughout Jammu and Kashmir. The migratory grazier, who forms significant proportion of the Gujjar population of the area, still practice the age old migration to subalpine and alpine pastures during summer. During winter they stay in the Shiwaliks, i.e., the lower most hills adjoining plains and do not go beyond the boundaries of the state as their ancestors used to do. The migration starts from Jammu by the middle of February and the flocks reach Udampur by end of February when the Gujjars of Udampur also start upward migration. The migratory route is almost parallel to the Jammu-Srinagar national highway. The grazing continues up to middle of September when the downward movement starts. Bakarwal tribal community of Jammu and Kashmir is found in every hilly nook of the region. Also known as Bakharwal, they are special nomadic tribes, mainly found in the Pir Panjal range of mountains located between the two states of Jammu and Kashmir and Himachal Pradesh. Bakarwal mainly are goatherds and shepherds by profession. The lifestyle of Bakarwal tribes also throws some light on their culture and societal set up. Through out the year they lead a secluded and lonely life, due to the vagaries of climate that they face while living in such rugged terrains. Once in every year they take the pain of accompanying their herds of sheep to the steep high mountain regions for grazing them in the green fields.

Out of the total nomadic Gujjar and Bakerwals, 66 per cent population of nomad Gujjar-Bakerwals who fall under scheduled tribe groups in the state of Jammu & Kashmir are living below poverty line, revealed by a survey conducted by Tribal Research and Cultural Foundation (Rahi 2009).

Tribes are facing the problems of poverty and under nutrition and there is more need to pay attention on them (Amaresh Dubey 2009). The study was carried out with the objective to know the knowledge of Gujjar and Bakarwals towards different aspects of livestock rearing.

METHODOLOGY

Present investigation was carried out in Jammu division of Jammu and Kashmir state. Jammu division comprises of 10 districts of out of which Jammu and Kathua were purposively selected for the present investigation as these contain majority of the nomadic tribes involved in livestock rearing. From these two districts 6 *kurus* (group of nomadic tribes) each of Gujjar and Bakarwal tribe were randomly selected. From each selected *kuru* of Gujjars, 5 Gujjar families were randomly selected thereby constituting 30 Gujjar families. The head of the family was selected as the respondent for the purpose of study. Likewise from the *kurus* of Bakarwals, 5 Bakarwal families were randomly selected constituting 30 Bakarwal families. Similarly head of the family was selected as respondent for the study. Thus the study sample consisted of 30 Gujjars and 30 Bakarwals making

a total sample size of 60 respondents. Data for the purpose of study was collected by using a comprehensively designed interview schedule specifically designed and pre-tested for the purpose of the present investigation. The data so collected were subjected to suitable statistical analysis and collated accordingly.

RESULTS AND DISCUSSION

Knowledge of the nomadic tribes about lives fact mx practice (Gujjars and Bakarwals) has been detailed under the different heads *i.e.* knowledge of care and management, breeding aspects, feeding aspects of livestock.

Knowledge of nomadic tribes about care and management aspects of livestock:

A perusal of data presented in table 1 revealed that both the categories of the respondents had an excellent degree of knowledge about vaccination of the deadly diseases for animals (MPS 100) and was accordingly ranked Ist. It was followed by the knowledge of the respondents about bathing and cleaning of cattle (MPS 95) and precautions for preventing diseases in animals (MPS 78.33) which obtained II and III ranks in the hierarchy of the knowledge regarding care and management practices. It is interesting to note that both the categories of the respondents *i.e.* Gujjars and Bakarwals had almost equal magnitude of the knowledge regarding the aforementioned practices and were ranked equally.

Further deep glance at the data incorporated in table 1 corroborate that overall the respondents possessed a fair degree of knowledge about hygienic living conditions for animals (MPS 70), care and management of animals during parturition (MPS 66.67), first aid treatment of animals (MPS 56.67) and segregation of sick and diseased animals (MPS 50) and were assigned IV, V, VI and VII ranks respectively by the total respondents. They have been found to possess low level knowledge regarding diseases of newly born animals (MPS 46.67), Deworming in cattle (MPS 43.33), diseases of lactating animals (MPS 40), deadly diseases of pregnant animals (MPS 31.67) and clean milk production (MPS 20) and were ranked VIII, IX, X, XI and XII respectively by the respondents. It is alarming indeed that both the Gujjars and Bakarwals have been found to possess very poor knowledge regarding record keeping about income and expenditure (MPS 6.66) and modern housing structures of cattle (MPS 5).

Table 1: Knowledge possessed by the nomadic tribes in care and management aspects of lives

Care and Management Practices	Gujjar tribe		Bakarwal tribe		Total	
	MPS	Rank	MPS	Rank	MPS	Rank
Deworming in cattle	46.67	VIII	40.00	IX	43.33	IX
Bathing and cleaning of cattle	93.33	II	96.67	II	95.00	II
Modern housing structures of cattle	6.67	XIII	3.33	XIV	5.00	XIV
Deadly diseases of newly born animals	40.00	X	53.34	VI	46.67	VIII
Deadly diseases of pregnant animals	36.67	XI	26.67	XI	31.67	XI
Diseases of lactating animals	46.66	IX	33.34	X	40.00	X
Clean milk production \ meat	16.67	XII	23.33	XII	20.00	XII
\wool production from animals						
Record keeping about expenditures and income	3.33	XIV	10.00	XIII	6.66	XIII
First aid treatment of cattle	63.34	V	50.00	VII	56.67	VI
Precautions for preventing animal diseases	80.00	III	76.66	III	78.33	III
Hygienic living conditions for cattle	73.33	IV	66.67	V	70.00	IV
Segregation of diseased and sick animals	56.67	VII	43.33	VIII	50.00	VII
Vaccination for deadly diseases	100.00	I	100.00	I	100.00	I
Care and management of animals during parturition	60.00	VI	73.34	IV	66.67	V

Comparative analysis of the knowledge of the Gujjar and Bakarwal tribes about care and management of animals reveal that Gujjar and Bakarwal tribes differed in respect of their knowledge about diseases of animals. In all other aspects they possessed almost a similar magnitude of knowledge in respect of care and management practices of animals.

Knowledge of nomadic tribes about breeding aspects of livestock: Data incorporated in table 2 vividly corroborate that the Gujjar and Bakarwal tribes had cent per cent knowledge of the gestation period of the animals they rear. Gujjars had excellent knowledge about the gestation period of buffalo and Bakarwals had excellent knowledge of the gestation period of goats and sheep and this aspect of the breeding practices under study got the first rank by both the categories of the respondents. Overall this aspect also got first rank. Besides, Gujjar had the knowledge of the identifying symptoms to an extent of 96.67 per cent which was ranked second. The same aspect was ranked third in case of Bakarwals with the MPS 83.34. Excellent degree of knowledge was possessed by both the categories of respondents with regard to the age at which the animals attain breeding age which was ranked third in case of Gujjars (MPS 93.34) and second in case of Bakarwals (MPS 96.67). A fairly high degree of knowledge was also experienced among Gujjar as well as Bakarwal tribes about pregnancy diagnosis with MPS 83.34 and 70.00 respectively. It was assigned fourth and sixth ranks respectively by Gujjars and Bakarwals. The respondents were also found to possess fairly very high degree of knowledge about breeding related ailments in animals with MPS 80 and 73.34 respectively. However

this aspect got the same rank *i.e.* fifth by both the categories of respondents.

Table 2: Knowledge possessed by the nomadic tribes in breeding aspects of livestock

Breeding Practices	Gujjar tribe		Bakarwal tribe		Total	
	MPS	Rank	MPS	Rank	MPS	Rank
Selection and purchase of quality animals	16.67	IX	43.34	VIII	38.34	VIII
Attainment of breeding age	93.34	III	96.67	II	94.99	II
Breeding related ailments	80.00	V	73.34	V	76.67	V
Improved method of breeding	56.67	VII	76.67	IV	66.67	VI
Grading for selection	23.34	VIII	26.67	IX	24.99	IX
Gestation period of animals	100.00	I	100.00	I	100.00	I
Identification of heat symptoms in animals	96.67	II	83.34	III	89.99	III
Pregnancy diagnosis	83.34	IV	70.00	VI	76.67	IV
Identification of fertility problems	63.34	VI	56.67	VII	59.99	VII
Improved breeds of cattle	16.66	X	10.00	X	13.33	X

MPS: Mean Percent Score

A further glance at the data incorporated in the table make it vivid that both the categories of the respondents had fair knowledge of the improved methods of breeding to be followed for the improvement of the animals to an extent of 66.67 per cent. The Bakarwal tribes edged over the Gujjars in respect of this aspect of the breeding related knowledge with an MPS of 76.67 over 56.67 for the Gujjars. However the respondents had poor knowledge regarding selection and purchase of quality animals, grading for selection and improved breeds of the respective cattle and animals reared by them with an overall MPS of 24.99, 38.34 and 13.33.

Knowledge of nomadic tribes about feeding aspects of livestock: An overview of the data contained in Table 3 reveals that both the categories of the respondents possessed an excellent knowledge of the feeding practices to be followed for the feeding of the newly born animals which was ranked first with MPS 96.67. However, all the Gujjar respondents had the knowledge of the colostrum feeding in animals which was ranked first by the Gujjar tribes with MPS 100. Second in the rank hierarchy came the knowledge of the Gujjars about feeding of newly born animals (MPS 96.67) followed by period of grazing to be followed in cattle (MPS 90), importance of colostrum for newly born animals (MPS 86.67), starter diet for newly born animals (MPS 80), feeding of lactating animals (MPS 70) and feeding of pregnant animals (MPS 66.67) which were assigned II, III, IV, V and VII ranks respectively by the Gujjar tribes. It has also been found that the Gujjars had low knowledge about weaning practice in cattle (MPS 46.67), importance of mineral supplementation (MPS 23.33) and importance of green fodder for animals which were assigned VIII, IX and X ranks by the Gujjar tribes.

Table 3: Knowledge possessed by the nomadic tribes in feeding aspects of livestock

Feeding Practices	Gujjar tribe		Bakarwal tribe		Total	
	MPS	Rank	MPS	Rank	MPS	Rank
Colostrum feeding	100.00	I	56.67	V	78.33	IV
Weaning in cattle	46.67	VIII	26.67	VIII	36.67	VIII
Importance of colostrums	86.67	IV	73.34	III	79.99	III
Period of grazing	90.00	III	93.34	II	91.67	II
Importance of green fodder	13.34	X	10.00	IX	11.67	X
Importance of mineral supplementation	23.33	IX	6.67	X	15.00	IX
Starter diet for newly born animals	80.00	V	60.00	IV	70.00	V
Feeding of pregnant animals	66.67	VII	40.00	VII	53.33	VII
Feeding of newly born animals	96.67	II	96.67	I	96.67	I
Feeding of lactating animals	70.00	VI	46.67	VI	58.33	VI

MPS: Mean Percent Score

In case of Bakarwal tribes, an excellent degree of knowledge has been observed regarding feeding of newly born animals which was ranked first with MPS 96.67. It was followed by knowledge regarding, period of grazing for animals (MPS 93.34), feeding of colostrum for animals (MPS 73.34), starter diet for newly born animals (MPS 60) and colostrum feeding in animals (MPS 56.67) which were assigned II, III, IV and V ranks respectively by the Bakarwal tribes. However, they have been found too possess poor knowledge about feeding of lactating animals (MPS 46.67) and feeding of pregnant animals (MPS 40) and were assigned VI and VII ranks respectively by the Bakarwal tribes. Bakarwals have also been found to possess very poor knowledge regarding weaning in cattle (MPS 26.67), importance of green fodder for animals (MPS 10) and importance of mineral supplementation for animals (MPS 6.67) which obtained VIII, IX and X ranks by the Bakarwal tribes.

Overall knowledge possessed by Gujjar and Bakarwal in different aspects of livestock production: A perusal of data incorporated in Table 4 reveals that the both the categories of the respondents had knowledge of the breeding aspects to the maximum level amongst the other aspects of the knowledge with MPS 62.16 followed by the knowledge of the feeding aspects (MPS 55.11) and knowledge regarding care and management of the cattle with MPS 50.71. It is interesting to note that identical ranks were assigned to the aspects of the knowledge of the livestock production under study by both the categories of the respondents *i.e.* Gujjars and Bakarwals with slight variations in the MPS obtained.

Table 4: Overall knowledge possessed by Gujjar and Bakarwal in different aspects of livestock production

Knowledge aspects	Gujjar tribe		Bakarwal tribe		Total	
	MPS	Rank	MPS	Rank	MPS	Rank
Breeding aspects	60.66	I	63.67	I	62.16	I
Feeding aspects	59.23	II	51.00	II	55.11	II
Care and management of cattle	51.66	III	49.76	III	50.71	III

MPS: Mean Percent Score

CONCLUSION

The study reflects that tribal population lacks knowledge regarding various aspects i.e identification of diseases, clean milk production, improved breeds of cattle, importance of mineral supplementation.

Thus it is recommended that veterinary clinical camps and awareness camps should be organized on regular basis for these tribes to enhance their technical knowledge about modern livestock management practices. The training cum awareness programmes should be tailored in such a way that tribal population comprises of Gujjar and Bakarwal get maximum out of it, further credit facility should be made available at ease for them. Migratory schooling facilities should be more strengthen for the children of the tribes so that education is not discontinued during the time of migration. It is also further suggested that self help groups of these tribes should be made to enhance their livelihood.

Paper received on : September 17, 2014

Accepted on : October 23, 2014

REFERENCES

Saha, A, Swapan, B.M. & Gupta, D. (2006) Validation of Indigenous Knowledge in Healthcare System. Indian Journal of Extension Science, NDRI, Karnal.

Rahi, Javaid (2009): Tribal Research and Cultural Foundation, A National Organization working on Gujjars and Bakarwals in the Jammu and Kashmir. Dictionary of Gujjar Tribe, Jammu.

Dubey, Amaresh (2009): Poverty and Under-nutrition among Scheduled Tribes in India: A Disaggregated Analysis- IGIDR Proceedings/Project Report Series, pp. 62-13

Profile of Peri-urban and Rural Dairy Farmers : A Comparative Analysis

Kamta Prasad Dwivedi¹, Arun Kumar² and Prakash Singh³

ABSTRACT

This study was conducted in Faizabad district of Uttar Pradesh to study the socio-economic profile of peri-urban and rural dairy farmers with a sample of 120 dairy farmer (60 peri-urban + 60 rural) selected from eight villages selected through probability proportionate sampling technique on the basis of herd size. The study revealed that the majority of peri-urban (88.33%) and rural dairy farmers (75%) were literate with the dominancy of joint family system (68.33% in peri-urban and 65% in rural). The majority of peri-urban dairy farmers (63.33%) and rural dairy farmers (56.66%) were found to be medium size family *i.e.* 5-8 members; and possessed pucca house 65 per cent and 61.66 per cent, respectively. The majority of both type of farmers (90% and 78.33%) reported agriculture as their main occupation. A majority of the peri-urban dairy farmers (46.66%) was found to be having marginal land holding, while rural dairy farmers (33.33%) were found in each marginal and large land holding categories. The annual income of majority of the peri-urban and rural dairy farmers (45% and 40%) was found in the category of ₹ 60,001/- to 90,000/- and 30,000/-1 to 60,000/- respectively. The dominant mass media information sources were observed to be radio followed by mobile and television. Majority of peri-urban dairy farmers (55%) and rural dairy farmers (73.33%) were observed to be in the medium category of material possession. The medium level of scientific orientation, achievement motivation, economic motivation and value orientation were found among both type of respondents.

Key words: Socio-economic profile, peri-urban, rural farmers and dairy farmers.

INTRODUCTION

Dairy sector contributes significantly in generation of employment opportunities and supplementing the income, particularly for small and marginal farmers and landless labourers of rural India, besides providing food security. Peri-urban is an area or village or habitation located in the perimeter of the urban area having partial or complete influence of urbanization. The rearing of cattle and dairying has become a subsidiary occupation for many households with agriculture for improving the socio-economic condition of rural people. The dairying requires a lot of skilled and unskilled manual labour for its various kinds of activities like maintenance of animal, feeding, milking, cleaning of cattle sheds, taking care of calves, processing of milk and marketing, *etc.* Thus, the employment potential is higher in dairy sector. A peri-urban area is not only a zone of direct impact experiencing the immediate impacts of land demands from urban growth and pollution, but is also a wider market-related zone of influence that is recognizable in terms of the handling of agricultural and natural resource products (Simon *et al.*, 2006). In this context, the present study was undertaken with the objective of exploring comparative analysis of profile of peri-urban and rural dairy farmers.

METHODOLOGY

The study was conducted during 2011-2012 among purposively selected peri-urban and rural dairy farmers of Faizabad district (U.P.). At first, the list of all the villages in the selected district was prepared and then four villages situated near the road in four directions (East, West, North and South) within 5 kilometers away from Nagar Palika boundary were randomly selected as peri-urban villages namely, Dabaseber, Keshavpur, Mishran and Ghatampur.

In the same manner, four villages, namely, Bargadiya, Rajepur, Amauna and Bikapur situated in the same directions beyond 10 kilometers from Nagar Palika boundary were randomly selected as rural areas. At last stage of sampling, the list of respondents were prepared separately for each sample village and thus, a total of 120 dairy farmers (60 peri-urban + 60 rural) from eight sample villages were selected through probability proportionate sampling technique on the basis of herd size.

The data were collected through stockyard and pre-tested interview schedule in face to face situation. Descriptive statistics was used for the analysis of data.

¹ and ² Research Scholar, Department of Extension Education, Institute. of Agril. Sciences, Banaras Hindu University, Varanasi (U.P.)-221 005

³ Professor, Department of Extension Education, N.D.U.A.&T. Kumarganj, Faizabad (U.P.)- 224 229

Table 1: Distribution of respondents according to personal, social and economical variables

Variables	Respondents (n=120)			
	Peri-urban (n=60)		Rural (n=60)	
	f	%	f	%
Education				
Illiterate	07	11.66	15	25.00
Literate	53	88.33	45	75.00
Primary	01	01.66	00	00.00
Junior high school	11	18.33	19	31.66
High school	17	28.33	10	16.66
Intermediate	12	20.00	08	13.33
Graduate	10	16.66	05	08.33
Post graduate	02	03.33	03	05.00
Total	60	100	60	100
Family type				
Nuclear family	19	31.66	21	35.00
Joint family	41	68.33	39	65.00
Total	60	100	60	100
Family size				
Small (Up to 4 members)	13	21.66	09	15.00
Middle (5 to 8 members)	38	63.33	34	56.66
Large (9 and above)	09	15.00	17	28.33
Total	60	100	60	100
Housing pattern				
Kaccha	04	06.66	07	11.66
Mixed	17	28.33	16	26.66
Pucca	39	65.00	37	61.66
Total	60	100	60	100
Land holding				
Marginal (below 1 ha)	28	46.66	20	33.33
Small (1-2 ha)	10	16.66	14	23.33
Medium (2-4 ha)	05	08.33	06	10.00
Large (4 ha and above)	17	28.33	20	33.33
Total	60	100	60	100

Annual income

Up to ₹ 30,000	03	05	11	18.33
₹ 30,001 to 60,000	18	30	24	40
₹ 60,001 to 90,000	27	45	19	31.66
₹ 90,001 to 1,20,000	09	15	04	06.66
₹ 1,20,001 and above	03	05	02	03.33
Total	60	100	60	100

Social participation

No participation	45	75.00	46	85
Member in one organization	13	21.66	14	15
Members in two organizations	02	03.33	00	00
Total	60	100	60	100

Over all materials possession

Low (up to 25)	11	18.33	08	13.33
Medium (26 to 51)	42	70.00	44	62.85
High(52 and above)	07	11.66	08	13.33
Total	60	100	60	100

Occupation

Occupation	Main	Subsidiary	Main	Subsidiary
Agril. Labour	00.00	0.0	03.33	05.00
Service	01.66	00.00	01.66	00.00
Agriculture	90.00	08.33	78.33	16.66
Dairy	08.33	91.66	16.66	78.33
Total	100	100	100	100

It is clear from the Table-1 that the literates among the peri-urban and rural dairy farmers were observed to be 88.33 per cent and 75 per cent respectively while illiterate were observed to be 11.66 per cent and 25 per cent respectively. The literacy percentage in the peri-urban dairy farmers was found more as compared to rural dairy farmers because peri-urban farmers have more access to educational institutions as the most of institutes are located in and around urban areas.

The majority of the peri-urban dairy farmers (68.33%) belonged to joint family compared to rural dairy farmers (65%). The majority of peri-urban dairy farmers (63.33%) and rural dairy farmers (56.66%) were found under middle family size category *i.e.* 5-8 members. The findings are similar with the findings of Gautam *et al.*, 2007. Majority of peri-urban dairy farmers (65%) and rural dairy farmers (61.66%) possessed pucca house.

A majority (46.66%) of the peri-urban dairy farmers belonged to the marginal land holding category, in the case of rural dairy farmers, the majority of the respondents (33.33%) were found in marginal as well large land holding categories. The annual income of majority of the peri-urban farmers (45%) was found in the categories of ₹ 60,001/- to 90,000/-, followed by 30 per cent in ₹ 30,001/- to 60,000/-while, in the case of rural dairy farmers, 40 per cent were in the category of ₹ 30,001/- to 60,000/- followed by 31.66 per cent in ₹ 60,001/- to 90,000/-. Hence, the trend shows that the peri-urban farmers dominated in annual income over the rural dairy farmers. The majority of the peri-urban respondents (21.66%) had participation in one organization followed by two organizations (3.33%) whereas, 75 per cent farmers were had no participation in any organization. Likewise, in case of rural dairy farmers, 15 per cent were having participation in one organization and 85 per cent had no participation in any organization. Data show that the majority of peri-urban dairy farmers (55%) were observed in the medium category of material possession followed by high (24.5%) were as, majority of rural dairy farmers (73.33%) were observed in the medium category of material possession followed by high (13.33%) respectively. These finding are in line with the finding of Raval and Chandawat, (2011). Table 1 further indicated that a overwhelming majority of the peri-urban dairy farmers (90%) had agriculture as their main occupation followed by dairy (8.33%) while, in case of subsidiary occupation, the large majority of farmers (91.66%) adopted dairy followed by agriculture (8.33%) respectively. Likewise, in case of rural dairy farmers, the majority of the respondents (78.33%) reported agriculture as their main occupation followed by dairy (16.66%) while, in case of subsidiary occupation, the large majority of farmers (83.33%) adopted dairy followed by agriculture (16.66%).

Table 2: Distribution of respondents according to utilization of information sources
n=120

Particulars	Peri-urban (n=60)		Rural (n=60)	
	Mean scores	Rank order	Mean scores	Rank order
Formal sources				
V.D.Os.	0.21	IX	0.16	VIII
B.D.Os.	0.15	X	0.15	X
A.D.Os.	0.16	VIII	0.15	IX
Secretary	0.33	VII	0.34	VII
Gram pradhan	0.42	IX	0.45	IV
Cooperative society	0.44	IV	0.45	VI
Banks	0.55	I	0.54	I

Mandi samiti	0.51	II	0.45	III
Agril. scientist	0.09	XI	0.11	XI
Kishan sahayak	0.41	VI	0.46	II
Facilitators	0.45	III	0.45	V
Average	0.33	III	0.33	III
Informal sources				
Family members	0.87	I	0.88	I
Neighbour	0.77	II	0.72	II
Friends	0.76	III	0.68	IV
Relatives	0.73	IV	0.65	V
Progressive farmers	0.73	V	0.70	III
Average	0.77	I	0.72	I
Mass media exposure				
Radio	0.93	I	0.92	I
T.V.	0.90	II	0.71	II
Mobile	0.83	III	0.69	III
Film show	0.61	IV	0.56	IV
Farm magazines	0.1	VIII	0.11	VIII
Posters	0.28	V	0.34	V
Farmers fair	0.24	VII	0.24	VII
Demonstrations	0.24	VI	0.25	VI
Average	0.46	II	0.42	II

The data in Table 2 revealed that the extent of contact of respondents with different information sources used by them for general information as well as about various practices of dairy farming. Among formal sources, the peri-urban dairy farmers were also found in the order viz., banks (0.55), *mandi samiti* (0.51), facilitator (0.45), cooperative (0.44), gram pradhan (0.42), *kishan sahayak* (0.41), secretary (0.33), A.D.Os. (0.11), V.D.O (0.21) and B.D.Os. (0.15) respectively and the rural dairy farmers was found in descending rank order i.e. bank (0.54), kishan sahayak (0.46), *mandi samiti* (0.45), gram pradhan (0.45), facilitators (0.45), cooperative (0.45), secretary (0.34), V.D.Os (0.16), A.D.Os. (0.15), B.D.Os. (0.15), and agril. scientists (0.11). The contact of peri-urban dairy farmers with informal sources was found in descending the ranke order viz., family members (0.87), neighbors (0.77), friends (0.76), relatives (0.73), and progressive farmers (0.73). Like-wise, rural dairy farmers were found in the order i.e. family members (0.88), neighbor (0.72), relatives (0.68), friends (0.65), and progressive farmers (0.70).

In case of mass media sources of information, the peri-urban dairy farmers were found in the rank order of radio (0.93), T.V. (0.90), mobile (0.83), film shows (0.61),

poster (0.28), demonstrations (0.24), farmer's fairs (0.24), farm magazine (0.1) and circular letters (0.03). Likewise, rural dairy farmers were found in descending order of radio (0.92), T.V. (0.71), mobile (0.69), film show (0.56), posters (0.34), demonstrations (0.25), farmers fairs (0.24) and farm magazine (0.11). The findings indicate that more powerful and useful sources of information among the dairy farmers were informal sources followed by mass media sources and formal sources.

Table 3: Distribution of respondents according to dairy experience, herd size and milk production
n=120

Categories	Peri-urban (n=60)		Rural (n=60)	
	f	%	f	%
Dairy experience (Years)				
Low (up to 6)	15	25.00	05	08.33
Medium (7 to 18)	40	66.66	48	80.00
High (19 and above)	05	08.33	07	11.66
Total	60	100.00	60	100.00
Herd size (Animals)				
Small (up to 1)	13	21.66	20	33.33
Medium (2 to 5)	40	66.66	36	60.00
Large (above 5)	07	11.66	04	06.66
Total	60	100.00	60	100.00
Milk production (Litres)				
Total		872		777
Per animal		6.70		7.33
Per person		2.05		2.06
Per family		14.53		12.95

Table 3 indicated that the majority of peri-urban dairy farmers (66.66%) and rural dairy farmers (80%) had medium level of farming experience. Most of the peri-urban dairy farmers (66.66%) had medium herd size followed by small (11.66%) and large (21.66%) respectively, but the majority of rural dairy farmers (60%) had medium herd size followed by small (6.66%) and large (33.33%), respectively. The Table-3 reflects that the total milk production with peri-urban dairy farmers was found to be 872 litres, while with rural dairy farmers it was 777 litres and the per animal milk production with peri-urban was 6.70 litres as against 7.33 litres with rural dairy farmers. The per family member milk availability and per family milk production was found to be 2.05 litres and 14.53 litres in case of peri-urban while, 2.06 litres and 12.95 litres in case of rural dairy farmers.

Table 4: Distribution of respondents according to psychological profile
n=120

Categories (Scores)	Peri-urban (n=60)		Rural (n=60)	
	f	%	f	%
Scientific orientation				
Low (up to 21)	07	11.66	16	26.66
Medium (22 to 25)	42	70.00	37	61.66
High (26 and above)	11	10.33	07	11.66
Achievement motivation				
Low (up to 16)	11	18.33	18	30.00
Medium (17 to 20)	40	66.66	36	60.00
High (21 and above)	09	15.00	06	10.00
Economic motivation				
Low (up to 21)	16	26.66	23	38.33
Medium (22 to 25)	41	68.33	35	58.33
High(26 and above)	03	05.00	02	3.33
Value orientations				
Low (up to 31)	09	15.00	16	26.66
Medium (32 to 36)	39	65.00	34	56.66
High (37 and above)	12	20.00	10	16.66

Table 4 revealed that the majority of peri-urban dairy farmers (70%) had medium level of scientific orientation followed by high (10.33%) and low (11.66%) whereas majority of rural dairy farmers (61.66%) had medium level of scientific orientation followed by high (11.66%) and low (26.66%). The majority of peri-urban dairy farmers (66.66%) had medium level of achievement motivation followed by high (15%) and low (18.33%) whereas majority of rural dairy farmers (60%) had medium achievement motivation followed by high (10%) and low (30%). The majority of peri-urban dairy farmers (68.33%) had medium economic motivation followed by high (5%) and low (26.66%) whereas majority of rural dairy farmers (58.33%) had medium economic motivation followed by high (3.33%) and low (38.33%). The majority of the peri-urban dairy farmers (65%) and rural dairy farmers (56.66%) had medium level of value orientations followed by high level (20%) and (16.66%) respectively.

CONCLUSION

The study revealed that the peri-urban dairy farmers were better in literacy, annual income, social participation, overall material possession, as compared to the rural dairy farmers. The rural dairy farmers had more dairy experience and per animal milk production when compared to the peri-urban dairy farmers. Peri-urban and

rural dairy farmers were observed to have joint family, middle family size, pucca houses and almost similar information sources or extension contact. The majority of peri-urban and rural dairy farmers had agriculture as their main occupation followed by dairying as subsidiary occupation. The majority of peri-urban and rural dairy farmers possessed medium herd size. The both type of dairy farmers had medium level of scientific orientation, achievement motivation, economic motivation and value orientations.

Paper received on : September 15, 2014
Accepted on : October 20, 2014

REFERENCES

Amarnath, J.S and Samvel APV. 2008. Agri business management. Satish serial publishing house, Delhi.

Gautam, U.S., Chand, R. and Singh, D.K. 2007. Socio-Personal Correlation for Decision-Making and Adoption of Dairy practices. *Indian Research Journal Extension. Education.* 7 (2&3):10-11.

Government of India, 2002. *Economic Survey 1999-2000*. Delhi: Economic Division, Ministry of Finance, Government of India.

Khuman, L.K., Hazarika, P. and Saharia, K.K. 2013. Personal socio-economic and communication profile of tribal and non-tribal dairy farmers. *Journal of Communication Studies*, 1(31):129-143

Raval and Chandawat, 2011. Extent of knowledge of improved animal husbandry practices and socio-economical characteristics of dairy farmers of district

A Study on Leadership Qualities of Supervisory Officers (Divisional / Institution Heads) in ICAR Institutes

K. Ponnusamy¹ and P.S. Swathi lekshmi²

ABSTRACT

Leadership is the role and status of one or more individuals in the structure and functioning of group organizations which enable & to meet a need or purpose, through co-operation of the group members. The ICAR is an apex body with a multitude of research institutes under its realm. The organization is manned by scientific staff of different cadres, prescribed by hierarchical set-up. The leadership qualities of the immediate supervisors have a direct bearing on the productivity of the scientists in succession, which in turn determine the efficiency of technology flow and its transfer to the client system in the field. The present study was undertaken to assess the leadership qualities of supervisory level officers in the hierarchy. More than half of respondents (53.63 %) opined that the immediate supervisors possessed professional knowledge and expertise only to some extent, while 65.22 % said that the level of planning was largely top down, implying a bureaucratic approach. About 42.02 % said that considerable scope was given by superiors to act independently and 56.52 % reported of motivating the staff substantially to achieve higher level of performance. A democratic leadership, involving a bottom-up approach must be fostered within the limits of official hierarchy to enable the individuals in the organization to show case their skills and ability for enhancing the productivity of the organization.

INTRODUCTION

Globalization, privatization and liberalization trends have ushered in a remarkable metamorphosis in the Indian economy, which demand an increase in knowledge and technology transformation required for developing a sustainable competitive advantage in the global market. As the number of people, who access a pool of knowledge increases, the pool expands. Considering the unpredictable scale and pace of change and the shift in the nature of competencies required in today's era, the winners would be those who are willing to face, fight, experiment and ride the change. The Indian agricultural scenario is no exception to this yardstick. There is a need to throw light on the management aspects of agricultural research institutions since, routine approaches cannot always meet the task of evolving new technology expeditiously and then ensuring its speedy application. For a steady and progressive growth, management and job efficiency of scientists, the leadership traits provided by immediate superiors like heads of divisions/officers in charge of sections/units/cells need to be assessed and analysed, in order to give feedback about their capabilities and weak points to make corrective measures to improve their managerial abilities. Management activities such as planning, organising and decision-making are dormant cocoons until the leader triggers the power of motivation in people and guides them towards goals. The heads of various divisions/sections have to interpret the future prospects to those in succession, and reinforce them with positive ideas. They must motivate the best talent to remain with them and imbibe the cardinal principle of productive contribution for overall growth. Effective leadership practices thus become an important force behind the continued success of any research organisation. In this backdrop, a study was conducted to assess the leadership qualities among heads of department /organisation in Indian Council of Agricultural Research institutes.

METHODOLOGY

The study was conducted during January and February, 2009 with scientists working in different ICAR institutes. An interview schedules was administered to 69 respondents in the cadre of scientists, scientists (senior scale), senior scientists and principal scientists who are working in ICAR institutes situated in different places like Karnal, New Delhi, Coimbatore, Chennai, Lucknow, Palampur in Himachal Pradesh, Katra in Himachal Pradesh and Mathura, in Uttar Pradesh to assess the leadership qualities of immediate superiors. A simple percentage analysis was worked out to interpret the results. The names of respondents and their institutes were kept confidential to protect their identity.

RESULTS AND DISCUSSION

The respondents' profile is presented in Table 1 to understand their working background. Most of the respondents were middle aged (55.07%), working in the cadre of scientist (senior scale), having less than 10 years of job experience (50.72%) and had served under one to three leaders (49.28%). The variation with respect to number of bosses / Heads served might be due to the number of places of posting, change of Heads due to retirement/promotion/appointment and change of nature of duties of individual scientists

Seventeen leadership qualities of the immediate supervisors of the respondents were analysed and are listed in Table 2. These pertain to the leadership qualities of immediate supervisors of respondents at the time of investigation. The respondents disclosed that majority of the supervisors possessed only small extent of professional knowledge and expertise (53.63%) and had a considerable ability to guide the subordinate staff on all aspects (55.07%) which might be due to lack of interest in periodic updation of knowledge and skill as well as lack of interaction in their field of specialisation.

¹Head, (Agricultural Extension), NDRI, Karnal, ² Mangalore Research Centre of CMFRI, Mangalore - 575 001

Although opportunities are available, several heads neither update themselves nor facilitate the subordinate staff to acquire the required competencies. Sometimes, they feel that highly capable scientists are a threat to them in terms of name, fame, recognition etc. The personal insecurity as being felt by incompetent heads results in developing jealousy towards skilled subordinates. In most of the institutions, top-down approach (65.22%) was followed by supervisors for planning

Table 1. Personal information of the respondents

		(n=69)	
Personal Information		Number	Percentage
Age of respondents	(i) Young (<35 years)	20	28.98
	(ii) Medium (36-50 years)	38	55.07
	(iii) Old (>50 years)	11	15.95
Designation of respondents	(i) Scientist	11	15.94
	(ii) Scientist (Senior Scale)	31	44.93
	(iii) Senior Scientist	15	21.74
	(iv) Principal Scientist	12	17.39
Number of years of service completed	(i) Upto 10 years	35	50.72
	(ii) 11-20 years	20	28.99
	(iii) > 20 years	14	20.29
No. of leaders so far served	(i) 1 to 3 leaders	34	49.28
	(ii) 4-5 leaders	22	31.88
	(iii) > 5 leaders	13	18.84

Table 2: Leadership qualities of immediate supervisors as perceived by respondents

		(n=69)	
Leadership Qualities		Number	Percentage
Possession of professional knowledge and expertise	(i) Nil	7	10.14
	(ii) Only to some extent	37	53.63
	(iii) To a great extent	25	36.23
Ability to guide the staff on all aspects	(i) No ability	14	20.29
	(ii) Considerable	38	55.07
	(iii) Highly capable	17	24.64
Level of planning	(i) Only top down	14	20.29
	(ii) Largely top down	45	65.22
	(iii) Mainly bottom up	10	14.49
Communication of information	(i) Very little	12	17.39
	(ii) Considerable	43	62.32
	(iii) Very transparent	14	20.29
Tolerance to failure	(i) Nil	11	15.94
	(ii) Substantial	39	56.52
	(iii) Focus on success again	19	27.54
Willingness to initiate/ act	(i) Do nothing	1	01.45
	(ii) Slight preference	31	44.93
	(iii) Action oriented	37	53.62
Level of delegation	(i) Very little scope to act independently	20	28.99
	(ii) Considerable scope to act independently	29	42.02
	(iii) Large scope to act independently	20	28.99
Ability to anticipate problems, ideas & innovation	(i) Little interest	15	21.74
	(ii) Substantial	45	65.22
	(iii) Future driven	09	13.04
Periodical review of subordinate's work	(i) Not very much	16	23.19
	(ii) Moderately	38	55.07
	(iii) Very much	15	21.74
Facilitating to acquire variety of competencies	(i) Do nothing	11	15.94
	(ii) Substantial	43	62.32
	(iii) Great extent	15	21.74

research/teaching/extension programmes at divisional/institute levels. The official circulars/office orders/communication were transmitted only to considerable extent (62.32%) to the staff indicating that bottom up planning and transparency in communication was mostly on paper. The respondents revealed that the information is immediately communicated by supervisors when there is a benefit/advantage to them, otherwise it will be kept secret or revealed only to those who are close to them encouraging favouritism / nepotism / partiality, ultimately leading to low level of morale among fellow scientists.

Even though 53.62 per cent of respondents opined that supervisory officers had the willingness to take initiative and were action oriented, only 27.54 per cent of them had the tolerance to failure and focusing on success again. It indicated that several organisational factors also played a role in exercising effective leadership and providing adequate importance to human resource development (HRD) components by the heads at institute level. About 42.02 per cent of supervisors delegated the duties/responsibilities/powers to considerable extent indicating that independence given to work needs to be improved a lot. Periodic review of subordinate's work was moderately done by 55.07 per cent of superiors while 63.77 per cent of them used to act timely and rationally to address staff grievances only to some extent revealing that the leadership qualities were not properly exercised by the supervisory officers for enhancing the individual scientist's productivity. Although half of the supervisory officers (50.72%) often invited suggestions from their staff in relation to work, only one-fourth of them (24.64%) took risk and responsibility for the decisions taken and implemented. The study conducted by Jayalakshmi and Kishore Kumar (2000) at College of Agriculture, Vellayani, Kerala showed that the scientists were not fully satisfied with HRD components and mandate of the university. They suggested that recognising the values of openness, trust, mutuality, collaboration and enthusiasm within the system by every member of the organisation could contribute significantly to increased productivity and excellence.

A scientist cannot be expected to bypass the head and approach the Director every time to get the things done and leadership qualities should be imbibed in heads through executive training at NAARM, Hyderabad and other similar management institutes. Mere seniority, meager subject knowledge and routine research publications without enriching the subject cannot be the considerations for becoming the heads or any other higher positions in agricultural research organisations. In order to guide and motivate the scientists for increasing the overall productivity of respective ICAR institutes, considerable importance should be given to assessment of leadership qualities of candidates who apply for the posts of heads. Moreover, a suitable mechanism should be evolved to identify incompetent heads in order to streamline and make them useful to ICAR system for prosperity of Indian agriculture.

Suggestions for Efficient Leadership Practice

Certain leadership practices which have brought laurels in

private sector organisations are to be communicated in detail for heads in ICAR institutes to adopt the same depending upon the place, positions and urgency. Not all leaders are made for all kinds of situations and enterprises, since their capabilities are not the same. A leader should be good at bringing multi disciplinary groups into a mutually reinforcing and tightly knit team. The aim should be to integrate all levels of personnel operationally, functionally and emotionally with the overall mission and awareness of how the contributors of each mesh with those of the rest. There should not be a single leadership agenda. Sensing the need of the time, altering the agenda and continuously rationalizing the agenda are very vital. The various leadership practices that are essential for smooth running of any enterprise are listed below.

If the scientists are new recruits, it is extremely important to give them time to acclimatizes themselves to the workspace. It is only when the poor performance persists even after a considerable period of time that one needs to initiate action. Leaders need to be friendly, correct the mistakes and not ignore them. They should give attention to what the employee perceives as the stumbling block in his or her performance. They should not let the employee get complacent about the amelioration in performance. Communication is a strong motivator as people have greater zeal to know what is happening to them and the organisation. Leadership styles differ and each leader selects a style best suited to his personality. Not only warmth and concern for people and total commitment to the highest values of integrity but also passion to win, to achieve, to enjoy and celebrate team victories, a commitment to excellence to the best are great binding features in any enterprise. The ability to get the message across is what ignites people in organisations to act in synchronisation with the given objectives and goals. While written communications may be appropriate in certain formal or legal contexts, personal chemistry operating in face to face interaction is important for getting results since it imparts and improves clarity on the spot, regarding the course of action to be taken, induces a sense of participation and pride in the ideas generated, facilitates unobstructive monitoring of on going action, promotes better mutual understanding and maximizes the synergy in the achievement of objectives.

Commitment to training and development, ensuring the introduction of the latest technologies and processes and flexibility to change and adapt to the needs of the customer must be the driving force. Risk acceptance, quick decision, staying power, killer instincts are expected qualities of leaders of private sector enterprises. Accountability, transparency, prudence, propriety and probity are expected qualities of leaders in public sector enterprises.

The relative contribution of every staff towards the job needs to be acknowledged. Leaders should encourage and praise the poor performers whenever they perform well. It is a fine thing to have ability, but the ability to discover ability in others is true capability. The unremitting glare of public scrutiny makes it incumbent on persons in leadership positions in government to inspire trust and confidence of the people as also every stakeholder with whom it has dealings. Trust welds

human beings into a cohesive team, enthusing them to throw themselves heart and soul into whatever tasks they undertake.

Leaders are required to amalgamate the varied talents and disciplines the generalists and specialists so as to pool their resources towards achieving the intended objective. They should set examples that are consistent with shared values and commitment. Sometimes, incentives are seen more as manipulation than motivation. Lavish incentives may indeed tempt the employees into sticking around longer if only to enjoy the perks, but in the long run, the hunger for skill recognition is what that counts.

Leaders should not only avoid public disparagement or criticism of their associates, but also build up their self-esteem and effectiveness. Recognizing individual contribution to the success of any project and celebrating the team's success regularly will inspire the subordinates. Once a decision is taken leaders should refrain from interfering in the execution, so long as the follow-up action conforms to the time frames and targets agreed upon. Leaders invariably should uphold exercise of judgment and discussion even if it is not in tune with their line of thinking, provided it is guided by consideration of public or national interest. Articulating the values clearly and repeatedly is the key to establishing long-term beneficial partnerships with all stakeholders.

Strategies need to be constantly evaluated and adapted both in response to anticipated changes in the environment and for proactively shaping the environment. Leaders need the right structure and teams that are tailor made for specific assignments to ensure flawless execution of the strategy and greater transfer of knowledge through cross-fertilization of ideas. They need people with a deep passion for the job and a desire to succeed. Quick decision making is critical and possible only by empowering people at all levels with leadership qualities. Encouraging exploration of uncertainty, while keeping an eye on the bottom line would help faster the entrepreneurial culture to exploit the abundant opportunities that exist in uncertain situations.

The 360^o feedback is a method of systematically collecting data about a person's performance and capabilities from a wide range of co-workers. Intensive behavioural interventions can be structured in a manner so that participants receive and give feedback in a non-threatening environment and yield a workable plan for setting goals for continued personal and professional development and strategies for attaining them.

Leaders should develop a sixth sense to critically assess innovations without stepping into the areas where the professional is responsible. The heads will be better off if they understand that most of the leaders are uncomfortable with stars that shine as brightly. They should be ready to experiment with new ideas and bold enough to take risks.

CONCLUSION

Indian farmers by and large are quite receptive towards

scientific innovations and the country is blessed with state of the art technology and highly talented scientists. For enhancing the productivity in the lands of farmers, one has to think of the development and management of agricultural research organisations where scientific ideas are conceived, nourished, culminated, generated and disseminated to the field. In an era of speed, adaptation and rejuvenation where agenda of agricultural research has changed, hierarchies have been replaced by networks, management by control has evolved into relationship based management and interaction. With the requirement for survival and growth in any ICAR institute, the deployment of the skills of supervisory officers is very important. Hence effective leadership practices help the people discover their potential by themselves, which in turn would lead to increased productivity in any organisation.

Paper received on : *September 17, 2014*
Accepted on : *October 22, 2014*

REFERENCE

Jayalekshmi, G and Kishore Kumar, N. 2000. Analysis of Human Resource Development Climate in a Research Institution.

Training Needs of Poultry Farmers in Hilly Areas

R. P. Sahu¹ and N. K. Singh²

ABSTRACT

Temperature of brooder, time of removal of chick guard, type of brooding system, method of providing feed to the brooding chicks, duration of heating brooder, house before chicks to brood, number of brooding days and purpose of chick guard, were perceived by the poultry farmers as more important training needs in brooding practices. While the aspects like percentage of moisture to be maintained in litter, period of regular and slight hoeing of litter in a viable shed, thickness of litter material to be added every month, replacement of litter from a viable poultry unit and basic qualities of the litter material were considered as more important training needs under litter management practices. The poultry farmers perceived that dose of fowl pox vaccine, age at which vaccination against fowl pox is done, dose of mareek's disease vaccine, age at which vaccination against mareek's disease is done, medicine used to kill internal parasites and rate of coccidistat for mixing with feed were the more important training needs in vaccination practices. Whereas, under feeding practices, source of vitamin in feed, source of protein in feed, source of minerals in feed and source of carbohydrates in feed were considered as more important training needs. Training assumes a special recognition in view of growing sophistication in poultry farming and allied technology. In order to make a training more meaningful and effective, the training needs of the poultry farmers have to be identified before implementing any training programme. The present study was undertaken with the objective to assess the training needs of poultry farmers in Bageshwar district of Uttarakhand.

Key words: Training needs; litter management practices; vaccination practices;

INTRODUCTION

Poultry is one of the fastest growing segments of the agriculture sector in India with an average growth rate of 6 per cent in egg production and 12 per cent per annum for broiler production. As a result, India is now the world's largest producer after China and USA. Regarding broiler production, India stands 5th with 2.25 million tons of broiler meat production contributing ₹ 9000 crores to the national economy. Consistent with increase in production and productivity, per capita availability has increased to 44 eggs and 1.76 kg poultry meat per annum but, it is still below the NIN recommendation of 180 eggs and 11 kg of poultry meat (Yadav and Kumar, 2008).

METHODOLOGY

The present study was conducted in Bageshwar district of Uttarakhand. Out of three blocks (Bageshwar, Kapkot and Garur) only two blocks namely Bageshwar and Garur were purposively selected. Twenty poultry farmers from each block were selected randomly. A total of 40 poultry farmers constituted the sample for the study purpose. The data were collected through a well-structured pre-tested interview schedule. Training needs

of each specific area were assessed using a three point rating scale *i.e.* most needed, somewhat needed and least needed and were quantified by assigning the scores as 3, 2 and 1 respectively. Mean scores were used to rate specific areas. Percentage analysis was carried out for simple comparison.

RESULTS AND DISCUSSION

The data incorporated in Table 1 indicate the mean training need scores and the extent of importance of training need against each component of poultry farming. The results explicate that the respondents perceived most important training need in the area of temperature of brooder with mean score (2.32) followed by time of removal of chick guards, type of brooding system, methods of providing feed to the brooding chicks, duration of heating brooder house before chicks to brood, number of brooding days and purpose of chick guard with the mean score 2.25, 2.12, 2.05, 1.97, 1.90 and 1.87 respectively. The least important training needs in poultry farming practices were ratio of dextrose and water to be offered to the brooding chicks (1.50), thickness of bedding material on which chicks are kept to brood (1.55), and offering plenty of water to chicks before offering feed

¹SMS, (Agril Extension) ²SMS, (Veterinary Science), Krishi Vigyan Kendra, Parvatiya Krishi Anusandhan Sansthan, (ICAR), Kafilgair-263628, Bageshwar, Uttarakhand(India)

(1.60). These findings were supported by the reports of Paul and Sharma (2005).

Table 1: Training need in brooding practices

Brooding practices	Degree of training needs			Total obtained score	Mean score	Rank
	Most needed	Somewhat needed	Least needed			
	Duration of heating brooder house before chicks to brood	16	07			
Type of brooding system	18	09	13	85	2.12	III
Temperature of brooder	21	11	08	93	2.32	I
Number of brooding days	14	08	18	76	1.90	VI
Thickness of bedding material on which chicks are kept to brood	05	12	23	62	1.55	IX
Ratio of dextrose and water to be offered to the brooding chicks	04	12	24	60	1.50	X
Method of providing feed to the brooding chicks	17	08	15	82	2.05	IV
Offering plenty of water to chicks before offering feed	06	12	22	64	1.60	VIII
Purpose of chick guard	13	09	18	75	1.87	VII
Time of removal of chick guards	20	10	10	90	2.25	II

Training needs of litter management practices

It is evident from Table 2 that on the basis of mean score, the litter management practices such as percentage of moisture to be maintained in litter (2.27), period of regular and slight hoeing of litter in a viable shed (2.22), thickness of litter material to be added every month (2.15), replacement of litter from a viable poultry unit (2.07) and basic qualities of the litter material (1.95) were rated as more required training areas. Whereas, effect of dry litter on birds (1.65), treatment of wet litter and hard crust formed there on (1.70) and thickness of litter material spread at the time of a starting a lot (1.82) were perceived as less important training needs. These findings were found to be partially supported by the reports of Tekale *et al.* (2009) and Bhagat and Nain (2005).

Training needs of vaccination

A perusal of data presented in Table 3 reveals that on the basis of mean score, the vaccination such as dose of fowl pox vaccine (2.35), age at which vaccination against fowl pox is done (2.32), dose of mareek's disease vaccine (2.27), age at which vaccination against mareek's disease is done (2.20), medicine used to kill internal parasites (2.15) and rate of coccidiostat for mixing with feed (2.10) were rated as more required training needs. Whereas, age at which broilers are vaccinated against Ranikhet (1.85), dose of Ranikhet vaccine (1.90), age at which broilers are vaccinated (IB) (1.92) and dose of infectious bronchitis (2.07) perceived as less important training needs. These

findings were supported by the reports of Paul and Sharma (2005).

Table 2: Training need in litter management practices
n=40

Litter management practices	Level of training needs			Total obtained score	Mean score	Rank
	Most needed	Somewhat needed	Least needed			
	Thickness of litter material spread at the time of starting a lot	12	09			
Basic qualities of the litter material	14	10	16	78	1.95	V
Thickness of litter material to be added every month	17	12	11	86	2.15	III
Percentage of moisture to be maintained in litter	20	11	09	91	2.27	I
Period of regular and slight and hoeing of litter in a viable shed	18	13	09	89	2.22	II
Effect of dry litter on birds	08	10	22	66	1.65	VIII
Treatment of wet litter & hard crust formed thereon	10	08	22	68	1.7	VII
Replacement of litter from a viable poultry unit	16	11	13	83	2.07	IV

Table 3: Training need in vaccination

Vaccination	Level of training needs			Total obtained score	Mean score	Rank
	Most needed	Somewhat needed	Least needed			
	Dose of Ranikhet vaccine	11	14			
Age at which broilers are vaccinated against Ranikhet	10	14	16	74	1.85	X
Dose of infectious bronchitis (IB)	14	15	11	83	2.07	VII
Age at which broilers are vaccinated (IB)	12	13	15	77	1.92	VIII
Age at which vaccination against fowl pox is done	21	11	8	93	2.32	II
Dose of fowl pox vaccine	22	10	8	94	2.35	I
Age at which vaccination against mareek's disease is done	18	12	10	88	2.20	IV
Dose of mareek's disease vaccine	20	11	9	91	2.27	III
Rate of coccidiostat for mixing with feed	15	14	11	84	2.10	VI
Medicine used to kill internal parasites	16	14	10	86	2.15	V

Training needs of feeding practices

It is evident from Table 4 that on the basis of mean score the feeding practices such as source of vitamin in feed (2.42), source of protein in feed (2.35), source of mineral in feed (2.27), source of carbohydrates in feed (2.22), quantity of feed per chick given to 29-35 days old chick (2.15), quantity of feed per chick given to during 36-42 days and onwards (2.07), quantity of feed per chick given to 22-28 days old chick (2.05), quantity of feed per

chick given to 16-21 days old chick (2.00) and quantity of feed per chick given to 4-7 days (1.92) were rated as more required training needs. Whereas, quantity of feed on an average a chick consumes during its life (1.50), ratio of poultry concentrate and grinded maize (1.55), percentage of total expenditure incurred on the cost of feeds (1.62), quantity of feed per chick given to 1-3 days old chick (1.77) and quantity of feed per chick given to 8-15 days old chick (1.80) were perceived as less important training needs. These findings were found to be partially supported by the report of Tekale *et. al.*, (2009) and Paul & Sharma (2005).

Table 4: Training need in feeding practices

Feeding practices	Level of training needs			Total obtained score	Mean score	Rank
	Most needed	Somewhat needed	Least needed			
	n=40					
Percentage of total expenditure incurred on cost of feeds	5	15	20	65	1.62	XII
Source of protein in feed	21	12	7	94	2.35	II
Source of carbohydrates in feed	18	13	9	89	2.22	IV
Source of vitamin in feed	23	11	6	97	2.42	I
Source of minerals in feed	20	11	9	91	2.27	III
Ratio of poultry concentrate and grinded maize	4	14	22	62	1.55	XIII
Quantity of feed per chick given to 1-3 days old chick	7	17	16	71	1.77	XI
Quantity of feed per chick given at the age of 4-7 days	10	17	13	77	1.92	IX
Quantity of feed per chick given to 8 -15 day s old days chick	9	14	17	72	1.80	X
Quantity of feed per chick given to 16-21 days old chick	12	16	12	80	2.00	VIII
Quantity of feed per chick given to 22-28 days old chick	13	16	11	82	2.05	VII
Quantity of feed per chick given to 29-35 days old chick	16	14	10	86	2.15	V
Quantity of feed given during 36-42 days and onwards	14	15	11	83	2.07	VI
Quantity of feed on an average a chick consumes during its life	3	14	23	60	1.50	XIV

Duration and place of training as desired by poultry farmers

It is seen from Table 5, that 52.5 per cent of the poultry farmers wanted training for a period of the three days, whereas, 22.5 per cent expressed the training for a period of one day. Similarly, 17.5 per cent of the poultry farmers were interested in training for a period of one week and very few *i.e.* 7.5 per cent expressed the desire for training for a period of two weeks. It is also evident from Table 5 that the majority (40.0 %) of the poultry farmers preferred their native village for training. The KVKs were given preference by 32.5 per cent of poultry farmers, whereas

17.5 per cent preferred key village centre, 7.5 per cent preferred tehsil and 2.5 per cent of poultry farmers preferred block.

Table 5: Distribution of poultry farmers on the basis of duration and place of training for training programme as desired n=40

Training duration		
Particulars	Frequency	Percentage
One day	9	22.5
Three day	21	52.5
One week	7	17.5
Two week	3	7.5
Training place		
A native village	16	40.0
Key village centre	7	17.5
At tehsil	3	7.5
At block	1	2.5
At KVK	13	32.5

CONCLUSION

The training programmes for poultry farmers should be organised keeping in view of the identified area of training need with selectively higher mean score values in order of importance. This can go a long way in improving the skills and competencies of the poultry farmers in adopting the modern poultry farming technology, thereby raising the level of poultry farm production. Also, in order to make the training more effective the programmes need to be conducted well in advance (before the commencement of the particular activity).

Paper received on : September 15, 2014 Accepted on : October 20, 2014

REFERENCES

Bhagat, G. R. and Nain, M. S. 2005. Training needs of farmers in Shivalik hills of Jammu and Kashmir. *Indian Research Journal of Extension Education* 5 (2&3): 44-46.

Paul, N. and Sharma, V. P. 2005. Knowledge of poultry farming practices among poultry farmers of Jammu. *Indian Research Journal of Extension Education* 5 (2&3): 67-71.

Tekale M. S., Deshmukh, D. S., Sawant, M. M., Bhuktar, T. B. and Otari. U. P. 2009. Training needs of goat keepers in weaker section of Jalana district. National seminar on enhancing of efficiency of extension for sustainable agriculture and livestock production, 29-30, December 2009. IVRI, Izatnagar, Bareilly.

Yadav, M. P. and Kumar, D. 2008. Technically the most advanced sector. The Hindu survey of Indian agriculture 93-95.

Constraints Perceived by Tribal Farmers in Adoption of Recommended Practices

Parvez Rajan¹, N. K. Khare², S. R. K. Singh³ and M. A. Khan⁴

ABSTRACT

KVKs are grass root level institutions imparting training programme for the rural people. Undoubtedly training helps to improve the knowledge and skill. Therefore, the present study was undertaken during 2013-14 to identify the constraints faced by the tribal farmers in adoption of improved production technology given by Krishi Vigyan Kendra (KVK) working in the tribal district of Madhya Pradesh. The study was conducted with 225 tribal farmers (beneficiaries) randomly selected from 12 villages of Mandla, Dindori and Shahdol district. Result of the study revealed that lack of agro based and rural industries for the income generation and employment to tribals, lack of current agricultural literature, demonstrations not conducted adequately and timely, co-operative societies are not providing seeds timely, lack of storage facilities were the top most ranked constraints faced by the tribal farmers.

Key words: Adoption, beneficiaries, constraints, krishi vigyan kendra

INTRODUCTION

Use of modern inputs and adoption of improved technologies are undoubtedly more important in increasing the productivity. Research evidences show that the adoption of recommended production technologies gives higher production, consequently more income to the farmers. But the extent of adoption of recommended technologies by the farmers depends upon various factors as well as constraints faced by them. Constraints refer to the item of difficulties faced by farmers. (Tiwari and Pathek, 2011). Krishi Vigyan Kendra is a project of ICAR for testing and transfer of Agricultural technologies to bridge the gap between production and productivity and to increase self employment opportunities among the farming communities. The trainings offered here follow the principles of Learning by doing and "seeing is believing". It offers skill and knowledge oriented trainings in multidisciplinary areas. The KVK is the light house of knowledge to the farming community of the State. KVK's function by the collaborative participation of scientists, subject matter experts, extension workers and farmers. Tribal peoples have significant contributions to the local and national economy by being participated in income generating activities (IGAs) such as vegetable production, nursery establishment, livestock and poultry rising, cottage industry, small business *etc.* Unfortunately, the tribal people community is almost unknown to modern agricultural technology and has been left out from the main stream of economic development, (Mondal, 2006)

In Madhya Pradesh state 47 KVKs are functioning under zone VII ZPD, out of which 6 KVKs are working in tribal districts. These KVKs are primarily focused on dissemination of location specific technologies access to information for upliftment and empowerment of tribals. The government is also running various programmes to improve the economic conditions of the tribals. Agriculture being the backbone of tribal economy, it is envisaged to enhance agricultural production in tribal areas, (Kirar, 2009).

Constraints refer to the factors or conditions, which limit or restrict the use of an improved practice or innovation resulting in low production or insufficient use of resources. Training programme for the tribal people should be designed based on their felt needs. Training needs of the tribal people refers to one's need for gaining knowledge and skills on different agricultural and non-agricultural aspects and successful adoption of these activities (Rokonuzzaman, 2013). The present study 'entitled constraints perceived by tribal farmers in adoption of recommended practices' was undertaken with the prime objectives of identifying the major constraints faced by the tribal farmers.

METHODOLOGY

The study was carried out in three districts of Madhya Pradesh *i.e.* Mandla Dindori and Shahdol during 2013-14 as these districts comes under tribal districts of M.P. The Mandla district comprises of seven blocks out of which

¹Ph.D. Scholar, ²Head, Deptt. of Extn. Edu., ³Sr. Scientist, ZPD Zone VII ⁴Directorate of Extension Services, JNKVV, Jabalpur

two blocks were selected and from each selected block two adopted villages of KVKs were selected *i.e.*, Prempur, Bhavarda, Silwara and Madanpur. The Dindori district also comprises of seven blocks out of which two blocks were selected and from each selected block two adopted villages of KVKs were selected *i.e.*, Rusamal, Nariya, Bilasar and Chaura. The Shahdol district comprises of five blocks out of which two blocks were selected and from each selected block two adopted villages of KVKs were selected *i.e.*, Sinduchunia, Kalyanpur, Shahpur and Kudeli. A comprehensive list of tribal farmers of each selected village was prepared with the help of KVKs of each district. 75 equal numbers of beneficiaries from each district was selected randomly, thus the total 225 tribal farmers was the sample size of the study.

RESULTS & DISCUSSION

The data presented in Table 1 showed profile of beneficiaries and non- beneficiaries. The study revealed that the highest percentage of beneficiaries 52 per cent belonged to middle age group. The data indicates that about 23.55 per cent of the beneficiaries had education up to high school.

In case of occupation most of the beneficiaries 49.33 per cent was doing agriculture + other livelihood of the family. In case of annual income most of the beneficiaries 42.23 per cent had medium annual income (₹ 1,00,001 -1,76,000/-). About 35.12 per cent of beneficiaries had medium land holdings. In case of farming experience highest percentage of beneficiaries 38.67 per cent had medium experience.

The data regarding attitude towards technological demonstration indicates that majority of beneficiaries 69.33 per cent had high attitude towards technological demonstration and 77.78 per cent had high knowledge about KVK activities perception of beneficiaries towards scientific agriculture 53.34 per cent of beneficiaries had high perception. In case of market orientation, 36.88 per cent of beneficiaries had high market orientation and 77.78 per cent of beneficiaries had high scientific orientation.

It is evident from the data that about 67.56 per cent of beneficiaries had high aspiration level. In case of participation 47.11 per cent had medium participation in KVK activities, 80.00 per cent beneficiaries had medium use of information sources and 64.45 per cent beneficiaries had high training exposure.

Table 1: Profile of tribal farmers

A. Independent Variable	CATEGORIES	N= 225	
		Beneficiaries	
		Freq	% age
Age	Young age group (Up to 35 years)	66	29.34
	Middle age group (36-50yrs)	117	52.00
	Old age group (Above 50)	42	18.66
Education	Illiterate	39	17.34
	Up to primary school	31	13.78
	Up to middle school	34	15.11
	Up to High school	53	23.55
	Up to Higher Secondary	53	23.55
	Up to College	15	06.67
	Agriculture	35	15.55
Occupation	Agriculture + Labour	23	10.22
	Agriculture + Other	111	49.33
	Agriculture + Cast Occupation	11	04.88
	Agriculture + Independent Business	45	20.00
Annual income	BPL (Below ₹ 24,000/-)	30	13.33
	Low income (₹ 24,000 - 1,00,000/-)	59	26.22
	Medium income (₹ 1,00,001 – 1,76,000/-)	95	42.23
	High income (₹1,76,001 – 2,50,000/-)	41	18.22
Land Holding	Marginal (Below 1 ha)	40	17.77
	Small (1.01 – 2 ha)	65	28.88
	Medium (2.01 – 4 ha)	79	35.12
	Large (Above 4 ha)	41	18.23
Farming Experience	Low experience (5 - 16 years)	78	34.66
	Medium experience (17 - 27 years)	87	38.67
	High experience (28 - 38 years)	60	26.67
Attitude towards Technological Demonstration	Low (10 – 23)	40	17.77
	Medium (24 - 36)	29	12.88
	High (37 - 50)	156	69.33
Knowledge about KVK activities	Low (Up to 8)	30	13.33
	Medium (19 - 17)	20	08.89
	High (18 – 25)	175	77.78
Perception towards Scientific Agriculture	Low (7 - 21)	40	17.78
	Medium (22 - 35)	65	28.88
	High (36 - 49)	120	53.34
	Low (Up to 3)	63	28.00
	Medium (4 - 6)	79	35.12

Market Orientation	High	(7 - 10)	83	36.88
	Low	(6 - 18)	30	13.33
Scientific Orientation	Medium	(19 - 30)	20	08.89
	High	(31 - 42)	175	77.78
	Low	(3 - 8)	12	05.33
Aspiration level	Medium	(9 - 14)	61	27.11
	High	(15 - 20)	152	67.56
	Low	(Up to 4)	17	07.55
Participation in KVK activities	Medium	(5 - 9)	106	47.11
	High	(10 - 14)	102	45.34
	Low	(0 - 6)	20	08.88
Use of information sources	Medium	(7 - 13)	180	80.00
	High	(14 - 20)	25	11.12
	Low	(Up to 2)	28	12.44
Training exposure	Medium	(3 - 4)	52	23.11
	High	(5 - 6)	145	64.45

CONSTRAINTS

Economic constraints:

Table no 2. reflected that “Lack of agro based and rural industries for the income generation and employment to tribals” was the top most economic constraints faced by beneficiaries of KVK. This was followed by “Lack of money to purchase useful inputs” “Lack of money for land preparation” “High cost of seeds” and “High labour charges”. Similar result also reported by Paniker and Chaudhari (2000). Thus it is clear from above table and discussion “Lack of agro based and rural industries for the income generation and employment to tribals” was the major economic constraints and “High labour charges” was the least economic constraints faced by the beneficiaries.

Table No 2: Economic constraints

Constraints	Beneficiaries N=225		
	f	%	Rank
Lack of agro based and rural industries for the income generation and employment to tribals.	90	40.00	I
Lack of money to purchase useful inputs.	50	22.22	II
Lack of money for land preparation.	45	20.00	III
High cost of seeds.	40	17.77	IV
High labour charges.	30	13.33	V

Table No 3: Technical constraints

Constraints	Beneficiaries N=225		
	f	%	Rank
Lack of information's about tribal programmes and insurance policies.	50	22.22	II
Lack of current agricultural literature.	80	35.55	I
Lack of knowledge about insects and diseases.	40	17.77	III
Lack of crop related training.	25	11.11	IV
Lack of knowledge about soil testing.	10	4.44	V
Technological skills are not developed through special training programme.	10	4.44	VI

Technical constraints: Table no 3. Shows that “Lack of current agricultural literature” followed by “Lack of information's about tribal programmes and insurance policies” and “Lack of knowledge about insects and diseases” “Lack of crop related training” “Lack of knowledge about soil testing” “Technological skills are not developed through special training programme”. The work of Girase *et al.* (2004).

An overall picture of above table indicates that “Lack of current agricultural literature” was the major technical constraint while “Lack of knowledge about soil testing” and “Technological skills are not developed through special training programme” was the least important technical constraints as expressed by the beneficiaries farmers of KVKs.

Table No 4: Extension constraints

Constraints	Beneficiaries N=225		
	f	%	Rank
Lack of technical guidance by the KVK.	50	22.22	III
Irregular visit of FEOs.	100	44.44	II
Demonstrations not conducted adequately and timely	160	71.11	I
Lack of trainings provided by KVKs.	40	17.77	IV

Extension constraints: It is clear from the table no.4 that the “Demonstrations not conducted adequately and timely” “Irregular visit of FEOs” “Lack of technical guidance by the KVK” “Lack of trainings provided by KVKs” ranked first, second, third and fourth respectively. The Singh *et al.* (2013) Therefore, it is reflected from above result the most of the beneficiaries were facing the as major constraint “Demonstrations not conducted adequately and timely” and constraints “Lack of trainings provided by KVKs” was least constraint obtained by the beneficiaries of KVKs.

Table No 5: Situational constraints

Constraints	Beneficiaries N=225		
	f	%	Rank
Low market price.	200	88.88	II
Lack of storage facilities.	220	97.77	I
Lack of Irrigation facilities.	170	75.55	III
Lack of market.	150	66.66	IV

Situational constraints: It is evident from the above data “Lack of storage facilities” ranked first in situational constraints followed by “Low market price” “Lack of Irrigation facilities” and “Lack of market”.

Thus it can be concluded from above result that “Lack of storage facilities” was the major constraints and “Lack of market” was the least constraints as expressed by the tribal farmers.

CONCLUSION

On the basis of above study it may be concluded that the major constraints as perceived by the beneficiaries were lack of agro based and rural industries for the income generation and employment to tribals, lack of current agricultural literature, demonstrations not conducted adequately and timely, co-operative societies are not providing seeds timely, lack of storage facilities as economic constraints, technical constraints, extension constraints and situational constraints, respectively. They also suggested following point.

- i. Improved seeds should be made available in time and in sufficient quantity by the KVK.
- ii. Formation of more cooperative societies.
- iii. Adequate fertilizers made available at time.
- iv. On field demonstrations.
- v. Frequent visits to research farms.
- vi. Availability of current agricultural literature.
- vii. Maximum contact by scientists of KVK.
- viii. Cost of fertilizers and weedicides should be reduced.
- ix. Crop insurance made simple.
- x. More intensive off campus training programme.

Effective training program designed for the tribal people for better livelihood will go a long way in their required daily expenditure. Hence, it is necessary to have

a complete understanding of the needs of the tribal people before launching aforementioned training programme.

Paper received on : September 20, 2014
Accepted on : October 24, 2014

REFERENCES

- Girase G.P, Kalantari L.B and Tekale V.S. 2004. Constraints faced by the farmers in the adoption of recommended package of practices of cotton. *Asian Journal of Extension Education*. Vol. 22(1): 157-160.
- Kirar B.S and Mehta B.K. 2009 Extent of Knowledge of Tribal Farmers about Rice Production Technology. *Indian Research Journal of Ext Edu*. Vol. 9 (1): 32-35.
- Mondal, H. 2006. Women in Rice Post Harvest Activities and Their Training Needs in Kaligong Upazilla of Lalmonirhat District under RDRS. *M.S. (Ag.Ext.Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh, Bangladesh. p 87.
- Paniker, Beena C. and Chaudhari M.R 2000 Constraints faced by rural women in receiving training in the modern practices of Agriculture. *Agril. Ext. Review*. Vol. 12 (5): 11-14.
- Rokonuzzaman M. 2013 Training Needs of Tribal People Regarding Income Generating Activities. *Indian Research Journal of Ext Edu*. Vol. 13(2): 1-7.
- Singh A.K, Singh K.C, Singh D and Singh J. 2013 Evaluation of FLD to enhance the yield of sesame in Sidhi district of Madhya Pradesh. *Research Journal of Social and Life sciences* 15(2): 275-280.
- Tiwari, A. K. and Pathek, J 2011 Constraints Faced by Rice-Wheat Growers in Training Imparted by KVKs. *Indian Journal of Extension Education*. Vol.47 (3&4): 82-83.

A Comparative Study of Impact of KVKs Managed by Different Agencies in Uttar Pradesh

Narendra Prasad¹, S. K. Verma², K. M. Singh³, L. B. Singh⁴ and R. P. Sahu⁵

ABSTRACT

The Krishi Vigyan Kendra (KVK) provides a strong training support for bringing about production breakthrough in agriculture. Krishi Vigyan Kendras are functional in carrying out extension activities in accordance with government programme schedule and providing support to raise the skill of the farmers which will help them to increase their farm productivity. On the basis of findings and observations of the study, it may be concluded that most of the farmers were having either marginal or small holdings. Majority of the respondents were having farming as their main occupation. The KVK beneficiaries differed significantly in case of knowledge, attitude and skill. New agricultural technologies dissemination through KVK were adopted by the farmers to a considerable extent. Highest adoption was found by the KVK of NGO which may be due to better and adequate infrastructure and other facilities. Among the three selected KVKs, the performance of KVK of the NGO, Sultanpur was found to be superior. Nearly 60 per cent beneficiaries reported that after receiving training from KVK, their farm productivity increased. Forty per cent of the beneficiaries fully adopted recommendations of the KVK, while 40 per cent adopted it partially.

Keywords: Krishi Vigyan Kendra, non-government organization, impact, respondents

INTRODUCTION

Training of farmers and in-service extension functionaries is a critical input for the rapid transfer of agricultural technology. *Krishi Vigyan Kendras* (KVKs) were evolved as an innovative institution for vocational training in agriculture and allied subjects. The KVKs are the grass-root level technology transfer and vocational training institutions designed for bridging the gap between the available technologies on one hand and their application for increased productions on the other. Hence, to evaluate the effectiveness and performance of selected three *Krishi Vigyan Kendras* on the farmers of the area, the present study was undertaken with the objectives: To study the personal, socio-economic and communication characteristics of the respondents of three KVKs, to study the level of knowledge of the respondents towards the programme of three KVKs, and to study the adoption behavior of the respondents towards the programme of three KVKs.

METHODOLOGY

The present study was conducted in three KVKs of Uttar Pradesh namely, KVK, Sultanpur, KVK, Bareilly and KVK, Shahjahanpur. Twenty villages were selected from the each KVK for the selection of the respondents; eight adjacent to KVK; eight in the radius of 20-25

kilometres; and two beyond 25 kilometres from the KVK. Only such villages were selected where farmers attended the training programmes of the KVK. About 25 respondents were selected from each selected village. The lists of beneficiaries of three selected KVKs were prepared. Fifty beneficiaries from each selected KVK were selected randomly as respondents for the study. In this way, 300 beneficiaries of KVK comprised the sample size. Scoring techniques of socio-economic status suggested by Trivedi and Pareek (1964) with slight modification was followed to assess the socio-economic status of the respondents. To study the communication behaviour and information sources utilization pattern (ISUP), the availability, contact and competency for understanding was included. Each information source was measured on a 3 point continuum of frequently, occasionally and rarely and score value of 3, 2 and 1 was assigned to each level for positive questions while for negative questions, score values were assigned in reverse order *i.e.* 1, 2 and 3. Information sources utilization pattern of the respondents was categorized into three categories *i.e.* low, medium and high depending on the mean score values. A knowledge test was developed for measurement of knowledge of the respondents reading scientific rice production technology. Based on the pre-test, suitable modification and deletions of questions were done. For quantifying the level of knowledge of respondents a score of one (1) was assigned to each

correct reply and zero (0) to incorrect or no reply. The total number of items in the knowledge test were '20'. Thus, a respondent could get a maximum of 20 and a minimum of zero score. Knowledge score obtained by the respondents were then divided into three classes as low, medium and high. Adoption of recommended agriculture technology selected to cultivation of rice was measured by means of "Adoption Intensity Index". The following formula was used to work out the individual adoption extent

$$\text{Adoption extent} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{N} \times 100$$

Where $x_1, x_2, x_3, \dots, x_n$ are correct answer for first, second, third, ..., n^{th} question and 'N' is the maximum possible score to secure. Finally, the adoption index was measured by the formula :

$$\text{Adoption index} = \frac{\text{Total score obtained}}{\text{Maximum possible score}} \times 100$$

The respondents were divided into three categories as low, medium and high on the basis of scores obtained by them. The following criteria was used for categorizing the adoption behaviour of the respondents:

<u>Score</u>	<u>Category</u>
Up to 8	low
9 - 16	Medium
Above 17	high

The data were collected from the selected respondents with the help of pre-tested structured interview schedule through personal interview method. The data so collected were arranged, classified, quantified and tabulated systematically.

RESULTS AND DISCUSSION

From the Table 1, it is evident that majority of the respondents (35.67%) were in monthly income group of ₹ 2501/- to 5000/- followed by the group of upto ₹ 2500/- with 34.33 per cent and monthly income group of ₹ 5001/- and above with 30.00 per cent.

Table 1: Distribution of beneficiaries according to their monthly income

Monthly Income (₹)	Number of Beneficiaries			Total
	KVK Shahjahanpur f(%)	KVK Sultanpur f(%)	KVK Bareilly f(%)	
	Up to 2500	40 (40.00)	29 (29.00)	
2501 -5000	28 (28.00)	44 (44.00)	35(35.00)	107(35.67)
5001 and above	32 (32.00)	26 (26.00)	31(31.00)	90(30.00)
Total	100	100	100	300

Table 2: Distribution of beneficiaries according to their education

Educational level of the respondents	Number of Beneficiaries			Total
	KVK Shahjahanpur f(%)	KVK Sultanpur f(%)	KVK Bareilly f(%)	
	Illiterate	20 (20.00)	12 (12.00)	
Can Read only	19 (19.00)	9 (9.00)	13(13.00)	41(13.67)
Primary School	28 (28.00)	24 (24.00)	15 (15.00)	67(22.33)
J.H.S	12(12.00)	18(18.00)	25(25.00)	55(18.33)
High School	9(9.00)	17(17.00)	12(12.00)	38(12.66)
Intermediate	7(2.00)	10(10.00)	14(14.00)	31(10.33)
Graduate	5(5.00)	10(10.00)	10(10.00)	25(8.33)
Total	100	100	100	300

The data presented in Table 2 showed that 35 per cent of the beneficiaries were having education upto primary school or were even illiterate. Beneficiaries having education upto Junior high school and high school were 18.33 and 12.66 per cent, respectively. Only 10.33 per cent and 8.33 per cent beneficiaries were having education upto education upto intermediate level and graduation level respectively.

Table 3: Distribution of beneficiaries according to their land holding

Type of farmer	Number of Beneficiaries			Total
	KVK Shahjahanpur f(%)	KVK Sultanpur f(%)	KVK Bareilly f(%)	
	Marginal (Up to 1 ha.)	22(22.00)	30(30.00)	
Small (1 – 2 ha.)	58 (58.00)	46 (46.00)	51 (51.00)	155(51.66)
Semi-Large (2 – 3 ha.)	12(12.00)	14(34.00)	15(15.00)	41(13.67)
Large (Above 3 ha.)	8(8.00)	10(10.00)	4(4.00)	22(7.33)
Total	100	100	100	300

The Table 3 indicated that 51.66 per cent beneficiaries were small farmers whereas, 27.34 per cent beneficiaries were marginal farmers. Only 13.67 per cent and 7.33 per cent beneficiaries were semi-large farmers and large farmers respectively. Thus, it can be concluded that majority of beneficiaries were having small and marginal land holdings.

Table 4: Distribution of the beneficiaries according to their socio-economic status

Categories	Number of Beneficiaries			
	KVK			Total
	Shahjahanpur f(%)	Sultanpur f(%)	Bareilly f(%)	
High (Score above 35)	22 (22.00)	26 (26.00)	30 (30.00)	78(26.00)
Medium (Score 18 - 34)	52 (52.00)	44 (44.00)	59(59.00)	155(51.66)
Low (Score up to 17)	26(26.00)	30(30.00)	11(11.00)	67(22.34)
Total	100	100	100	300

It is apparent from Table 4 that 51.66 per cent beneficiaries were from medium socio-economic status group followed by 26 per cent beneficiaries from high socio-economic status group and 22.34 per cent beneficiaries from lower socio-economic status group.

Table 5: Distribution of beneficiaries of KVK Shahjahanpur, Sultanpur and Bareilly according to their communication behaviour

Sources /channel	n=300					
	Shahjahanpur		Sultanpur		Bareilly	
	Score value	Rank order	Score value	Rank order	Score value	Rank order
News paper	1.77	VIII	1.72	VIII	1.68	VIII
Block officials	1.11	IX	1.01	IX	1.21	IX
Farm magazine	2.83	IV	2.75	IV	2.80	IV
Demonstration	3.66	III	3.36	III	3.60	III
Television / radio	2.13	VII	2.13	VII	2.15	VII
Group meeting/ discussion	5.42	I	5.55	I	5.29	I
Folder/leaflet/ pamphlets	4.45	II	4.45	II	4.61	II
Agricultural Scientists	2.53	V	2.53	V	2.63	V
Input Dealer	2.19	VI	2.19	VI	2.13	VI
Farmer's fair/Exhibition	0.19	X	0.19	X	0.09	X
Mean score	1.93			1.87		1.57
Overall mean score	2.39			2.33		2.23

It is evident from the Table 5 that KVK, in case of Shahjahanpur, group meeting/ discussion got highest score value (5.42) followed by folder/leaflet/pamphlets (4.45), demonstration (3.66), farm magazine (2.83) and agricultural scientists (2.53) and occupied rank order I, II, III, IV and V respectively. Further, input dealer (2.19), television / radio (2.13), newspaper (1.77), block officials (1.11) and farmer's fair (0.19) got the rank order VI, VII, VIII, IX and X, respectively. The same trend found in KVK Sultanpur and KVK Bareilly. So, it may be concluded that among all the informal sources, group meeting / discussion, was the most important sources of information used by the farmers. The television/radio was the most frequently used important information source among all mass media sources.

Table 6: Level of knowledge of beneficiaries

Categories	Number of Beneficiaries	n=300	
		Percentage	
Low (upto-10)	106	35.33	
Medium (11-15)	112	37.34	
High (above-16)	82	27.34	
Total	300	100.00	

A critical look of the Table 6 focuses that the majority of respondents (37.34%) were found to be possessing medium level of knowledge, followed by 35.33 per cent and 27.34 per cent low level and high level of knowledge respectively. On the basis of above findings it can be concluded that majority of respondents had average knowledge level regarding the programmes of the KVK. Similar findings were also reported by Anuradha, (1992).

Table 7: Adoption behaviour score of beneficiaries

Categories	Number of Beneficiaries	n=300	
		Percentage	
Low (upto - 10)	99	33.00	
Medium (10 - 20)	128	42.66	
High (above - 21)	73	24.34	
Total	300	100.00	

From the Table 7 it is clear that the majority of beneficiaries (42.66 %) were having medium adoption behaviour followed by 33.00 per cent and 24.34 per cent beneficiaries exhibiting low and high level of adoption behaviour respectively. On the basis of these findings, it can be concluded that majority of respondents have adopted new agricultural technologies provided by the KVK either fully or partially. Similar findings were also given by Anuradha (1992) and Rahman, and Hossain, (1995), Singh, Gautam and Singh 2012.

CONCLUSION

The study revealed that majority of the farmers were having either marginal or small holdings with farming as their main occupation. The knowledge level and adoption behaviour of beneficiary farmers varied significantly as a result of exposure to the KVKs. The scientific innovative agricultural technologies transferred by KVKs were adopted either partially or fully by the beneficiary farmers.

Paper received on : September 10, 2014
Accepted on : October 24, 2014

REFERENCES

Anuradha, N. 1992. A study on the knowledge and adoption of scientific storage of food grains at domestic level by the trained farm-women in Nalgonda district of

Andhra Pradesh. Unpublished M.Sc. (Ag.) Thesis. College of Agriculture, Rajendranagar, Hyderabad. (A.P.)

Kalra, A. and Sandhu, N. S. 1994. Assessment of training programmes organized at the agricultural universities in India. *J. Res. Punjab Agril. Univ.* 31:227-230.

Rahman, M. and Hossain, M.D. 1995. Analysis of socio-economic characteristics of the farmers in relation to adoption of improved farm practices in boro rice cultivation. *Annals of Bangladesh Agric.* 5:15-21.

Singh, Alka, Gautam, U. S. and Singh, S. R. K. Socio-economic Empowerment of Farmwomen in Madhya Pradesh Through Suitable Technological Interventions: A Krishi Vigyan Kendra (KVK) Approach, *Indian Journal of Extension Education* Vol. 48, No. 1 & 2, 2012 (74-77)

Communication Behaviour of Dairy Farmers: A Source for Milk Quality Improvement

Vikram Singh¹, Jancy Gupta² and M. S. Nain³

ABSTRACT

The present study was conducted in dairy cooperative system of Rajasthan state in organized sector i.e. Rajasthan Cooperative Dairy Federation (RCDF). A multistage proportionate random sampling procedure was applied to draw the sample for the study. Out of 21 unions four district milk unions were selected for the present study viz. Alwar, Bhilwara, Bikaner and Hanumangarh. A total of 120 farmers were selected on the basis of proportionate random sampling. The results of this study revealed that most of the dairy farmers used friends, progressive milk producers, veterinary officers and neighbours as information sources; group discussion, group meetings, newspaper and Dairy Cooperative Society (DCS) were important channels for information seeking about proper 'cattle shed' and 'milking procedure'. However, Milk route supervisor, progressive milk producer, friends and neighbours were found as major information sources; whereas, DCS, educational tour and group discussion were important channels for information used by the dairy farmers for information seeking about 'cleaning of utensil' and 'post milking practices'.

Keywords:

INTRODUCTION

Creating social change through media is not about the tools you use, the technologies, the perceived quality of the media produced. It's about a real and deep understanding of needs: knowing what will work for your community. Professor Clemencia Rodriguez - Colombia.

Use of right information at the right time is the key success in any endeavor. The real challenge is not to producing information or storing information, but making people to use information. Information is a critical input in the operation and management of organizations. Timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing, leading and controlling (Babu, et.al. 1997). In the information age, extension has a major role in devising way to increase the use of knowledge and information by the people and for the people. As Buford (1990) pointed out, the effectiveness of Agricultural Extension depends to a large extent on information exchange between and among farmers on the one hand, and broad range of other actors on the other hand. Extension, along with education and research are typically seen as service provider public or private agency that responds to the needs of farmers and rural people for knowledge that they can use to improve their farm productivity, incomes and welfare and to manage natural resources, on which they depend in a sustainable way. It brings information and new technologies to farming

communities, allowing them to improve their production, incomes, and standards of living. Considering the situation, extension has little choice but to become information-based. This article identifies information sources and channels they use to get information and their extent of utilization with information disseminating behaviour.

METHODOLOGY

The present study was conducted in dairy cooperative system of Rajasthan state of India, which was purposively selected due to the growth rate of milk procurement and its packed milk marketing was highest in organized sector i.e. Rajasthan Cooperative Dairy Federation (RCDF). This federation is having 21 district cooperative milk unions. A multistage proportionate random sampling procedure was applied to draw the sample for the study. Out of 21 unions four district milk unions were selected for the present study viz. Alwar, Bhilwara, Bikaner and Hanumangarh. A total of 120 farmers were selected on the basis of proportionate random sampling. The data were collected finally from all the selected 16 DCSs and 120 respondents.

Communication behaviour: The communication behaviour referred to the tendency of farmers to seek and share technical information related to farming for enhancing their knowledge and skill. It was studied under two dimensions, namely; Information seeking behaviour and information disseminating behaviour.

¹Scientist, Indian Council of Agricultural Research, New Delhi, India.110012, ²Principal Scientist, National Dairy Research Institute, Karnal, Haryana, India.132001. ³Senior Scientist, Indian Agricultural Research Institute, New Delhi. 110012

Information Seeking Behaviour: Operationally it was defined as the behaviour which is characterized by the number of sources and channels used and frequency of use of sources and channels as perceived by farmers (Khan, *et. al.* 2011).

The data were collected against four aspects of CMP *viz.* cattle shed, milking procedure, cleaning of utensils and posts milking practices for measuring the use of information sources and channels. (Here, the sources were defined as individuals or institutions who, develop or disseminate the information on the basis demand of an information seeker; whereas channels were used as method for disseminate this information). To measure the frequency of use of sources and channels on four point continuum scale *viz.* most often, often, some time and never by giving the score of 3, 2, 1 and 0 respectively.

Information Disseminating Behaviour: Following equation was used for evaluating scores of individual dairy farmer under study:

$$IDiB = \sum Nd + \sum Fd$$

Where,

IDiB = Information Disseminating Behaviour,
Nd = Number of fellow farmer being disseminated,
Fd = Frequency of dissemination.

Here, four CMP aspects were used for this purpose *viz.*, cattle shed (which comprises all aspects of housing, animal health management, feeding and use of scarce resources), milking procedure (it included all the aspects of pre milking, actual milking and post milking), cleaning of utensils (type of utensils, cleaning agents with procedure, management of utensil) and post milking practices (it consider about the time between pail to DCS, disposal and cooling of milk).

RESULTS AND DISCUSSION

Use of information sources for different CMP practices: The findings in relation to number of dairy farmers using different sources of information about individual CMP practices presented in Table-1 (A). The critical view of this data revealed that, Cleaning of Utensil and Cattle Shed 'friends' as a source of information was used by all the respondents with 15.96 percent, while progressive milk producers and Veterinary Officer (VO) were used by same number (14.48%) respondents. The neighbours were found as a source of information to 13.14 percent farmers. It was followed by relatives and progressive milk producers (10.59%). On the other hand

NGOs and agricultural graduates were used by very less numbers of farmers.

A perusal of the Figure-1 showed that the friends were maximum frequency and was ranked first followed by, progressive milk producers and VO who got second rank, respectively. The research stations/ KVK and agriculture graduates were on the least ranks.

Regarding the Milking Procedure also, friends were used as source by all the respondents amounting to 17.77 percent, while 15.52 percent contacted progressive milk producer for the same. However, neighbours were used as a source of by 15.07 percent of farmers, followed by VO (14.62%), and milk route supervisor (13.43%). At the same time A.T.I.C. and agriculture graduates were used by very less number of farmers *i.e.* 0.89 and 0.29 percent, respectively.

Figure-1: Use of Information Sources

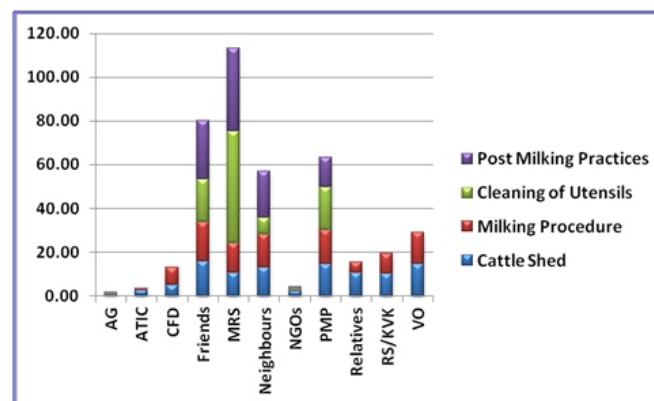


Figure-1 is revealed that, milk route supervisor was used as the main source of information by majority of dairy farmers (51.41%), followed by friends and progressive milk producer with same score 19.82 percent. Here neighbours were used by only 7.54 percent farmers. It is very important to know that not a single farmer used cattle feed dealer, VO, research stations/ KVK, and A.T.I.C as source of information for the cleaning of utensils. The rank order indicated that Milk route supervisor was ahead as a source of information to all other sources, followed by friends and progressive milk producers, neighbours, NGOs, agricultural graduates, and relatives.

As far as the information of Post Milking Practices is concerned, more than one third of respondents (37.74%) used milk route supervisor, followed by friends (26.74%), neighbours (21.06%), progressive milk producers (13.53%), NGOs (0.62%) as a source of information and agriculture graduates were used by only one farmer. But

not a single farmer was a used cattle feed dealer, VO, research stations/ KVK and A.T.I.C. as the source of information for this aspect. The above discussed results showed that friends, neighbours, progressive milk producers, and milk routes supervisors used as source of information by the farmers for all four practices. At the same time cattle feed dealer, VO, research stations/ KVK, and A.T.I.C were not used by farmers for latter two practices. The close observation in the study area and field experience of researcher pointed that, the “farmers were very suspicious in the nature and they did not believe in the information furnished by the individuals who are not in contact with them.

They accepted an idea or innovation about farm practices from his friends, neighbours, progressive milk producers' relatives and milk route supervisors, who always lived with DCS members. In case of VOs, KVKs, A.T.I.C. and agriculture graduates' conditions were different because first all they were very less in study area of all milk unions and secondly they did not have any relation with cleaning of utensils and post milking practices. These results are having similarity with the findings of Khan, *et. al.* (2010), Kumari and Jaharana (2014), and Singh and Singh 2012, Lawrence and Ganguli (2012).

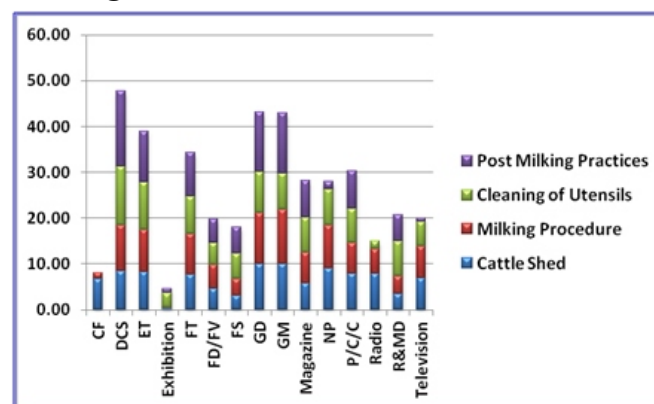
Table 1: Use of information sources and channels for different CMP practices

Sources & Channels	Cattle Shed (%)	Milking Procedure (%)	Cleaning of Utensils (%)	Post Milking Practices
A. Sources of Information				
Agriculture Graduates (AG)	0.67	0.29	0.47	0.31
Agriculture Technology Information Centre (ATIC)	2.54	0.89	0.00	0.00
Cattle Feed Dealers (CFD)	4.96	7.92	0.00	0.00
Friends	15.96	17.77	19.82	26.74
Milk Route Supervisors (MRS)	10.59	13.43	51.41	37.74
Neighbours	13.14	15.07	7.54	21.06
Non-Governmental Organization (NGOs)	2.27	0.29	0.94	0.62
Progressive Milk Producers (PMP)	14.48	15.52	19.82	13.53
Relatives	10.59	4.93	0.00	0.00
Research Stations (RS)/KVK	10.32	9.26	0.00	0.00
Veterinary Officers (VO)	14.48	14.62	0.00	0.00
B. Channels of Information				
Cattle Fair (CF)	6.70	1.38	0.00	0.00
Dairy Cooperative Society (DCS)	8.38	9.99	12.99	16.48
Education Tour (ET)	8.20	9.20	10.49	11.11
Exhibition	0.33	0.09	3.18	0.96
Farmer's Training (FT)	7.62	8.91	8.23	9.60
Filed Day (FD) /Filed Visit (FV)	4.52	5.28	4.77	5.21
Film Show (FS)	3.09	3.62	5.57	5.76
Group Discussion (GD)	10.05	10.98	9.02	13.16
Group Meeting (GM)	10.05	11.76	7.97	13.16
Magazine	5.78	6.75	7.69	7.96
News Paper (NP)	9.04	9.30	7.97	1.78
Posters /Charts /Circulars	7.96	6.66	7.42	8.24
Radio	7.96	5.19	1.85	0.00
R&MD	3.44	3.91	7.56	5.76
Television	6.88	6.98	5.30	0.82

Use of information channels for different CMP practices: The Table-1 (B) also incorporated the findings related to the frequencies of farmers using different channels of information about individual CMP practices. The table appraised that for the information on properly constructed and maintained cattle shed group discussion and group meeting were used by all the respondents with 10.05 percent adopting recommended practices. Newspaper was used as a source of information by 9.04 percent farmers, followed by DCS, educational tour, poster/ charts/ circulars with 8.38, 8.20, and 7.96 percent, respectively. Whereas, exhibition, film show and field day were used by very less number of farmers as a channel or source of information for the cattle shed. The rank order of channels of information used by farmers Figure-2 showed that group discussion and group meeting were on first rank, followed by, newspaper, DCS, educational tour, posters/ charts/ circulars as third, fourth, and fifth rank, respectively.

The table revealed that group meeting was highly preferred by the farmers as a channel of information for milking procedure and ranked first with 11.76 percent. Whereas, group discussion was on second rank with 10.98 percent farmers, followed by DCS (9.99%), newspaper (9.30%) as on third and fourth ranks, respectively. Meanwhile, film show, cattle fair and exhibition were in least ranks with 3.62, 1.38 and 0.09 percent, respectively.

Figure-2: Use of Information Channels



Regarding cleaning of utensils, DCS was used as a source of information by maximum farmers (12.99%) with first rank, followed by educational tour (10.49%), group discussion (9.02%) and farmer's training (8.23%) with second, third and fourth rank, respectively. On the other hand field day/ field visit provided information only to 4.77 percent farmers, followed by exhibition and radio with 3.18 and 1.85 percent of respondents respectively and fall as least rankers. Cattle fair was not listed as a source of information by any of the respondents. For

obtaining the information about post milking practices, DCS was found obtaining first rank with 16.47 per cent respondents, who concerned it as channel of information whereas, farmers training and group discussion was on second rank with the number (13.16%) of respondents. However, educational tour (11.11%), farmers training (9.60%) and posters/ charts/ circulars (8.24%) were in descending order of use and rank for the post milking practices.

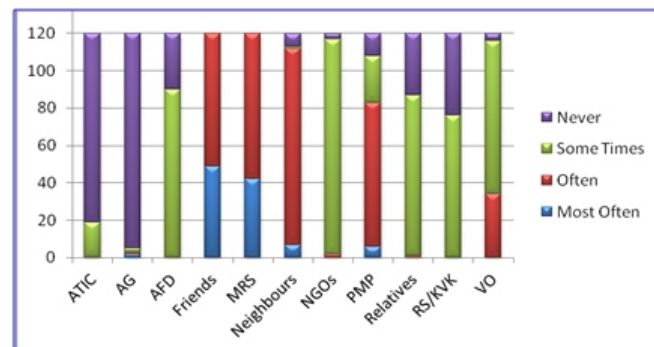
At the same time exhibition (0.96%) and television (0.82%) were in the last rank order in the table as a sequence. At the same time cattle fair and radio were not used by all the respondents. It might be due to less number of cattle fairs in the study area. Radio was also not used by a single farmer because of lack of programmes related to these practices. These results are having similarity with the findings of Yadav, *et. al.* (2011), Babu, *et. al.* (2012), Lawrence and Ganguli (2012), and Cukur (2013).

The above discussed results are also showing it's clear growth in Figure-2, where DCS, group discussion (GD), group meetings (GM) and educational tours (ET) were used by dairy farmers with maximum priority for good cattle shed and milking procedures. It might be due to the DCS being the place where, members participate in fortnightly meetings, monthly meetings, election meetings, demonstrations for improved dairy husbandry practices, management committee meetings, which provide chances to them for discussion about their own problems and issues related to animal husbandry practices.

On the other side DCS, educational tour, farmers training and group discussion were used as a source of information by dairy farmers with maximum priority for cleaning of utensils and post milking practices. It might be because these two practices are directly related to CMP, which involves new practices. All the milk unions of study area were sending their selected milk producers on educational tours for CMP training or visiting places like Anand, Mehasana, Barodara, Surat and Khera in Gujrat, Warangal, (Andhra Pradesh), NDRI (Haryana), Ludhiana (Punjab) for improving milk quality by adopting good practices.

Extent of use of information sources as perceived by dairy farmers: The Table-2 (A) revealed that the friends were most utilized by dairy farmers for seeking information about CMP practices, with 2.40 MS, as it was perceived MO by 40.80 percent farmers and often by 59.20 percent of them.

Figure-3: Extent of Use of Information Sources



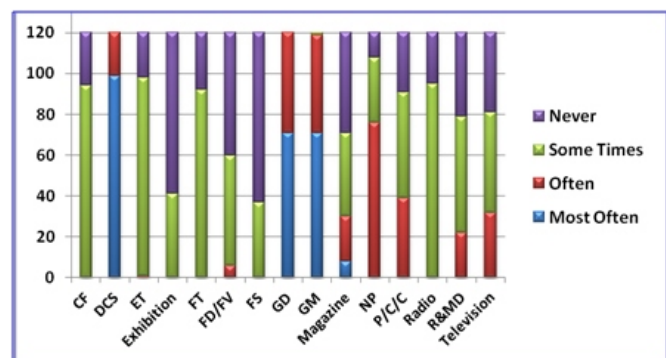
The milk route supervisor was on second rank with 2.35 MS, whereas, neighbours were on third rank with 1.93 MS. The fourth rank occupied by progressive milk producers (1.64 MS), followed by VO (1.25 MS), cattle feed dealer (0.75 MS), and relatives with 0.73 MS. On the hand agriculture graduate were least utilized by dairy farmers with 0.02 MS, it might be due to availability of very less number of agriculture graduates in the study area (the responses regarding agriculture graduates were found better in Hanumangarh union, where one agriculture college was there in Sangaria town of the district.). The Figure-3 also revealed these results in a critical manner where, friends and milk route supervisor (MRS) was mostly used by dairy farmers for their information need. But, agriculture graduates (AG) and ATIC was least used by farmers due to unavailability in the study area.

Extent of use of information channels as perceived by dairy farmers: The Table-2 (B) also revealed that DCS was ranked first by the dairy farmers with 2.82 MS, as it was most often utilized by 82.50 percent, and often utilized by 17.50 percent of respondents. The group discussion was on second rank with 2.59 MS, whereas group meetings got third rank with 2.58 MS. It was followed by, newspaper (1.53 MS), posters/ charts/ circulars (1.08 MS), television (0.94 MS) which were ranked fourth, fifth and sixth, respectively. The least rank was awarded to film show, which might be due to lack multimedia and films related to CMP. However, presently a change is occurring in use of Information and Communication Technologies (ICT) for educating farmers on CMP. These results also predicts from Figure-4 where it is clearly shown that DCS, group discussion (GD), and group meetings were used by most of the farmers, whereas film show (FS) and exhibition were used very less for getting their need based information for milk quality improvement. Such studies were also organized in India and abroad similar results by Nande, *et. al.* (2009), Khan (2010 & 2011), Dhayal, *et. al.* (2012), Ansari and Sunetha (2014).

Table 2: Extent of utilization of information sources and channels as perceived by dairy farmers

Sources and Channels	Most Often (%)	Often (%)	Some Times (%)	Never (%)	Mean Score	Rank
A. Sources of Information						
Agriculture Graduates (AG)	2.00	1.00	2.00	115.00	0.02	XI
Agriculture Technology Information Centre (ATIC)	0.00	0.00	19.00	101.00	0.15	IX
Cattle Feed Dealers (CFD)	0.00	0.00	90.00	30.00	0.75	VI
Friends	49.00	71.00	0.00	0.00	2.40	I
Milk Route Supervisors (MRS)	42.00	78.00	0.00	0.00	2.35	II
Neighbours	7.00	105.00	1.00	7.00	1.93	III
Non-Governmental Organization (NGOs)	0.00	2.00	115.00	3.00	0.15	IX
Progressive Milk Producers (PMP)	6.00	77.00	25.00	12.00	1.64	IV
Relatives	0.00	1.00	86.00	33.00	0.73	VII
Research Stations (RS)/KVK	0.00	0.00	76.00	44.00	0.63	VIII
Veterinary Officers (VO)	0.00	34.00	82.00	4.00	1.25	V
B. Channels of Information						
Cattle Fair (CF)	0.00	0.00	94.00	26.00	0.78	XI
Dairy Cooperative Society (DCS)	99.00	21.00	0.00	0.00	2.82	I
Education Tour (ET)	0.00	1.00	97.00	22.00	0.82	IX
Exhibition	0.00	0.00	41.00	79.00	0.34	XIV
Farmer's Training (FT)	0.00	0.00	92.00	28.00	0.76	XII
Filed Day (FD) /Filed Visit (FV)	0.00	6.00	54.00	60.00	0.55	XIII
Film Show (FS)	0.00	0.00	37.00	83.00	0.30	XV
Group Discussion (GD)	71.00	49.00	0.00	0.00	2.59	II
Group Meeting (GM)	71.00	48.00	1.00	0.00	2.58	III
Magazine	8.00	22.00	41.00	49.00	0.90	VII
News Paper (NP)	0.00	76.00	32.00	12.00	1.53	IV
Posters /Charts /Circulars	0.00	39.00	52.00	29.00	1.08	V
Radio	0.00	0.00	95.00	25.00	0.79	X
R&MD	0.00	22.00	57.00	41.00	0.84	VIII
Television	0.00	32.00	49.00	39.00	0.94	VI

Figure-4: Extent of Use of Information Channels



Seven milk unions of Rajasthan have purchased the video Compact Disc (CD) on CMP produced by Dairy Extension Division of NDRI and are very widely used for educating farmers on CMP.

Information Disseminating Behaviour of Dairy Farmers: The information disseminating behaviour comprised of two sub-components, viz., information dissemination count and frequency of information dissemination. Table 3 incorporated that a large number of dairy farmers (79.16%) who were in medium category for information dissemination count i.e. 6 to 18 persons. It means a dairy farmer disseminate his idea or news or innovation to his 6 to 18 fellow farmers. In the same line 14.18 percent dairy farmers were in high category with more than 17 fellow farmers.

Table 3: Information disseminating behaviour of dairy farmers

Information Dissemination Count				Frequency of Information Dissemination			
Category	Criteria	Frequency	Per-cent	Category	Frequency	Per-cent	Mean score
Low	< 6	8	06.66	Most often	41	34.20	2.15
Medium	6 to 18	95	79.16	Often	57	47.50	
High	> 18	17	14.18	Some time	22	18.30	
Information Disseminating Behaviour							
	Criteria	Frequency	Percent	14.35			
Low	< 8.09	9	07.50				
Medium	8.09 to 20.61	93	77.50				
High	>20.61	18	15.00				

Only 8 farmers belonged to low category with less than six farmers as dissemination count. In the next part of table, frequency of dissemination indicate that almost half (47.50%) of the respondents were in category of 'often' to disseminate their information to fellow farmers, followed by 'most often' with 34.20 percent and 18.30 percent dairy farmers in 'some times' category of frequency. While taking information disseminating behaviour of dairy farmers for categorization, it was noted from the lower part of table that 77.50 percent of dairy farmers fell in the category of medium followed by high and low with 15 and 7.50 percent, respectively.

The mean score was 14.35, from which it could be concluded that generally a dairy farmer disseminates his acquired information to 14 fellow farmers. These results are having similarity with the findings of Khan, *et al.* (2010), Kumari and Jaharana (2014), and Lawrence and Ganguli (2012).

These findings confirmed that higher the information disseminating behaviour of an individual, greater was his communication behaviour.

The possible explanation may be that those dairy farmers who had more information disseminating behaviour, usually not only received and decode more information, but also at the same time they took the initiative of disseminating more information. Those who do acquire and comprehend more information can be expected to share it with others. Conversely, those who may not have enough information may have little to share with others.

It was observed in the study area that, educational tour, training at union level and milk route supervisor were major source for collecting information and DCS was the most vital place for disseminating it with fellow farmers.

Table 4: Communication behaviour of dairy farmers regarding CMP practices

Components	Category	Criteria score	Frequency (n=120)	Percent	Mean score
Information Seeking Behaviour	Low	<94.32	29	24.16	130.66
	Medium	94.32 to 167.01	66	55.00	
	High	>167.01	25	20.84	
Information Disseminating Behaviour	Low	< 8.09	9	07.50	14.35
	Medium	8.09 to 20.61	93	77.50	
	High	>20.61	18	15.00	
Communication Behaviour	Low	<108.33	25	20.83	145.01
	Medium	108.33 to 182.67	69	57.50	
	High	>182.67	26	21.67	

After discussing about both the components of communication behaviour viz., information seeking behaviour and information disseminating behaviour, Table-4 summarized that majority of dairy farmers (57.50%) were in medium category for their communication behaviour, followed by almost same number of dairy farmers in low and high categories of distribution. The explanation of all these findings of communication behaviour which were showing good results might be, due to good use of sources and channels of information by dairy farmers. Such studies were also organized in India and abroad with similar results by Hossain, *et. al.* (2011), Cukur (2013), Phukan, *et. al.* (2013), Punitha, *et. al.* (2013), and Rastogi and Hasan (2014).

CONCLUSION

Most of the dairy farmers used friends, progressive milk producer, veterinary officer and neighbours as information sources; group discussion, group meetings, newspaper and DCS were important channels for information seeking about proper 'cattle shed' and 'milking procedure'. However, Milk route supervisor, progressive milk producer, friends and neighbours were found as major information sources; whereas, DCS, educational tour and group discussion were important channels for information used by the dairy farmers for information seeking about 'cleaning of utensil' and 'post milking practices'.

Paper received on : September 21, 2014

Accepted on : October 6, 2014

REFERENCES

Ansari, M. A. and Sunetha, S. 2014. Agriculture Information Needs of Farm Women: A Study in State of North India. *African Journal of Agricultural Research*. 9

(19), 1454-1460.

Babu, A. R., Singh, Y. P. and Sachdeva, R. K. 1997. Establishing a management information system. In B. E. Swanson, R. P. Bentz, & A. J. Sotranko. (Eds.), *Improving Agricultural Extension (A reference manual)*. Rome: Food and Agriculture Organization, 161-169.

Babu, S. C., Glendenning, C. J., Okyere, K. A., and Govindarajan, S. K. 2012. Farmers' Information Needs and Search Behaviors: Case Study in Tamil Nadu, India. *International Food Policy Research Institute (IFPRI) Discussion Paper 01165*.

Buford, J. A. 1990. Extension management in the information age. *Journal of Extension*, 28 (1).

Cukur, T. 2013. Determination of Communication Behavior of Earthen Pond Fish Farmers. *Bulgarian Journal of Agricultural Science*, 19 (6), 1358-1363.

Dhayal, B. L., Khan, I. M. and Jangid, M. K. 2012. Information Seeking Behaviour of Ber Growers In Jaipur District Of Rajasthan. *Rajasthan Journal of Extension Education*, 20, 57-60.

Hossain, K. Z., Islam, M. R., Bhuiyan, M. H., Wazed, M. A., and Rahman, M. M. 2011. Farmers' Communication Behavior in Receiving Information on Improved Rice Production Technologies. *Journal of Innovation Development Strategies*, 5(1), 28-33.

Jahagirdar, K. A. and Balasubramanya, A. S. 2010. A study on communication behaviour of extension personnel. *Karnataka Journal of Agricultural Sciences*, 23 (2), 384-385.

Khan, I. M., Singh, V., and Dhanraj. 2010. Extent of Utilization of Information Sources and Channels Used by Farmers. *Rajasthan Journal of Extension Education*, 17&18, 128-131.

Khan, I. M., Singh, V., and Garhwal, S. 2011. Preferences of Farmers to Different Sources and Channels in Piprali Panchayat Samiti of District Sikar, Rajasthan. *Rajasthan Journal of Extension Education*, 19, 121-124.

Kumari, K. and Jaharana. 2014. Communication Behaviour Of NAIP (National Agriculture Innovation Project) Farmers of Kota District of Rajasthan. Synopsis of Department of Agricultural Extension Education, Sam Higginbottom Institute of Agriculture, Technology & Sciences, Allahabad. www.academia.edu.

- Lawrence, C. and Ganguli, D. 2012. Entrepreneurial Behaviour of Dairy Farmers in Tamil Nadu. *Indian Research Journal of Extension Education*. 12 (1), 66-70.
- Nande M. P., Gawande S. H., Patil A. M., and Khode N. V. 2009. Information Seeking Behaviour of Dairy Farmers in Nagpur District of Maharashtra. *Journal of Community Mobilization and Sustainable Development*, 4(1), 99-102.
- Phukan , P., Borua, S., and Barman, U. 2013. Communication behaviour of winter vegetable cultivators of Jorhat district of Assam. *J. Acad. Indus. Res.* 1(8), 464-466.
- Punitha P., Seeralan S., and Prakash N. 2013. Communication Behaviour of Farmers Club. *Journal of Community Mobilization and Sustainable Development*, 8 (1), 5-8.
- Rastogi, S. and Hasan. S. 2014. A study on communication behaviour of agricultural input users of Udham Singh Nagar district of Utrakhand, India. *Journal of Applied and Natural Science* 6 (1), 193-196.
- Yadav, B. S., Khan, I. M., and Kumar, M. 2011. Utilization Pattern of Different Sources and Channels of Agriculture Information used by the Fenugreek Growers. *Indian Research Journal of Extension Education*, 11 (1), 44-49.
- Singh, Mayank and Singh, Rajiv Kumar 2012. Constraints Perceived by Farmers in Communication Behaviour *Indian Journal of Extension Education* Vol. 48, No. 1 & 2, (52-55)

Self Help Groups Under Swarnjayanti Swarojgar Yojana: Grass Root Constraints of Dairy Owners

Subodh Kumar¹ and Hema Tripathi²

ABSTRACT

Data were collected from 208 members of 52 SHGs comprising 50 per cent male and 50 per cent female groups through structured interview schedule from Faizabad district of Eastern Uttar Pradesh. The study revealed that the lack of remunerative price for milk and milk products, improper supply and high cost of veterinary services and medicines as well as lack of training regarding scientific dairy husbandry were the severe problems perceived by the SHG members ranked at I, II and III place, respectively. At group level, major constraints perceived by them were; illiteracy followed by improper supervision by block officers, untimely credit disbursement, complicated bank procedures, intra-group conflict and non-cooperation by family members in descending order.

Key words: Swarnjayanti swarojgar yojana, self help group, constraints, gender, dairying

INTRODUCTION

Self Help Groups (SHGs) are small voluntary association of the rural men or women from the same socio-economic background who work together for the purpose of solving their problems through self help and mutual help. Dairying in India is one of important subsidiary occupation in the rural areas next to agriculture. Developing small diary enterprises and empowering them through micro financing under self help group approach, is one of the most potent way to generate self employment opportunities among rural poor.

According to Anna and Pillai (1990), non availability of capital by credit institutions, inadequate marketing arrangements, illiteracy, lack of training opportunities in different aspects of production and marketing were the biggest handicaps of women entrepreneurs. According to Desai (1991), the basic problems or difficulties of women entrepreneurs were their twin responsibility towards family and work. Some other constraints identified were; absence of need for achievement, economic dependence, lack of autonomy, low risk bearing capacity, lack of education, lack of family involvement in male dominated society, lack of information and experience and problem of liquidity and less availability of finance. According to Kherde and Pal (1992), educational backwardness, poverty, deprivation, ill health and lack of opportunities for economic, political and socio-development were the major problems faced by rural women in dairying. Kaushik and Singal (1992) reported that most common problems faced by female members of dairy cooperatives were; lack of knowledge about government help and

subsidies, lack of knowledge about the advantages of dairy co-operative society, lack of finance and credit facilities for purchase of animals. However, infrastructural and personal/family problems ranked at low level than educational/communication and economic problems. Raju *et al.* (1993) reported that lack of knowledge, non availability of veterinary services, green fodder and labour, high cost of medicines and concentrate mixture and distant location of AI centers were the major constraints perceived by the dairy farmers. Saxena (1996) found that problems visualized by members of women co-operative to start dairy business include lack of infrastructural facilities (52.67%), finance (20.66%), not getting support from family (15.33%), credit problem (6.67%) and problem of marketing of a produce (4.67%). Main constraints in proper functioning of SHG in Bidaj included no clear assessment of the need for credit for creating SHGs among women of different sections in the village, lack of clarity about the concept of SHG among the members, heterogeneity, large size of the group, lack of the necessary confidence for taking up loan and fund constraints for lending (Shylendra, 1998). Nirmala *et al.* (2004) revealed that mere financial assistance does not help the members of SHGs but they should also be provided with institutional support like training, marketing and information on available latest technology. Harinarayana, (1991) in his study on 'Promotion of Women Entrepreneurship' lists economic backwardness, lack of familial and community support, ignorance of opportunities, lack of motivation, shyness and inhibition, preference for traditional occupation and preference for secure jobs as the factors that inhibit promotion of grass root entrepreneurship among rural women. Inadequate

loan amount(14.67%), limited number of installment (8%) and the problem of lack of cooperation among the members (7.33%). Thinking of women about dominance of male members in family, lack of confidence in taking the decision, lack of guidance in problem solving etc were the constraints reported by Kadu et al 2013 while studying the empowerment of Women's SHG through food processing and dairy management practices.

Thus it is the need of the hour to analyze the impediments/constraints perceived by SHGs under the scheme for self employment. Hence a study was done at Faizabad, UttarPradesh, with the aim to assess the major constraints/problems faced by women and men self help groups in smooth running their dairy enterprise as well as self help groups. The present study differs from earlier studies as it covers comparative study on constraints/issues at grass root relating to entrepreneurship development in dairying units of SHGs for male and female members as well as groups as well as in two different blocks in the study area.

METHODOLOGY

The present study was conducted in purposively selected two blocks, namely, Heringtonganj and Milkipur, of Faizabad district in Uttar Pradesh due to existence of maximum number of dairy SHGs at the time of investigation. From each of the selected two blocks, an exhaustive list of SHGs and its members was prepared. Restoring to proportionate random sampling a total 52 SHGs, consisting 26 male and 26 female SHGs were finally identified. A gender wise comprehensive list of all the members from each of the selected SHGs were prepared for collecting the relevant information under different dimensions of the study. Four members were random mix selected from each of the selected group. Thus a total of 208 members, comprising equal number of respondents of both the genders (104 males and 104 females), constituted the sample size for the study. Data were collected through personal interview schedule, interaction dialogue, as well as from secondary sources. Data were collected on various constraints encountered by among male and female members of self help groups. Devi and anand (2012) reported that performances of SHGs were best at group level.

RESULTS AND DISCUSSION

Problems / constraints perceived by male and female SHGs in smooth running of their dairy unit

The study found out that no timely credit disbursement, illiteracy and intra-group conflicts were

the main problems perceived by male self help groups, whereas illiteracy was perceived as most serious problem followed by improper supervision by block officers and complicated bank procedures, ranked 1st, IInd and IIIrd, respectively by the female SHGs in smooth functioning of the respective groups (Table 1)

Table 1: Problems/constraints perceived by male and female members in smooth functioning of SHGs

Problems	Male SHGs (n=26)			Female SHGs (n=26)			Total (N=52)		
	f	%	Ranks	f	%	Ranks	f	%	Ranks
Intra group conflicts	19	73.07	III	8	30.76	VI	27	51.92	V
Illiteracy	20	76.92	II	23	88.46	I	43	82.69	I
Complicated bank procedures	14	53.84	V	20	76.92	III	34	65.38	IV
Improper supervision by block officers	17	65.38	IV	22	84.61	II	39	75.00	II
Non-cooperation by family members	8	30.76	VI	10	38.46	V	18	34.61	VI
No timely credit disbursement	21	80.76	I	16	61.53	IV	37	71.15	III

Non-cooperation by family members perceived by more number of female SHGs (38.46%) as compared to male dominated groups (30.76%). Pooled figures also indicated that illiteracy was the most severe problem, created difficulties in maintaining records, proceedings of meetings and banking transactions. SHG members could not start their income generating activities as per time schedule due to lack of proper supervision by the block officers and no timely credit disbursement. These problems were placed at IInd and IIIrd positions, respectively.

Thus for smooth functioning of groups, regular supervision of the SHGs should be ensured even after credit disbursement by the block officers. Besides, educational programmes should also be associated with SHG concept to improve the literacy level of members. Bank officers should be instructed for timely release of credit to the SHG members, so that they can start income generating activities as per pre-decided schedule. Bank officers should co-operate more with the illiterate group members regarding simplifying the complex banking procedure, if possible. Shylendra (1998). Chatarjee (2003) also pointed out that the SHG members suffered due to complex banking rules and regulations. Also, he recommended for some flexibility in banking rules for illiterates and poor people.

The momentum of implementation of SGSY was slow mainly because of inadequate technical and other support at the district level for micro-planning and technical aspects, hampered meaningful progress under SGSY reported by Rajakutty (2004).

Problems / constraints perceived by male and female members in the smooth functioning of SHGs

Lack of remunerative price for milk and milk products, improper supply and high cost of veterinary services and medicines as well as lack of training regarding scientific dairy husbandry were the severe problems perceived by the SHG members ranked at I, II and III place, respectively. Other constraints for smooth running of dairy unit were; lack of knowledge in preparing balanced ration based on available resources, unorganized market and lack of transport facilities for farm produce, lack of storage facilities for milk and milk products, lack of knowledge on scientific dairy husbandry and clean milk production, unavailability of green fodder round the year, unavailability and high cost of concentrate and lack of infrastructure.

It could be seen from Table 2 that problems faced by male and female SHG members in running the dairy unit were almost similar. However, it differed in terms of its severity. Male SHG members perceived that the improper supply and high cost of veterinary services and medicines as most severe problem followed by lack of remunerative price for milk and milk products and lack of training regarding scientific dairying. Female SHG members, however perceived lack of remunerative price for milk and milk products as the most severe constraint followed by lack of training regarding scientific dairying and inadequate supply and high cost of veterinary services and medicines.

Table 2: Problems/constrains perceived by male and female SHG members in smooth running of their dairy unit

Problems/Constraints	Male (n=104)			Females (n=104)			Total(N=208)		
	f	%	Ranks	f	%	Ranks	f	%	Ranks
Improper supply and high of Vety. services and medicines cost	97	93.26	I	89	85.57	III	186	89.42	II
Unavailability of green fodder round the year	75	72.11	VII	76	73.07	VIII	151	72.59	VIII
Unavailability & high cost of concentrate	70	67.30	IX	78	75.00	VII	148	71.15	IX
Lack of infrastructure	60	57.69	X	62	59.61	X	122	58.65	X
Lack of remunerative price for sale of milk and milk products	95	91.34	II	96	92.30	I	191	91.82	I
Lack of storage facilities for milk & milk products	85	81.73	V	70	67.30	IX	155	74.51	VI
Lack of training regarding scientific dairy husbandry	93	89.42	III	90	86.53	II	183	87.98	III
Unorganised market and lack of transport facilities for farm produce	79	75.96	VI	80	76.92	VI	159	76.44	V
Lack of knowledge on scientific dairy management & clean milk production	71	68.26	VIII	83	79.80	V	154	74.03	VII
Lack of knowledge in preparing balance ration based on available resources	90	86.53	IV	88	84.61	IV	178	85.57	IV

The extent of severity perceived by male and female SHG members for lack of knowledge in preparing balanced ration based on available resources, unorganised market, lack of transport facilities for milk and milk products and lack of infrastructure, were similar in terms of ranks assigned by them. Table further indicated that more number of female members had perceived the problems of unavailability of green fodder round the year, high cost of concentrate and lack of knowledge on scientific dairy management and clean milk production as more severe and serious constraints as compared to male SHG members. Pooled figures also indicated that lack of remunerative price for milk and milk products, improper supply and high cost of veterinary services and medicines and lack of training regarding scientific dairy husbandry were the most important constraints perceived by the SHG members irrespective of their sex. SHG members faced problems in adoption of scientific dairy farm practices due to lack of proper knowledge and understanding of it. Thus there is an urgent need to organise regular skill oriented training programmes for SHG members to improve their knowledge and skill regarding scientific dairy husbandry. Strong linkages also needed to be established between SHGs and scientific institutes/universities for technical supports. In order to reduce the marketing constraints, the SHG members may be motivated to develop storage facilities at group level and preparation of more value added products and its marketing on cooperative basis. Linkages of SHGs also need to be established / strengthened with veterinary hospitals for covering these families under regular vaccination, deworming and health management programmes.

CONCLUSION

Provision of remunerative price for milk and milk products, timely supply of inputs, reduced cost of veterinary services and medicines, trainings and extension interventions regarding scientific dairy husbandry may further improve the socio-economic status of SHG members by generating more income and employment. Educating SHG members about rules, by-laws, group norms, banking procedures and regular monitoring and supervision by block officers as well as timely credit disbursement will be the motivating factors for smooth functioning of self help groups.

Paper received on : September 16, 2014
Accepted on : October 31, 2014

REFERENCES

- Anna, V. and Pillai, N. C. 1990. Women entrepreneurship in Kerala. *Social Change*, 20: 2.
- APMAS, 2009, Quality and Sustainability of SHGs in Assam, Retrieved from <http://www.apmas.org>
- Bhoj, S; Kumar, A; Bardhan, D. and Dabas, Y.P.S. 2014. Women self help groups in Uttarakhand-India: constraints identification in milk production and participation in microfinance module. *Animal Science Reporter*; 8(2):61
- Chatterjee, S. 2003. Networking SGSY, Banks and SHGs : Initiatives in Uttar Pradesh. *Kurukshetra*, 51(4) : 27-29
- Das, K., 2011, Socio-economic features of Karbi Tribes in Karbi Anglong District of Assam. *Vanyajati*, LIV (1): 16-22
- DAS KS 2012 Ground realities of self help groups- Bank linkage program : An empirical analysis, *Indian Journal of Research in Social Sciences* 2, (2): 468-479
- Das, S.K. 2012 An analysis of constraints in women empowerment in tribal area: evidences from Assam *Asian Journal of Research in Social Science & Humanities* (4):2249-7315
- Desai, V. 1991. Dynamics of entrepreneurial development and management - principles, projects, policies and programmes. Himalaya Publishing House, Delhi pp. 139-142.
- Ganapathy S. and Mayilsamy C 2013 Empowering Women through Self-Help Groups 3(5) *Indian Journal of Research*
- Kadu S S. Kotikhane R.R. and Nagawade, D.R. 2013 Empowerment of Women's SHG through Food Processing and Dairy Management Practices *Indian Research. Journal of Extension Education*, 13 (3),
- Kausik, S. and Singal, S. 1992. Constraints felt by women members of dairy co-operatives societies in rural households of Karnal District. *Indian Dairyman*, 45(3) : 380-382.
- Kherde, R. L. and Pal, M. 1992. Role of farm women in dairy development. *Indian Dairyman*, 44 (1) : 12-15.
- Kumar, S. 2003. A study on self help groups in dairy husbandry. M. V.Sc Thesis, IVRI, Izatnagar, Bareilly.
- Manimekalai, M. and Rajeshwari, G. 2001. Nature and performance of informal self help groups A case from Tamil Nadu. *Indian Journal of Agricultural Economics*, 56(3): 453-454.
- Nayyar, Pooja *et. al.* 2007, "Causes and Constraints Faced by Women Entrepreneurs in Entrepreneurial Process", *The Journal of Social Science*. 14(2): 99-102.
- Nirmala, V., Bhat, K. S. and Buvanewari, P. 2004. SHGs for poverty alleviation in Pondicherry. *Journal of Rural Development*, 23(2) : 203-215.
- Pillai, S. S. 1987. Women entrepreneurship in Gujarat : Braving the choppy waves. *Social welfare*, 33 : 12-15.
- Raju, O., Pochaiyah, M. and Reddy, C. V. 1993. Constraints in the adoption of crossbred cows. *Indian Journal of Dairy Science*, 46 (9) : 415-419.
- Rajakutty, S. 2004. Self and wage employment programmes for poverty alleviation in rural India - An overview. *Journal of Rural development*, 23(2) : 155-185.
- Rao, Harinarayan C. 1991. Promotion of Women Entrepreneurship, A Brief Comment. *SEDME*, 18(2), 21-28.
- Satish, P. 2001. Some issues in the formation of self help groups. *Indian Journal of Agricultural Economics*, 56(3): 410-418.
- Saxena, D. 1996. Entrepreneurial behaviour of milk producers in women dairy co-operatives. M. Sc. Thesis, IVRI, Izatnagar, Bareilly.
- Sharma, K. C. 2001. Partipatory rural development through self help groups. Paper presented in training programme on Empowerment of Rural Women through SHGs. National Institute of Rural Development, Hyderabad, March 5-10.
- Sharma, A., 2007, Expanding outreach to underserved regions: Kick-starting microfinance in north-eastern region, IIBM, Guwahati.
- Shylendra, H. S. 1998. Promoting women's Self help groups : lessons from an action research project of IRMA. Institute of Rural Management Anand, Gujarat, pp. 1-25.

Singh, A. 1995. NABARD-APRACA International Seminar on Development of rural poor through self help groups. May 29-30, Bangalore.

Singh R 2012. Women Entrepreneurship Issues, Challenges and Empowerment through Self Help Groups: An Overview of Himachal Pradesh. International journal

of democratic and development studies, 1(1): 45-58

Varathan, B. Jaya; P, M.; Pandian, Saravana, A. S; Kumar G. S and Selva ,K.. N. 2012. Factors influencing the perception of constraints by self help group members and non-members in livestock farming. *Indian Journal of Animal Research*; 46 (3):276

Devi, E. Jenita and Anand, Sarita. Evaluation of Performance of Women Self Help Groups. *Indian Journal of Extension Education* Vol. 48, No. 3 & 4, 2012 (65-68)

Insecticide Use Pattern on Tomato Crop in Punjab

Ravinder Singh Chandi¹ and Anureet Kaur Chandi²

ABSTRACT

Tomato is one of the important, popular and remunerative vegetable crops grown around the world for fresh market and processing. Fruit borer, *Helicoverpa armigera* (Hubner) is rated as one of the most noxious pests infesting tomato crop. Overuse of insecticide to knock down this destructive pest has led to many problems like build up of insecticide resistance, resurgence, replacement of natural enemies and insecticide residue in tomato fruits. The vegetable growers, therefore, are using a wide range of insecticides, either single or in mixtures for its control. Out of the six insecticides viz. flubendiamide, profenophos, carbaryl, cypermethrin, deltamethrin, and fenvalerate recommended by Punjab Agricultural University, Ludhiana for its control, carbaryl was not being used by the farmers. Fourteen insecticides singly and two mixtures were being used extensively by the vegetable growers of the state. On an average, 3.87 sprays (range 3-8 sprays) were done by each tomato grower. Out of these, 29.97 per cent sprays were done with recommended insecticides, 56.31 per cent with unrecommended insecticides and 13.69 with unrecommended mixtures. Chlorantraniliprole 18.5 SL, being unrecommended was used to a tune of 17.31 per cent, while flubendiamide 480 SC (10.59%) lead in recommended insecticides. Cypermethrin and chlorpyrifos were the most frequently used mixtures.

Key words: Fruit borer, *helicoverpa armigera*, insecticide, spray pattern, tomato.

INTRODUCTION

Tomato (*Lycopersicon esculentum* Mill.) is one of the important and remunerative vegetable crops grown around the world for fresh market and processing. It is a popular vegetable globally ranking second in importance after potato in many countries. It occupies the daily menu of people all over the world, especially in the Indian subcontinent, where the diet is predominantly vegetarian in nature (Mandaokar *et al.*, 2000). It is not only traded in the fresh market but is also used in the processing industry in soups, as paste, concentrate, juice and ketchup. The production and productivity of the crop is greatly hampered by the fruit borer, *Helicoverpa armigera* (Hubner) (Lepidoptera: Noctuidae) which causes damage to the developing fruits and results in yield loss ranging from 20 to 60 per cent (Selvanarayanan, 2000, Lal and Lal, 1996, Tewari and Krishnamoorthy, 1984). *H. armigera* is a polyphagous pest whose outbreaks in various crops are common and highly devastating. Early instars feed on flower buds, flowers and foliage while the matured instars bore into the fruits resulting in drastic yield reduction (Rath and Nath, 1997). The larvae bore characteristic circular holes mostly near the calyx of green fruits. This pest causes scarring, tissue damage and aberration in fruit shape or colour, making tomatoes undesirable for fresh market (Reddy and Miller, 2014).

Among the various strategies adopted to combat this pest of tomato, insecticides form the first line of defense.

The farmers have a tendency to overuse insecticide in an over ambitious approach to knock down this destructive pest. Most of the insecticides used in tomato crop are based on quite limited number of chemically different classes. Of them, the most important insecticides that are used in tomato belong to organophosphates, carbamates and synthetic pyrethroids (Pawar and Jadhav, 1993). Recently, it has been noticed that some of these insecticides recommended for the control of fruit borer, not only had a shift in the status of their toxicity, but also caused resurgence. The indiscriminate use of synthetic chemical pesticides to control this pest has resulted in development of resistance (Armes *et al.*, 1992). Most of the insecticides do not provide satisfactory level of control, probably due to the development of insecticide resistance. Apart from these, monitoring data on the above conventional insecticides showed that certain amount of insecticide residues were present at detectable levels, occasionally persisted at concentrations above the standards established by EPA (Kumar, 1998). Primarily, this is attributed to the application of insecticides at higher doses for want of effective control. Ultimately, this has resulted in the presence of these insecticides at higher concentration in edible parts of the plant as well as in the environment (Thilagam, 2006). Due to the problem of resistance and low level of control of fruit borer, the growers intensively spray tomato crop with insecticides either singly or in mixtures throughout the growing season of the crop. Six insecticides have been recommended by Punjab Agricultural University,

¹. Assistant Entomologist, Department of Entomology, PAU, Ludhiana-141 004, Punjab

². Assistant Professor of Entomology, Department of Entomology, PAU, Ludhiana-141 004, Punjab

Ludhiana for the control of *H. armigera* in tomato crop (Anonymous, 2013). However, there is an apprehension that farmers are not following the recommended practices regarding the use of insecticides. This practice may lead to worsening the problems of insecticide resistance by increased selection pressure on the pest. In addition, it may also leave excessive residues on edible portion and increased insecticidal load in the environment that may in the long run prove to be hazardous from public health/consumer safety point of view. Therefore, a survey was conducted to determine the insecticide spray pattern adopted by vegetable growers of Punjab for the management of tomato fruit borer and the results of the same are discussed in this paper.

METHODOLOGY

A survey to observe insecticide spraying pattern, adopted by the vegetable growers for tomato fruit borer management was conducted during the season November, 2009 to August, 2010 in the districts of Amritsar, Fatehgarh Sahib, Kapurthala, Ludhiana and Sangrur. The information was collected from 100 tomato growers of these districts. The data were collected on kind of insecticide(s) used, spray interval followed, purchase of insecticide and dosage used for sprays. The response of the farmers was recorded in a proforma devised for the purpose.

RESULTS AND DISCUSSION

Insecticide used

A wide range of insecticides belonging to all major groups were being used by the farmers (Table 1) for control of fruit borer in tomato. Out of six insecticides recommended (Anonymous, 2013) by Punjab Agricultural University, Ludhiana flubendiamide 480 SC, profenophos 50 EC, cypermethrin 10 EC, deltamethrin 2.8 EC and fenvalerate 20 EC were used by the farmers while carbaryl 50 WP was never used by the vegetable growers. Other 14 insecticides were being used singly and two as tank mixtures.

Dosage of Insecticides

The dosage for most of the insecticides (75-2500 ml/ha) was about the same as recommended for different insect pests on various crops except that of cypermethrin, deltamethrin and fenvalerate each @ 500-750 ml/ha, which was more than double to the recommended dosage of pyrethroids against various insect pests (Table 1). In an earlier survey, Chandi *et al.*, (2012) reported the use of higher dosage of pyrethroids by farmers for the control of diamondback moth in cole crops. Joia *et al.*, (2000) also

reported the use of synthetic pyrethroids at higher dosages by the vegetable growers. Dhawan and Simwat (1996) reported the use of higher dosage of pyrethroids by farmers for control of bollworm in cotton.

Number and frequency of sprays

On an average, 3.87 sprays (range 3-8 sprays) were done by each tomato grower during the season (Table 1). Out of these, 29.97 per cent sprays were done with recommended insecticides, 56.31 per cent with unrecommended insecticides, while 13.69 with unrecommended mixtures. Chlorantraniliprole 18.5 SL alone was used by 17.31 per cent, while flubendiamide 480 SC with 10.59 per cent share lead in recommended insecticides. Cypermethrin and chlorpyrifos (505) was the most frequently used mixture followed by cypermethrin and endosulfan.

Table 1: Pattern of insecticides use on tomato in punjab

Insecticide	Dosage (ml/g per ha)	Number of sprays	Per cent of total sprays
Chlorantraniliprole 18.5 SL	125-200	67	17.31
Flubendiamide 480 SC	75-125	41	10.59
Spinosad 48 SC	150-225	36	9.30
Indoxacarb 15 SC	375-500	18	4.65
Pyridalyl 10 EC	625-750	11	2.84
Emamectin benzoate 5 SG	125-250	7	1.81
Novaluron 10 EC	250-500	15	3.87
Cypermethrin 10 EC	500-750	37	9.56
Deltamethrin 2.8 EC	500-750	14	3.62
Endosulfan 35 EC	1250-2500	22	5.68
Metasystox 25 EC	625-1250	6	1.55
Fenvalerate 20 EC	500-750	8	2.07
Profenophos 50 EC	1250-1500	16	4.13
Quinalphos 25 EC	625-1250	12	3.10
Chlorpyrifos 20 EC	1250-2500	6	1.55
Monocrotophos 36 SL	1250-1500	7	1.81
Acephate 75 SP	625-750	5	1.29
Triazophos 40 EC	1000-1250	4	1.03
Malathion 50 EC	1250	2	0.52
Cypermethrin + Endosulfan	1250-1500	22	5.68
Cypermethrin + Chlorpyrifos (505)	1000-1250	31	8.01

Spraying interval

As against the recommended interval of 10 days, the vegetable growers practiced the spraying of various insecticides or mixtures at intervals ranging from 4 to 12 days (Table 2). Some farmers even sprayed the crop with mixtures containing cypermethrin at four days interval during severe infestation of the pest. Spraying interval of 5-7 days was the most common. The practice of non-adherence to recommended spray schedule has also been observed earlier in potato (Kaur, 1994) and cole crops (Chandi *et al.*, 2012, Joia *et al.*, 2000 and Nahar, 1993).

The present study indicated that the majority of tomato growers use the unrecommended insecticides, viz. chlorantraniliprole 18.5 SL, spinosad 48 SC, indoxacarb 15 SC, cypermethrin 10 EC, endosulfan 35 EC and mixture of cypermethrin with endosulfan and chlorpyrifos in contrast to the recommended ones. This improper use of insecticides may jeopardize the control of tomato fruit borer in the long run. The use of monocrotophos is restricted in vegetables, but the study revealed that still some of the farmers are using it (1.81% of total sprays). Many of the vegetable growers used mixtures for the control of fruit borer. There seemed no scientific basis in selecting components of mixtures.

Table 2: Spraying interval between two sprays with different insecticides on tomato in Punjab

Insecticide	Spray interval (days)
Chlorantraniliprole 18.5 SL, flubendiamide 480 SC, spinosad 48 SC, indoxacarb 15 SC, pyridalyl 10 EC, emamectin benzoate 5 SG, novaluron 10 EC	10-12
Profenophos 50 EC, endosulfan 35EC, chlorpyrifos 20 EC, triazophos 40 EC, monocrotophos 36 SL, acephate 75 SP, quinalphos 25 EC	7-10
Cypermethrin 10 EC, deltamethrin 2.8 EC, fenvalerate 20 EC, metasystox 25 EC, malathion 50 EC	5-7
Tank mixtures : cypermethrin + endosulfan, cypermethrin + chlorpyrifos (505)	4-6

CONCLUSION

The present study indicates that the majority of tomato growers are not using the insecticides as per the recommendations regarding choice of insecticides, interval, number of sprays, mixtures etc. The vegetable growers are using a wide range of insecticides, either singly or in mixtures for the control of fruit borer in tomato. Out of the six insecticides recommended by Punjab Agricultural University, Ludhiana for its control, five insecticides viz. flubendiamide, profenophos, cypermethrin, deltamethrin, and fenvalerate were being used by the farmers. Fourteen unrecommended insecticides and two mixtures were being used extensively by the vegetable growers of the state. On an average, 3.87 sprays were done by each tomato grower. It is strongly felt that vegetable growers of the state need to be educated more effectively on the proper use of insecticides on vegetables. Surveys on the insecticide use pattern on major crops should be carried out as a routine practice to monitor the actual field use of insecticides and if needed, re-evaluation of recommended insecticides should be carried out so as to rationalize their use.

Paper received on : September 18, 2014

Accepted on : October 25, 2014

REFERENCES

- Anonymous 2013. *Package of practices for vegetable crops*. Punjab Agricultural University, Ludhiana, pp. 30-36.
- Armes, N. J., Jadhav, D. R. Bond, G. S. and King, A. B. S., 1992. Insecticide resistance in *Helicoverpa armigera* in South India. *Pesticide Science* 34: 355-64.
- Chandi, R. S., Chandi, A. K., Singh, G. and Suri, K. S. 2012. Insecticide use pattern on cole crops in Punjab. *Journal of Insect Science* 25(2): 210-13.
- Dhawan, A. K. and Simwat, G. S. 1996. Pattern of insecticide use on cotton by farmers in Punjab. *Pestology* 20: 30-34.
- Joia, B. S., Suri, K. S. and Udeaan, A. S. 2000. Insecticide use pattern on vegetables in Punjab I- cabbage and cauliflower. *Pestology* 22: 26-29.
- Kaur, G. 1994. Adoption of chemical measures for the control of insect pests and diseases in potato crop by farmers of Ludhiana district. M.Sc. Thesis, Punjab Agricultural University, Ludhiana, India. Pp 89.
- Kumar, K. 1998. Studies on bioefficacy and determination of residues of imidacloprid applied against sucking pests of cotton. Ph.D. Thesis, Tamil Nadu Agricultural University, Coimbatore, India. Pp 114.
- Lal, O. P. and Lal, S. K. 1996. Failure of control measures against *Heliothis armigera* infesting tomato in heavy pesticidal application areas in Delhi and satellite towns in Western UP and Haryana. *Journal of Entomological Research* 20(4): 355-64.
- Mandaokar, A. D., Goyal, R. K., Shukla, A., Bisaria, S., Bhalla, R. and Reddy, V. C. 2000. Transgenic tomato plants resistant to fruit borer (*Helicoverpa armigera*) (Hubner). *Crop Protection* 19: 307-312.
- Nahar, R. S. 1993. *Extent and level of use of insecticides in selected vegetable crops by farmers of Ludhiana district*. M.Sc. Thesis, Punjab Agricultural University, Ludhiana, India. Pp 101.
- Pawar, D. S. and Jadhav, G. D. 1993. Bioefficacy of synthetic pyrethroids and endosulfan against okra pests. *Pestology* 17(5): 16-18.
- Rath, P. C. and Nath, P. 1997. Screening of some tomato genotypes for susceptibility to the fruit borer,

Helicoverpa armigera (Hubner) at Varanasi. *Vegetable Science* 24(2): 153-56.

Reddy, V. P. and Miller, H. 2014. Biorational versus conventional insecticides- Comparative field study for managing red spider mite and fruit borer on tomato. *Crop Protection* 64: 88-92.

Selvanarayanan, V. 2000. *Host plant resistance in tomato against fruit borer, Helicoverpa armigera (Hubner)*. Ph.D. Thesis Annamalai University, Annamalainagar, India.

Tewari, G.C. and Krishnamoorthy, P.N. 1984. Yield loss in tomato caused by fruit borer. *Indian Journal of Agricultural Sciences* 54: 341-43.

Thilagam, P. 2006. Evaluation of flubendiamide 480 SC against bollworm complex in cotton and leaf folder and stem borer in rice. Ph.D. Thesis Tamil Nadu Agricultural University, Coimbatore, India. Pp 232.

Consequences of the Interventions in Coconut Based Homesteads as Perceived by Small Farm Families of Central Kerala

S. Helen¹ and B. Shanmugasundaram²

ABSTRACT

An ICAR adhoc scheme on 'Possible Diversifications and Restructuring of Coconut based Homesteads' was implemented in the six agro-ecosystems of Central Zone of Kerala covering three districts namely Palakkad, Thrissur and Ernakulam with the holistic approach in coconut based homesteads with the participation of all the stakeholders. The consequences of the interventions as perceived by the participating farmers were assessed after three years of creating the preferred enterprises. When overall mean of positive effects in all the six agro-eco situations were assessed, it was found that the 'Increased income' was realised as the highest positive effect with 4.97 mean score in the High Elevation Medium Rainfall situation (HEMR-Kizhakkenchery). 'Discouraged because of slow growth of animals' was reported as the highest negative impact with the mean score of 2.40 by the farmers of High Elevation-High Rainfall (HEHR) situation (Pananchery), that too showed 'lower' magnitude of negative effect. The interventions made under participatory mode created 'higher' positive effects and 'lowest' negative effects in the small holdings of coconut based homesteads.

Key words: Consequences, interventions, perception, small farm families, coconut based homesteads

INTRODUCTION

Coconut is the principal crop in majority of the small homesteads of Kerala. The small and marginal farmers who are economically backward seldom give attention for the proper management of coconut palm. Low productivity in the coconut based homesteads is causing utmost concern to the farm families. The poor small and marginal farm families who depend on their tiny holdings for sustenance are the worst hit. Fall in price of the farm commodities of the state has aggravated the situation making livelihood of these families very difficult. The traditional concept of integration in homestead farming in Kerala is declining because of various socio-economic reasons. Under such situation, it was felt that the interventions on appropriate combinations of enterprises based on the preferences of participating families in the coconut based homesteads would rejuvenate the integration of coconut based homesteads.

The ICAR adhoc scheme on 'Possible Diversifications and Restructuring of Coconut based Homesteads' was conducted in the six agro-ecosystems of Central zone of Kerala covering three districts namely Palakkad, Thrissur and Ernakulam. The scheme was implemented with the holistic approach in coconut based homesteads with the participation of all the stakeholders. In this research scheme, it was aimed to generate additional income for the sustenance of the families depending on coconut based homesteads with the major thrust on conserving natural resources apart from meeting

the basic needs of a family. The gradual shift in the socio-economic development in Kerala forces many families to move away from traditional conservation practices to money spinning vocations. The interventions were taken up in participatory mode to prevent non-judicious use of resources, encourage conservation practices, increase employment opportunities and thereby enhance the income of families. One panchayat was selected from each agro-ecological situation, on the basis of discussion with the extension personnel working at the block level. Two wards from each selected panchayats were selected based on the discussions with respective Agricultural Officers, Panchayat Presidents, Chairpersons of the agricultural development council and board members, with the criteria of intensive coconut based homestead farming in the panchayat. Sixty small farm families, mainly involved in coconut based homestead farming, representing the selected two wards were invited for a Participatory Rural Appraisal (PRA) session. In addition household survey was conducted.

Based on the discussion in the PRA session, farmers' interest and preferences, ten small farm families were selected randomly for practicing the viable models in their homesteads from each of the six agro ecological situations constituting sixty small farm families in the sample.

Details of interventions made in the coconut based homesteads of the project area are given in the Table 1.

¹ Associate Professor (Agricultural Extension) Communication Centre Kerala Agricultural University Mannuthy-680 651, Thrissur Dt. Kerala state, South India.

² Associate Professor, (Agricultural Extension)Regional Agricultural Research Station, (KAU) Pattambi. Palakkad Dt. Kerala state, South India.

Table 1: Details of interventions made in the small coconut based homesteads

Agro- ecological situations	Selected Panchayats	Interventions made based on the individual preference of farmers	Number of components	Number of farm families involved
High Elevation- High Rainfall (HEHR)	Pananchery	Goats- Malabari	14	6
		Heifers- Cross breeds	4	4
		Fodder- Co-1	450slips	9
		Turmeric- Sona and Kanthi	10kgs of rhizomes	2
Medium Elevation- High Rainfall (MEHR)	Karukutty	Vegetables		10
		Goats- Malabari	16	8
		Chicks- Gramapriya	55	7
		Turmeric- Sona and Kanthi	40kgs	8
		Fruit tree seedlings	4	1
Low coastal area, Low Elevation- High Rainfall (LEHR)	Thalikulam	Vegetables		10
		Goats- Malabari	6	3
		Heifers- Cross breeds	2	2
		Chicks- Gramapriya	45	2
		Banana- Njalipoovan	75	4
High Elevation- Medium Rainfall (HEMR)	Kizhakkenchery	Turmeric- - Sona and Kanthi	50kgs	9
		Fodder- Co-1	250slips	5
		Vegetables		10
		Goats- Malabari	20	10
		Chick- Gramapriya	20	4
High Elevation- Low Rainfall (HELRL)	Muthalamada	Fodder- Co-1	300 slips	6
		Vegetables		10
		Chicks- Gramapriya	140	9
		Biocontrol agents for vegetables	1	1
Medium elevation- black soil- Low Rainfall (MELR)	Eruthenpathy	Vegetables		10
		Heifers- Cross breeds	10	10

Based on the preferences of the participating farmers, interventions were made with fifty per cent contribution from the project. For adopting each intervention, they were trained and exposed to various technologies developed by the Kerala Agricultural University. Most of the inputs required to adopt the interventions were also made available through the University. Field visits were made to solve the field problems in adopting the technologies taken up by the small farm families.

METHODOLOGY

The consequences of the interventions as perceived by the participating farmers were assessed after a period of three years of interventions. Possible positive and negative effects were identified during the field visits and measured in terms of a five point continuum ranging from five scores to one score for 'highest' to 'lowest' continuum respectively. Mean scores were arrived to assess the consequences of the interventions as perceived by the participating farmers.

RESULTS AND DISCUSSION

Consequences of the interventions in coconut based

homesteads as perceived by the participating small farm families after three years of interventions

The data given in the Table 2 revealed that the consequences of the interventions as perceived by the participating farmers. Among all the positive effects of the interventions, 'increased income' was realised as the highest positive effect with 4.97 mean score in the High Elevation Medium Rainfall situation (HEMR-Kizhakkenchery) followed by 'increased soil fertility because of additional manuring' with the mean score of 4.89 in the same situation. Thampan (1999) reported the similar nature of findings. It indicated that the intervention on goats and poultry rearing along with growing fodder and vegetables in small coconut based homesteads of HEMR situation created the highest positive effects. This finding is in line with the results of Jayanthi *et al* (2009), Gangadharappa *et al* (2007), Devendra and Thomas. (2002).

When overall mean of positive effects in all the six agro-eco situations were calculated, it was found that the highest mean score was obtained by HEMR situation (Kizhakkenchery). Both these situations achieved more 'higher' positive effects with the interventions on goats or heifers rearing with fodder and turmeric cultivation and goats and chicks rearing along with growing fodder respectively. There was a better utilization of underemployed labour throughout the year in the coconut based homesteads. This finding is in confirmation with the results of Parawan (1999). The interventions created in the MELR situation (Eruthenpathy) alone had shown 'lower' positive effect since all the participating farmers preferred to rear heifers and just started yielding during the assessment period.

Table 2: Consequences of the interventions in coconut based homesteads as perceived by the participating small farm families after three years of interventions

Particulars	Mean values					
	Name of the situations and panchayats					
	HEHR - Pananchery	MEHR- Karukutty	LEHR- Thalikulam	HEMR- Kizhakkenchery	HELRL- Muthalamada	MELR Eruthenpathy
Positive effects						
Increased income	4.88	4.83	4.33	4.97	4.25	3.78
Increased employment generation	4.88	4.83	4.33	4.44	4.50	4.56
Increased soil fertility because of additional manuring	4.88	4.83	4.33	4.89	4.25	4.56
Increased yield of other crops	4.88	4.67	4.17	4.67	4.25	4.22
Increased consumption of nutritious food	4.63	4.67	4.17	4.78	4.38	3.44
Improvement in the health of family members	4.13	4.50	4.17	4.67	4.38	3.33
Utilized free time for productive purpose	4.13	4.83	4.17	4.44	4.50	4.78
Developed infrastructure at home / farm	4.13	3.83	3.83	4.00	3.25	3.11
Invested in other enterprises	3.50	2.83	3.33	2.67	2.75	2.89
Repaid loans	4.00	2.33	3.17	3.78	2.88	2.89
Could meet contingencies	4.00	2.33	3.17	4.00	2.88	3.11

Enhanced social relationship by exchange of products/ by products/ offspring	4.25	3.33	3.33	4.11	4.00	2.67
Increased my savings	4.63	3.00	3.67	4.00	3.13	2.67
Spent the income for better education	4.13	3.17	3.67	3.89	3.00	2.11
Spent the income for better food habits	3.88	3.50	3.83	4.11	3.13	2.44
Spent the income for better health care	4.13	3.50	4.00	4.22	3.00	2.44
Extended the diversification in terms of livestock/ crops.	4.25	4.00	3.83	4.11	3.00	3.33
Enhanced the recycling of farm produce because of the adoption of diversification	4.25	4.33	3.83	4.22	4.00	3.89
Adopted biogas	4.00	1.67	2.00	2.11	2.38	1.56
Adopted bio composting	4.00	1.67	2.00	2.44	2.38	1.56
Overall mean values	4.28	3.63	3.67	4.03	3.51	3.17
Negative effects:						
Affected the growth of intercrops	1.00	1.33	1.00	1.89	1.38	1.22
Discouraged because of loss incurred	1.00	1.67	1.00	1.67	1.50	1.56
Discouraged because of the outbreak of diseases of animals	1.00	1.67	1.00	1.67	1.75	1.56
Discouraged because of slow growth of animals	2.40	2.00	1.00	2.33	1.88	2.11
Because of the adoption of the particular diversification, stopped other productive enterprises	1.00	1.17	1.17	1.44	1.00	1.00
Created enmity with neighbours because of the disturbance caused by animals and strained social relationship with neighbours	1.13	1.00	1.17	2.11	1.00	1.44
Created health problems among the persons who have taken care of the animals/ birds	1.00	1.00	1.00	1.44	1.00	1.67
Affected the education of children to take care of animals/birds	1.00	1.00	1.00	1.44	1.00	1.33
Overall mean values	1.19	1.35	1.04	1.75	1.31	1.49

HEHR- High elevation and High rainfall, MEHR- Medium elevation- high rainfall, LEHR- Low coastal area, low elevation- high rainfall, HEMR- High elevation- Medium rainfall, HELR- High elevation- low rainfall, MELR- Medium elevation- black soil- low rainfall

Among all the negative effects of interventions, 'discouraged because of slow growth of animals' was reported as the highest negative impact with the mean score of 2.40 by the farmers of HEHR situation (Panenchery), that was also 'lower' magnitude of negative effect. It was observed that those who reared the animals as their main occupation with much care showed better growth and those who preferred goats/heifers rearing as the subsidiary occupation with less care showed slow growth. When overall negative effects felt in all the six agro-ecosystems were compared, HEMR situation (Kizhakkenchery) reported the highest mean score of 1.75 and that too with lower magnitude of negative effect. In all the six agro-ecosystems, generally 'lowest' magnitude of negative effects was reported. Therefore it can be concluded that the interventions made under participatory mode created 'higher' positive effects and 'lowest' negative effects in the small holdings of coconut based homesteads.

Participatory mode of interventions in the small coconut based homesteads created such a lot of positive consequences within a short period. It was also observed that the positive consequences diffused among the neighbouring farm families by way of sharing either the qualitative products or planting materials or selling the offspring of farm animals. Long term benefits will be much more which are to be regenerated and promoted among farmers to keep up the integrative nature of traditional homestead farming. Value addition and marketing were practiced in none of the homesteads. Therefore efforts are necessary to promote value addition and processing of the surplus produce to improve the employment opportunities and retain the integration in homesteads. Since the holdings are very small, to ensure continuous supply of produce, the chances of group or co-operative efforts may also be explored.

CONCLUSION

The interventions made under participatory mode created 'higher' positive effects and 'lowest' negative effects in the small holdings of coconut based homesteads. For maintaining the sustainability of the interventions, small farm families must be exposed to different appropriate options of value addition of the farm produce in a co-operative manner.

Paper received on : September 15, 2014

Accepted on : October 20, 2014

REFERENCES

- Devendra, C and D. Thomas. 2002. Crop animal interactions in mixed farming systems in *Asia. Agricultural Systems*. 71(1-2): 27-40.
- Gangadharappa, N. R, M. Shivamurthy and S. Ganesamoorthi. 2007. Agroforestry - a viable alternative for social, economic and ecological sustainability. Proceedings of xii World Forestry Congress, Canada. Pp77-79.
- Jayanthi, C. C. Vennila, K. Nalini and B. Chandrasekaran. 2009. Sustainable integrated management of crop with allied enterprises- Ensuring livelihood security of small and marginal farmers. *Tech Monitor*. Jan-Feb. 2009. Pp: 26-27.
- Parawan, O.O. 1999 Integration of livestock under tree crops in the Philippines. In: Proceedings of the International Livestock-Tree Cropping Workshop, 5-9 December, 1999, FAO/MARDI, Serdang, Malaysia, pp: 78-89.
- Thampan, P.K. 1999 Success story in coconut based cropping system. *Indian Coconut Journal* 21 (11): 16-17.

Career Preferences of Graduate and Post Graduate Agriculture Students

Shesh Narain Singh¹, R. K. Doharey² and Shalini Srivastava³

ABSTRACT

This study was conducted in four main agricultural universities in Uttar Pradesh, by interviewing 300 respondents who were selected through proportionate random sampling technique on the criteria of having four year degree programme of B.Sc.(Ag.), two year degree programme M.Sc.(Ag.) and three year degree programme Ph.D.(Ag.). The study depicted that the highest number of respondents in age category of 22 to 26 years belonged to nuclear families (79%) and having 5-10 members in their families (72%). Except 7 per cent respondents all were unmarried and backward caste respondents were more in comparison to other categories of caste. The economic motivation, risk orientation and value orientations were observed of medium levels. The mobile phone is most useful communication media. The agriculture was observed as main occupation of majority of the respondent's families and having annual income of ₹100001 to 200000 (31%). The 51 per cent respondents were found having pucca type houses, 35 per cent of the respondents were found in the land holding category of small farmers. 64.66 per cent medium level of decision pattern of father. The maximum number of respondents was observed in medium category of communication technology use in day and most usefulness of communication technologies in career preferences was mobile phone. The purpose in use of communication Technology was 'computer information retrieval or data updating' ranked first. The civil services or administrative jobs were found most preferred jobs followed by state government job by the agriculture students.

Key words: Socio-economic profile, career preference/job, communication technology, SAUs students.

INTRODUCTION

Agriculture is still the largest employer of India. Agricultural education is now given importance so that the farmers can adopt environmentally and technologically advanced farming practices and consequently increase productivity as well as profitability. Agricultural universities in India help farmers to make farming viable and profitable. There are a total of 53 Agricultural Universities or 'AUs' in the country, including 46 State Universities, 5 Deemed Universities and 2 central universities which are administered by the Indian Agricultural Universities Association. These universities are engaged in teaching, research and expansion of agriculture and related fields. The Agricultural Universities in India set up on the 'land grant' pattern of USA have contributed immensely to human resource development as well as enhancement of agricultural productivity and production in the country over the years.

The system of education in Agricultural Universities was basically taken from USA pattern that greatly enabled incorporation of a number of diverse subjects in the courses as also provision of Hands-on practical experience to the students. Agricultural education has

now to evolve in tune with fast changing national and international scenario. Future agriculture is dominated by looming dangers of food insecurity originating from an unholy alliance of existing and emerging issues such as stagnating/declining productivity and profitability; degradation and depletion of natural resources; increased risks in the face of changing climate; unsafe livelihoods for millions of small and marginal farmers; regional imbalances in agricultural productivity; rising input costs, unsound profits and vulnerable markets; hanging food habits and quality concerns; high post-harvest losses and fragmented processing industry; globalization of trade and commerce; weakened technology transfer system; fossil fuel crisis and growing emphasis on bio-fuels encroaching upon good agricultural lands; poorly coordinated natural disaster management system, and the looming prospects of bioterrorism *etc.* Keeping in view the above facts into consideration this study was undertaken with the specific objectives; to study the socio-economic profile of respondents and to study the career preferences of respondents.

METHODOLOGY

In Uttar Pradesh, there are working four main agricultural universities namely C.S.A.U.A. & T. Kanpur,

¹ Asstt. Prof./SMS, Department of Extension Education, College of Agriculture ² Prof. & Head, Department of Extension Education, College of Agriculture and

³ Teaching Assoc., Department of Extension and Communication Management, College of Home Science, N.D.U.A. & T. Kumarganj Faizabad (U.P.) Pin. 224229

S.V.B.P.U.A&T., Meerut, N.D.U.A. &T., Kumarganj, Faizabad and M.S.K.J.U.A. &T. Banda. But M.S.K.J.U.A. &T. Banda established in recent years so this university is not suitable for research criteria. The other three universities are running different degree programs. The study was purposively confined to State Agricultural Universities, C.S.A.U.A. &T. Kanpur, S.V.B.P.U.A&T., Meerut, N.D.U.A. &T., Kumarganj, Faizabad. These universities has at present time deferent colleges (College of Agriculture, College of Horticulture & Forestry, College of Fisheries, College of Veterinary Science & Animal Husbandry, College of Home Science, College of Agriculture Engineering & Technology, College of Biotechnology, College of Agri-Business Management) one of which, college of Agriculture was selected purposively designed to conduct study specially on Agriculture students

RESULTS AND DISCUSSION

Socio-personal profile of students

Maximum number of the respondents (57.33%) was observed in the category of 22 to 26 years of age. All students/respondents were found in the B.Sc. agriculture in (41.33%), M.Sc. (42.34%) and Ph.D. students in (16%) respectively. Little less than half of the respondents (48.33%) belonged to backward categories of caste followed by (29.67%) General caste and (22.00%) Scheduled caste respectively. The maximum number of the respondents was observed unmarried (93%). It is apparent from the highest number of respondents (69.34%) was found having medium level of economic motivation, while (18.33%) and (12.33%) respondents had high and low levels of economic motivation, respectively.

The most use of communication media was Mobile Phone ranked first with mean score of 3.59 followed by Internet services (3.09) rank II, Computer system (2.71) rank III, Television (2.71) rank IV, Internet via mobile phone (2.39) rank V, respectively. It is apparent that 64 per cent of the respondents were found having medium level of value orientations followed by (18%) and (18%) had high and low levels respectively and 71 per cent of the respondents were found having medium level of risk orientation followed by (17.66%) and (11.34%) had low and high levels, respectively. Maximum number of respondents (62%) were observed in medium (3 to 7 hours) category of communication technology use in day followed by low (up to 2 hours) and high (8 hours and above hours) *i.e.* 21 and 17 per cent respondents respectively.

Familial status of students

A large majority *i.e.* 79 per cent respondents were residing in nuclear family system while remaining 21 per cent respondents were observed in joint family system. It is evident that 72.67 per cent of the respondents families were observed who had 5 to 10 members followed by 14.67 per cent families having up to 4 members and only 12.66 per cent respondents families were found having 11 and above members in their families. One third of the respondents (64.33%) were observed having their family education between high school to intermediate followed by 19.67 per cent graduation and above and 16 per cent up to junior high school respectively. In case of main and subsidiary family occupation the highest number of respondents (39.33%) reported in agriculture followed as their main family occupation followed by service (34.00%) and Business (19.00%) respectively. 31.67 per cent of the respondents were from those families, whose annual income were found in the categories of Rs. 100001 to 200000 followed by other categories *viz.*, 29.00 per cent (up to Rs. 100000), 18.67 per cent (Rs. 200001 to 300000) 10.66 per cent (Rs. 300001 to 400000) and 10 per cent (Rs. 400001 and above) respectively and pertaining to the type of houses possession that 51.00 per cent respondents were found having their houses of pucca types, 47.00 per cent were residing in mixed houses and 02.00 per cent were reported such who had kachcha houses. The majority (35.67%) of the respondents was found in the land holding category of small farmers (2.5 acre to 5 acre) followed by 25.00% in the categories of marginal farmers (below 2.5 acre), 9.67% in the category of medium farmers (5 to 7.5 acre), 9.33% in the category of large farmers (7.5 acre and above) and 20.33% respondents was found in land less respectively. Majority of respondents (99.67% and 97%) at personal level and family level was observed possessing cellular phone with them. The overall decision pattern of family in Father involvement is highest.

Usefulness of communication technologies in career preferences: The data showed that the most usefulness of communication technologies in career preferences was Mobile Phone ranked at first with mean score of 1.48 followed by Television (1.42) rank II, Internet services (1.41) rank III, Community Radio (1.18) rank IV, Internet via mobile phone (0.91) rank V respectively and the majority of Purpose in use of Communication Technology was "Computer information retrieval or data updating" ranked at first with mean score of 1.39 followed by "Data analysis" (1.01) rank II, "Sending and receiving e-mail" (0.96) rank III, "For searching details related to subjects" (0.94) rank IV, "Internet For finding references" (0.91) rank V respectively.

Table 1: Socio-personal, economic and psychological profile of the respondents

n=300

Variables	Percentage of the respondents	Mean	Standard Deviation	Minimum	Maximum
Age.		23.17	2.73	17	32
I. 17to 21 years	29.33				
II. 22 to 26 years	57.33				
III. 27and above years	13.34				
Education.					
I. B.Sc.(Ag.) II, III, IV Year	41.33				
II. M.Sc.(Ag.) I, II Year	42.34				
III. Ph.D.(Ag.) I, II, III Year	16.33				
Caste composition.					
I. General caste	29.67				
II. Backward caste	48.33				
III. Scheduled caste	22.00				
Marital status.					
I. Married	07.00				
II. Unmarried	93.00				
Economic motivation (scores).		22.84	02.52	10	29
I. Low (up to 20)	12.33				
II. Medium (21 to 25)	69.34				
III. High (26 and above)	18.33				
Communication media use.					
Mobile Phone		3.59			
II. Internet services		3.09			
III. Computer system		2.71			
IV. Television		2.70			
V. Internet via mobile phone		2.39			
Value orientation.		39.29	4.81	27	50
I. Low (27 to 35 score)	18.00				
II. Medium (36 to 43 score)	64.00				
III. High (44 to 50 score)	18.00				
Risk orientation.		22.45	2.66	12	28
I. Low (12 to 20 score)	17.66				
II. Medium (21to 25 score)	71.00				
III. High (26 to 28 score)	11.34				
Family type.					
I. Single family	79.00				
II. Joint family	21.00				
Family size.		07.18	03.13	2	21
I. Small(up to 4 members)	14.67				
II. Medium(5 to 10 members)	72.67				
III. Large(11 and above members)	12.66				
Family education status.		21.13	10.06	3	60
I. Up to junior high school (Upto 11 score)	16.00				
II. High school to intermediate (12 to 31 scores)	64.33				
III. Graduation to above (32 to above scores)	19.69				
Occupation.					
I. Agriculture based labour	05.33				
II. Caste based occupation	01.00				
III. Service	34.00				
IV. Agriculture	39.33				
V. Business	19.00				
VI. Agro based enterprise	01.33				
Family annual income (Rs.).		202183		20000	780000
I. Up to 100000	29.00				
II. 100001 to 200000	31.67				
III. 200001 to 300000	18.67				
IV. 300001 to 400000	10.66				
V. 400001 and above	10.00				
Housing pattern.					
I. Kachcha	02.00				
II. Mixed	47.00				
III. Pucca	51.00				
Land holding.		03.34		00.00	26
I. Land less	20.33				
II. Marginal(below 2.5 acre)	25.00				
III. Small(2.5 to 5.0 acre)	35.67				
IV. Medium(5.0 to 7.5 acre)	09.67				
V. Large(7.5 acre and above)	09.33				

Decision pattern of family.

I. Father	64.33
II. Mother	15.47
III. Brother	10.52
IV. Self	09.00
V. Sister	00.94

Communication technology use in day (in hours).

I. Low (up to 2 hours)	21.00
II. Medium (3 to 7 hours)	62.00
III. High (8 hours and above hours)	17.00

Usefulness of communication technologies in career preferences.

Mobile Phone	1.48
II. Television	1.42
III. Internet services	1.41
IV. Community Radio	1.18
V. Internet via mobile phone	0.91

Purpose in use of Communication Technology.

I. Computer information retrieval or data updating	1.39
II. Data analysis	1.01
III. Sending and receiving e-mail	0.96
IV. For searching details related to subjects	0.94
V. For finding references	0.91

Career preferences of students

Career preferences: The result of the degree of career preferences as preferred by the respondents. This is clear from the data that the Civil services or Administrative jobs was cent per cent preferred job at ranked first, as reported of the respondents followed by State Government jobs at ranked II (88.33%), Education and Research Institution jobs at ranked III (66.00%), Agro-based Public sector jobs at ranked IV (47.33%), Agro-based Private sector jobs at ranked V (47.33%), Self-employment at ranked VI (08.33%), Farming at ranked VII(05.00%) and General jobs at ranked VIII (04.00%) respectively. It may be concluded that Civil services or Administrative jobs, State Government jobs and Education and Research Institution jobs name the most important and preferred jobs by the Agricultural students.

Table. 2: Career preferences of respondents.

n=300

Career preferences	Respondents		Rank
	No.	Percent	
Civil services or administrative jobs	300	100.00	I
State Government jobs	265	88.33	II
Education and Research Institution jobs	198	66.00	III
Agro-based public sector jobs	156	52.00	IV
Agro-based private sector jobs	142	47.33	V
Self-employment	25	08.33	VI
Farming	15	05.00	VII
General jobs	12	04.00	VIII

CONCLUSIONS

The study revealed there was no caste discrimination as far as admission to Agriculture degree is concerned. Majority of students were found more conscious for their married life and participation in economic motivation was found to be of medium level. Mobile Phone was observed most important use of communication media. The value orientations and risk orientations were observed of medium level which means that there was no discrimination in the observed data. The maximum guardians had small size of land holding, having agriculture as family occupation. The majority of students had medium level communication technology use in a day and majority of students were observed satisfied to be with availability of communication technology. The usefulness of communication technology in career preferences and computer information retrieval or data updating was found to serve useful purpose in use of communication technology. Civil services or Administrative jobs were the most important preferred jobs for agricultural students.

Paper received on : September 27, 2014
Accepted on : October 30, 2014

REFERENCES

- Anastasova, M. 1992. Preferences and motivation for accepting different types of production and organization in agriculture. *Selskostopanska Nauka*. 30: 1/3, 62-68.
- Bryant, L. 2006. Marking the occupational body: young women and men seeking careers in agriculture. *Rural Society*. 16: 1, 62-79.
- Cheng PoJen; Yueh HsiuPing and Chen TzyLing 2011. Exploring agriculture freshmen's engagement, career attitude and identification of college majors. *Journal of the Agricultural Association of Taiwan*. 12: 6, 582-610.
- Danziger, N., & Eden, Y. 2006. Student career aspirations and perceptions: The case of Israeli accounting students. *Accounting Education: An International Journal*. 15(2), 113-134.
- Germeijs, V., & Verschueren, K. 2006. Graduate students' career decision making process: A longitudinal study of one choice. *Journal of Vocational Behaviour*. 68, 189-204.
- Heung, V. C. S. and Leong, J. S. L. 2006. Career demand and behaviour of university students in Hong Kong. *Asia Pacific Journal of Tourism Research*. 11: 1, 81-95.
- Ilenloh, M. I.; Onemolease, E. A. and Erie, A. P. 2012. Occupational aspirations of university students of agriculture in Edo State, Nigeria. *Journal of Agricultural & Food Information*. 13: 2, 130-143.

Enabling Retention of Rural Youth in Farming through Capacity Building – A Case Study

B. L. Dhaka¹ and K. Chaya²

ABSTRACT

Youth contributes more than 40 per cent of Indian rural population. Due to their limited access to education and skills training, rural youth are often very low-skilled, unemployed and insecure. Youth living in rural areas do not have enough incentives, profitable economic opportunities and attractive environments in which to live and work. Investing in young people living in rural areas is key to enhancing agricultural productivity, boosting rural economies, and reducing rural-to-urban migration. Realizing the potentiality of agriculture to significantly reduce poverty, enhance economic growth and entrench economic stability, the rural youth were equipped with necessary skills required to run dairy farm successfully through capacity building activities. The present paper is based on findings of a case study. A case study of a successful dairy entrepreneur in Bundi district of Rajasthan state was conducted to analyse the effectiveness of capacity building strategy to retain rural youth in farming. It was observed that capacity building approach enabled the rural youth to run dairy farm enterprise profitably. The study concluded that capacity building of rural youth could play an important role in retaining rural youth in farming.

Keywords: rural youth, capacity building, farming

INTRODUCTION

Over 40 per cent of the Indian rural population comprises of youth. Due to their limited access to assets, markets, finance and education and skills training, rural youth are often unemployed or work informally often in unpaid, very low-skilled, insecure and sometimes hazardous jobs. If young people living in rural areas do not find enough incentives, profitable economic opportunities and attractive environments in which to live and work, they will continue to migrate to urban areas. Large-scale migration of rural youth from farming to urban areas has caused serious concern among the agricultural policy makers.

This trend, if not checked, would not only contribute to the mega urbanization and growing urban unemployment that is already under way, but is likely to affect agricultural activities in the future expected to affect food production. The challenges of meeting the rapidly growing food needs of the population cannot be successfully overcome without significant and sustained investment in capacity building of rural youth in farming.

Youths are young people in a society who are characterized by ample ideas, energy, and new ways to see life and face problems (Gobeli, 2004). Educated youth are more likely to adopt new innovations, have access to extension services and utilize agricultural loans more effectively. Youth are strong and possess abundant energy

that needs proper channeling and harnessing for increased agricultural production (Ogunbameru, 2001). Youth involvement in agricultural activities will not only create career opportunities for the youth but also increase food production and to a large extent reduce the gap between food production and its demand in the community.

Realizing the seriousness of the issue, Krishi Vigyan Kendra, Bundi has started investing in young people living in rural areas in order to equip them with necessary skills required to run farming successfully through capacity building activities. This study sees capacity building for the rural youth as a tool to retaining youth in farming in the study area. A case study of a successful dairy entrepreneur in Bundi district of Rajasthan state was conducted to analyse the effectiveness of capacity building strategy to retain rural youth in farming.

METHODOLOGY

A case study of a successful dairy entrepreneur Shri Hans Raj Kahar from Gothra village of Keshoray Patan block, Bundi district, Rajasthan state was conducted. He was interviewed personally with the help of a structured interview schedule. The dairy enterprise was selected purposively. In order to know the economics of the enterprise initial investment, expenditure during one year and income during one year was calculated. Finally, net profit during one year was calculated.

RESULTS AND DISCUSSION

Case analysis : Shri Hans Raj Kahar is 33 years old, educated up to 12th standard, rural youth of village Gothara district Bundi, Rajasthan. After completing 12th he started looking for some job but all in vain. He decided to practice farming. But returns from farming were not providing proper support to smooth livelihood of his family. Due to lack of sufficient technical knowledge and proper guidance; he was not quite satisfied with his work. Meanwhile, he came in contact with scientists of Krishi Vigyan Kendra, Bundi, Rajasthan and attended a 45 days training programme on Dairy Management in the year 2008. He got all the technical know-how and skills to run a dairy farm successfully. Under the technical support of scientists of Krishi Vigyan Kendra, Bundi, Rajasthan, he gave new direction to his tradition dairy farming. He decided to improve the breed of local buffalo. With the financial support of Krishi Vigyan Kendra, Bundi under breed improvement programme of "Rajasthan Mission of livelihood" he purchased Murahh bull.

The local buffalo were inseminated with improved Murrah bull. As a result, the milk production was greatly enhanced. Now, Sh. Hansraj owns total 20 buffalos with milk production nearing about 9-12 litre/buffalo. He owns one buffalo bull. During the course of time he installed milk processing unit in nearby town. He also procured milk from other fellow farmers and processed it. On selling milk, cream, curd, ghee, butter etc and service of bull, he earned about ₹ 15000 per month as net income. One youth was employed for processing and selling of milk.

Table 1. Profile of rural youth under study

Particulars	Details
Name	Hansraj Kahar
Village	Gothara
Type of family	Joint
Size of family	13
Education	12 th
Age	30
Land holding	3.5
livestock holding	20
farming situation	Irrigated
Average daily milk production (in liter)	50
Average daily milk procurement (in liter)	100
Average daily milk processing and selling (in liter)	150

Performance of dairy farm : It is evident that (Table 2) total expenditure during one year was ₹ 17,40,500.00. Out of which he spent ₹ 5,47,500.00/- towards the purchase of feed and fodder for animals, ₹ 10,95,000/- for procurement of milk from fellow farmers, ₹ 42,000.00 for

shop rent and electricity charge, ₹ 54,000.00 for labour charges and ₹ 2,000/- for veterinary and medical charges per year Table 3 shows income during the year 2012-13.

He sold milk, cream, curd, ghee, paneer. During this period he sold of ₹ 12,27,188.00 milk and products like cream, curd, ghee, paneer etc of ₹ 6,89,063.00. He also provided service of bull to other farmers and earned ₹ 15,000/- during one year.

Hence, the total income during one year was ₹ 19,31,251.00. During the year 2012-13 Sh. Hansraj realized net income ₹ 1,90,750. This finding was in line with the findings of Oyediran *et. al.* 2013, Antwal (2009) and Ekale (2006).

Table 2. Expenditure during one year (2012 - 2013)

Particulars	Expenditure (₹)
Feed and fodder	547500.00
labour	54000.00
Veterinary and Medicinal charges	2000.00
Procurement of milk	1095000.00
rent of shop and Electricity	42000.00
Total Expenditure	1740500.00

Table 3: Income during one year (2012 - 2013)

Particulars	Income (₹)
Selling of milk	1227188.00
Selling of milk products	689063.00
Service of bull	15000.00
Total income	1931251.00

CONCLUSION

It could be concluded that dairy enterprise, next to agriculture, not only provides continuous income and improves dietary standards of family, but also supplements the income and reduces unemployment to a large number of the rural poor. However, dairy farming were hindered by myriad of problems such as, inadequate training and capacity building, lack of modern technologies and high cost of transportation. There was positive and significant relationship between profits realized from dairy farming and capacity building. Greater improvement in dairy farming can be achieved through adequate capacity building and training for the youth in the study area.

Paper received on : September 27, 2014

Accepted on : October 30, 2014

REFERENCES

- Antwal, P.N.; Bhosale, P.B. and Bellurkar, C.M. 2009. Women in Dairy Management: A case study. *Journal of Dairying, Foods and Home Sciences*, 28(1):64-66.
- Ekale, J. V.; Bellurkar and, C. M. and Jadhav D. L. 2006. Case study of a successful dairy woman entrepreneur. *Journal of Dairying, Foods and Home Sciences*, 25 (3/4) : 248-250.
- Gobeli, V. C. 2004. Extension Rural Youth Programme: Part of a Comprehensive Strategy for Sustainable Development, in developing Countries, USDA, Washington DC.
- Ogunbameru, B. O. 2001. Practical Agricultural Communication. Daily Graphics (Nigeria) Limited P. O. Box, 12668 (G.P.O).
- Oyediran, W. O.; Omoare, A. M.; Sodiya C. I. and Fakoya, E. O. 2013. Capacity Building for Rural youth: Priorities for Sustainable Catfish Production in Ogun State, Nigeria. *IOSR Journal of Agriculture and Veterinary Science*, 4(2): 38-42.

Ergonomic Evaluation of Improved Grain Cleaning Technologies - Comparative Study of Traditional and Improved Tools

Rashmi Shukla¹ and S.R.K. Singh²

ABSTRACT

This study was conducted to assess ergonomically the efficiency of improved hanging type cleaner grader. Twenty farmwomen were selected to assess and compare the impact of improved technologies over one. The physiological cost of work and energy expenditure in terms of heart rate cardiac cost, time required, strokes, output were observed to be lower while performing selected activities with the improved technologies compared to the traditional one. The work output was also found higher with all of the improved technologies. The activity was performed with both the traditional method using as well as by using supra the improved tools. Results of the study showed that the average heart rate and energy expenditure of the women were reduced significantly while performing the grain cleaning activity with the use of improved tool manufactured by CIAE, Bhopal. The use of both the improved tools also leads to reduction in the muscular stresses. Further it was observed that work productivity with the improved tool Hanging sieve had significantly improved. It was therefore recommended that women should be motivated to use the improved tools for grain cleaning to minimize their health hazards.

Key words : Ergonomics, grain cleaning technology

INTRODUCTION

Farm women play a significant role in India's economy and their number, at present, is estimated at about 101 million. Though they play multifarious roles, farm women are employed mostly in drudgery-prone activities which includes transplanting, weeding, harvesting, threshing, grain cleaning etc. The tools/equipment available have been primarily developed for male workers and given for use to women workers which results in lower system efficiency and occupational health problems. Women have different ergonomical characteristics than men and therefore it is necessary to develop tools/equipment to suit their anthropometric and strength data. The tools/equipment once developed needs to be demonstrated, and the users have to be given training or their proper use. The Central Institute of Agricultural Engineering Bhopal in association with DRWA sub-centre and AICRPs located at SAUs has taken a lead in this direction and evaluated/refined/developed about 21 tools and equipment suitable for farm women. Efforts have also been made to provide training to women extension functionaries and farm women on these tools and equipment. Making these tools available in rural is also very important and needs to be given due consideration. This paper touches all these aspects and suggestions have been given for development and promotion of women friendly tools and equipment.

The role of women in agriculture is very significant especially the post harvest and agro processing activities like the cleaning, drying, grinding, decortications. Cleaning of wheat grains is the most common farm activities performed by the women in every rural home. Grain and chaff are separated using natural breeze or by creating artificial wind. While doing so, the women adopt many unnatural postures like bending, stretching of different body parts which lead to increase in cardiovascular stresses. Elisjstom and Nachemson (1970) also found that unnatural postures lead to several musculo-skeletal problems. The tools/ equipment available have been primarily developed for male farmers and women farmers have to use the same if required resulting in low work efficiency and many occupational health problems. So, there is a need to develop or improve the existing grain cleaning equipment according to the anthropometric needs of the women farmers . to reduce their drudgery. Keeping in mind these views, an improved tool for cleaning of grains i.e hanging sieve was tested in order to see the impact on the reduction of stresses of women and to measure its impact on the increase of work output (Oberoi *et. al.*, 2005).

Studies have pointed out that farm activities that are time and labour intensive, monotonous, repetitive and more drudgery prone are generally performed by women. Since all the operations are done manually, they cause considerable physical and mental fatigue and other health

¹Scientist, DES, JNKVV, Jabalpur² Sr. Scientist, ZPD Zone VII, Jabalpur, Madhya Pradesh

problems. The root cause of their sufferings is ignorance about improved technologies, age-old methods of doing the work, inappropriateness of the technology and attitudinal constraints such as innate conservatism and resistance to change. "Empowerment of Women in Agriculture" has been initiated with the objective to empower farm women technologically to reduce their drudgery (Badiger *et al.*, 2006).

To measure the average heart rate during work and during rest of women performing the selected activity with traditional method and with the use of improved tools, to measure the change in work output with the use of traditional and improved methods related to selected activity and to compare the cardiac cost of work, time required for cleaning, number of strokes/batch for sieving saving with traditional and improved method, were the major objectives of the present study.

METHODOLOGY

Twenty Farm women of Narsinghpur District (M.P.) in the age group of 35 to 50 years with normal health without any major illness were selected for the study. The suitability of the women for the experiment was ascertained by measuring the body temperature, blood pressure, heart rate *etc.* Cleaning and grading of grain with hanging sieve was compared with traditional practice *supa*. During the experiment various parameters *viz.* time profile, output, heart rate, work pulse, cardiac cost, saving in cardiac cost. Stop watch was used to record the time.

Performance of the activity : The selected subjects were given enough rest and their resting heart rate was measured with the help of Heart Rate Monitor. Then the subject was asked to perform the selected activity by traditional method for approx. 30 mins. and the heart rate of the subjects was measured for the entire activity. After the Hanging Sieve specifications completion of the task the recovery heart rate was again recorded till the subject came in the state of normal heart rate. The same procedure was repeated when the same women performed the activity with improved tools manufactured by CIAE, Bhopal.

The Specifications of equipments were as mentioned in Table 1

Table 1 :Specifications of equipments

Particulars	Hanging Type Cleaner	Sack Holder
Overall Dimensions (l x w x h), mm	1040 x 620 x 205	530 x 450 x 810
Weight, kg	17.1	10.3
Size of jute bag, mm	-	1120 x 680
Cost, ₹	4000	1500

Features

Hanging sieve a batch type hand operated equipment to replace existing traditional practice of grain cleaning with natural wind or horizontal/vertical sieving to clean the grains.

These separate impurities like stubbles, chaff, dirt and broken from wheat, Bengal gram, soybean and other cereals and pulse crops.

These improved tools consist of the mainframe, scalper/grading screen, draper rod, handle, shutter *etc.*, and is operated by hanging it on any elevated point with 4 ropes.

A batch of 5-10 kg of grains is fed into the cleaner and it swings to and fro to sieve the batch

Single woman can operate this in standing posture and desired work can be done with minimum of efforts and body fatigue.

Working principles of equipment : It is manually operated equipment for cleaning and grading of grain, It consist of main frame, grading screen, draper rod, rubber grip over handle, shutter *etc.* and Four ropes are tied on the hooks provide on main frame of cleaner and hanged on any elevated points or hooks attached to the ceiling. It is operated in oscillating mode.

Average heart rate, energy expenditure were calculated with the help of following formula

Average heart rate during rest and work.

□ ΔHR (beat/Min) = Average working heart rate - Average heart rate during rest.

□ Output (Kg./hr.).

□ Cardiac, cost of work per unit of output (beats/Kg)= $\Delta HR \times \text{duration of work/output}$.

RESULTS AND DISCUSSION

Table 2: Comparative performance of the Supa and Hanging sieve

Particulars	(Traditional Practice with Supa)	(Double Screen grain cleaner Hanging Sieve)
No. of Trials	05	05
No. of Farm Women involved	20	20
Crop.	Wheat	Wheat
Output Kg./Hour	15/ Kg/Hour	150/ Kg/Hour.
ΔHR	5 Beat/Min.	5.94 beats/min.
No. of women farmers adopted (%)	-	40

Assessment of selected ergonomic parameters

Table 3: Impact of improved tool over traditional tool for grain clearing activity

Particulars	Traditional Practice (with supa)	Hanging Sieve (Double Screen grain cleaner)
Number of workers required	01	02
Grain used for experiment	Wheat	Wheat
Quantity of seed fed per batch/Kg.	01 Kg.	10 Kg.
Time required for cleaning/batch/min	06 min.	04 min.
Number of strokes/batch for sieving.	32	13
Output Kg/hour	10/Kg.	150/Kg.
Average Heart Rate beats/Min.	103.40 beats/min	93 beats/min.
ΔHR	5.94 beats/min	5 beats/min.
Cardiac cost of work per unit of	30 beats/Kg.	2.37 beats/Kg.

Analysis

From Table no. 3 it can be drawn that with traditional method of grain cleaning heart rate was 103.43 beats/min but with the use of improved tool (Hanging sieve) heart rate was reduced to 93 beats/min. The results had conformity with the findings of Sandhu *et al.* (2001) who advocated that by using improved tools/technologies, the physiological workload get reduced to a great extent.

The work efficiency is measured in terms of output there was significant increase (150 kg/h) in work output was observed while using improved technology compared to traditional method (10 kg/h). Results are in line with the study conducted by Gupta *et al.* (2004).

Similar results are observed in case of energy expenditure and physiological cost of work. Thus, these technologies proved drudgery reducing, more efficient, advantageous in terms of increased output thus time saving. The time saving with the use of improved method was 04/batch/min with that of traditional method is 06/batch/min. The energy expenditure was estimated by using the formula proposed by Varghese *et al.* (1994) for Indian Women. The cardiac cost of work is the total number of heart beats spent about the resting level in order to perform the work. The cardiac cost of recovery is the total no. of heart beats above the resting level occurring at the end of work and return to the pre activity state (Saha, 1976).

The same was perceived by the farm women. Hence, it may be concluded from the study that, most of the agricultural activities particularly post harvest activities were commonly performed by farm women. Since all operations are performed manually they cause physical

and mental fatigue and other health problems. Some of the schemes tried to introduce many technologies, which have not reached the women at gross root level. But this study has made efforts through continuous training and demonstrations at field level and created awareness and skill in the use of these technologies. Use of improved technologies *viz.* tubular maize sheller, ground nut decorticator, ground nut stripper and hanging type cleaner grader showed decrease in physiological cost of work and increased work out put compared to traditional method. Hence, beneficiaries of this study are changing their attitude, skill and knowledge which intern help to empower farm women technologically, socially and economically for improved quality of life.

Hanging sieve saves almost half the time and increase working efficiency (saving 19 strokes/batch for sieving), reduces drudgery of farm women over traditional practice. Comparison with traditional practice (Supa) found that Hanging sieve was easy in operation, no muscle strain, saves cardiac cost of worker, requires less energy expenditure causing fatigue.

CONCLUSION

On the basis of the above-discussion, it may be concluded that improved tools decrease the health hazards and work-load and increase the efficiency of work. Besides, the quality of grain was also improved with the use of improved tool. Hence, there is need to promote such drudgery reducing technology for the overall health improvement of the farm women engaged I agriculture. This will lead to the empowerment of the farming community having a healthy mother and healthy family.

Paper received on : September 27, 2014
Accepted on : October 30, 2014

REFERENCES

- Anonymous, 1987. *African Agriculture the next 25 years*. Food and Agriculture Organization. Rome.
- Badiger Chhaya, sumahasalkar and Kavitha 2006. "Ergonomic Evaluation of improved technologies for farm women in post harvest activities" *Karnakaka J. Agric. Sci.* 19(1):(80).
- Gupta, P., Singh, S., Singhal, A., S., Mathour, P. and Choudhary, A., 2004. Drudgery reduction of farm women through technology intervention in rural areas of

Rajastan. *In: Power Machinery Systems and Ergonomics, Safety and Health*, Anamaya Publishers, New Delhi, pp.331-337.

Gite L.P. 2008 "Tools and equipment for reducing drudgery of women in Agriculture in capacity building programme in OUAT Bhubaneswar P.P.1.

Saha, P.N. 1976. The practical use of some physiological research methods for assessment work stress. *Journal of Indian Association of Physiotherapists*, 4:9-13.

Oberoi 2005, Sharma Shivani and Kaur Kulvir "A Comparative study of traditional and improved grain Cleaning tools *Journal Dairying, Foods H.S.* 24 (3/4) P.P. 197.

Varghese, M.A., Saha, P.N. and Athreya, N., 1994, A rapid appraisal of occupational workload from a modified scale of Perceived Exertion. *Ergonomics*, 37:485-491.

Satisfaction of Beekeepers' towards the Services of National Horticulture Mission

Jaya Mehra ¹, K. L. Dangi ² and Vanpal Kumar Boyal ³

ABSTRACT

National Horticulture Mission was launched in the country in May 2005 as a centrally sponsored scheme to promote holistic growth of the horticulture sector through an area based regionally differentiated strategies. The present investigation was undertaken to evaluate the project with special reference to beekeeping under NHM. The evaluation of the programme is essential for making the future programme more effective. Keeping this in view, the present study was undertaken in Kota district of Rajasthan to study the satisfaction level of the beekeepers towards beekeeping programme under National Horticulture Mission. The study indicated that majority (98.00 %) of the beekeepers had high satisfaction level towards services provided by NHM for beekeeping programme. Besides, 2.00 per cent were moderately satisfied with services provided by NHM. The beekeepers were highly satisfied about storage of produce (MPS 78.94), however, they were least satisfied with availability of bee colonies (MPS 67.40).

Key words: National horticulture mission, beekeeping, satisfaction level.

INTRODUCTION

A centrally sponsored scheme called National Horticulture Mission (NHM) is being implemented in the country for which Government of India contributes 85 per cent and 15 per cent is met out by the State Governments. Main objectives of the Mission were providing holistic growth of horticulture sector through area based regionally differentiated strategies, which include research, technology promotion, extension, post-harvest management, processing and marketing in consonance with comparative advantage of each state/region and its diverse agro-climatic features; enhancing horticulture production, improving nutritional security and income support to farm households; promote, develop and disseminate technologies for horticultural development through seamless blending of traditional wisdom and modern scientific knowledge and creating employment generation opportunities for skilled and unskilled persons, especially unemployed youth.

Beekeeping is an important component of agriculture and rural development programmes in India. The role of beekeeping in providing nutritional, economic and ecological security to rural communities at the household level is an additional income generating activity. Hardly any evaluation of the project with special reference to satisfaction of Beekeepers' towards services of National Horticulture Mission might have been attempted so far. Keeping these facts in view, the present investigation was undertaken to study the satisfaction level of the

beekeepers towards services under National Horticulture Mission.

METHODOLOGY

The present study based on *ex-post facto* research design was conducted in Kota district of Rajasthan. The state of Rajasthan consists of 33 districts, of which Kota is the district where beekeeping enterprise is being followed in 4 panchayat samities. Out of five panchayat samities, Ladpura, Sangod and Sultanpur were selected as they possessed considerable population of beekeepers. Total 41 villages were included for the present investigation on the basis of population of beekeepers. The study was conducted by interviewing the whole population of the beekeepers who had undergone beekeeping in all of the villages of selected panchayat samities. The total size of the sample constituted of 151 respondents.

To measure the satisfaction level, a scale developed by Saini (2008) with a little modification was used for this study. Twelve attributes were included for investigation *viz.* publications, trainings, exhibitions, field visits, subsidies, availabilities of bee colonies, storage of produce, help in migration, marketing, income generated through beekeeping, overall satisfaction and happiness. The responses obtained were assigned scores as 5,4,3,2 and 1 to the scale's points *viz.* highly satisfied, quite satisfied, satisfied, somewhat satisfied and dissatisfied, respectively. Face to face interview was conducted in local language to obtain factual response for analysis of the satisfaction level of the beekeepers.

¹Ph.D. Scholar, Dept. of Extension Education RCA, MPUAT, Udaipur -313001(Raj), ² Professor, Dept of Extension Education RCA, MPUAT, Udaipur 313001(Raj)

³Ph.D. Scholar, Dept. of Agricultural Economics and Management RCA, MPUAT, Udaipur -313001(Raj)

RESULTS AND DISCUSSION

To frame a continuum of the beekeepers pertaining to satisfaction level, they were grouped into three strata *i.e.*, highly satisfied, moderately satisfied and least satisfied. This classification was based on the method (arbitrary) developed by Chauhan (1994).

A perusal of data in Table 1 reveals that majority (98.00%) of the beekeepers had high satisfaction level towards services provided by the NHM for beekeeping programme. Besides, 2.00 per cent were moderately satisfied with services provided by the NHM.

Table 1: Extent of satisfaction of beekeepers towards the services of NHM

n = 151	
Category	f(%)
Moderately satisfied (31 to 50)	3(2.0)
Highly satisfied (≥ 51)	148(98.0)
Total	151(100.0)

f = frequency % = per cent

The reason for high satisfaction may be due to the fact that there was no lapse on the part of the NHM to satisfy the beekeepers.

This indicated that all types of efforts and services were provided by the NHM officers to help and solve the problems of the beekeepers like training, literature, practical know-how, supply of good quality bee boxes and hives, subsidy procedure *etc.*

Besides, the NHM officers also provided the migration certificate to the beekeepers so that they can easily take their bees to different states for migration. The findings are similar to the findings of Vipin Kumar (2006) and Singh *et al.*, (2010).

Level of satisfaction of beekeepers towards services provided by NHM

The efforts were made to find out the level of satisfaction of beekeepers under various specific services provided by the NHM and the results are presented in Table 2.

The beekeepers had high satisfaction level about storage of produce (MPS 78.94), subsidy procedure (MPS 74.67), exhibitions (MPS 73.38), help in migration (MPS 73.20) and training (MPS 71.76), which were placed at 1st, 2nd, 3rd, 4th and 5th rank respectively.

Table 2: Aspect-wise level of satisfaction of the beekeepers towards beekeeping programme

n = 151		
Sub-item	MPS	Rank
Publications	68.84	VI
Training	71.76	V
Exhibitions	73.38	III
Field visits	68.34	VIII
Subsidy	74.67	II
Availability of bee colonies	67.4	IX
Storage of produce	78.94	I
Help in migration	73.2	IV
Marketing	68.45	VII

The services perceived as quite satisfied were beekeepers publications (MPS 68.84), marketing (MPS 68.45) and field visits (MPS 68.34) which were ranked 6th, 7th and 8th respectively. On the other hand, availability of bee colonies service (MPS 67.40) got least score due to the reason that some beekeepers did not get bee colonies at the right time.

CONCLUSION

It may be concluded that majority of the respondents were satisfied about most of the NHM services related to beekeeping programme. It meant, that the respondents found positive impact about most of the services provided under the NHM namely. It could be recommended that three services of NHM namely marketing, help in migration and storage of produce must be strengthened for beekeepers.

Paper received on : September 10, 2014
Accepted on : October 24, 2014

REFERENCES

- Chauhan N.B. 1994. A study on peasantry modernization in Dungapur district of Rajasthan. Ph.D. thesis submitted to Rajasthan Agricultural University, Bikaner, Rajasthan.
- Singh, K., Peshin, R. and Saini, S.K. 2010. Evaluation of the agricultural vocational training programmes conducted by the Krishi Vigyan Kendras (Farm Science Centers) in Indian Punjab. *Journal of Agriculture and Rural Development in the Tropics and subtropics*, 111: 65-77.
- Vipinkumar, V.P. 2006. Impact assessment of ATIC, CMFRI. Project Report on Evaluation Capacity Building in Rural Resource Management Workshop held at IARI, New Delhi. p. 26.

Barriers in Functioning of Dairy Enterprise Managed by Rural Women

Arun Kumar ¹, Prakash Singh ², R. P. Sahu ³ and Khushbu Singh⁴

ABSTRACT

This study was undertaken in the year of 2011 in Faizabad district of Uttar Pradesh with 120 respondents (60 rural women from SHG and 60 rural women from non-SHG of dairy enterprise). The main objective of this study was to find out the barriers in functioning of dairy enterprise managed by rural women. Majority of the SHG rural women faced the barriers as chances of dishonesty regarding handling of money, poor economic access of women to invest in dairy enterprise, lack of training programme, improper supply and high cost of veterinary services and medicines, lack of proper marketing channels. The majority of the non-SHG women faced hindrance of casteism hinders in proper SHG formation, improper supply and high cost of veterinary services and medicines, lack of training programmes and lack of proper marketing channels. Most of the independent variables *viz.*, age, family size, occupation, mass media sources, overall extension contact, farm power, agricultural implements *etc.* were found highly significant and positively correlated with degree of women empowerment.

Key words: Self Help Group (SHG), barriers, rural women, dairy enterprise, women empowerment

INTRODUCTION

Dairying in India is one of the important subsidiary occupations in the rural areas next to agriculture. In livestock management, indoor jobs like milking, cleaning *etc.* are done by women in 90 per cent families (Kadu *et al.*, 2013). They need to put double effort compared to men. Women face unique problems like financial constraints, over-dependence on intermediates for credit, scarcity of raw materials, intense competition, high cost of production, low mobility, family ties, obstacles to credit and a host of other problems based on women's social status when they enter into the world of entrepreneurship (Vani, 2013). The present study was conducted with the objectives of identifying the barriers in functioning of dairy enterprises by rural women; and finding out the relationship between different variables and empowerment of dairy women.

METHODOLOGY

The study was conducted in Milkipur block of Faizabad district of Uttar Pradesh in the year of 2011, which was selected purposively. A total number of 120 respondents (60 SHG member women, 60 non-SHG rural women) were selected from 6 villages randomly on the basis of dairy enterprise. A structured interview schedule was developed keeping in view the objectives and variables under study. The respondents were contacted personally for data collection. The analysis of data was

done by using the frequency, percentage and rank order for drawing the inferences.

RESULTS AND DISCUSSION

Barriers in undertaking dairy unit : Perceived barriers referred as the hindrances faced by respondents in respect of social barriers, financial barriers, technological barriers, marketing barriers or other factors which come in the way of process of formation of SHGs, rules and regulation of group, promotion of group and overall management of group *etc.* The extent of barriers must be minimum possible to empower the rural women for effective management of dairy enterprise.

**Table 1: Barriers in undertaking dairy unit as perceived by respondents
n=120**

Barriers	SHG women (N=60)			Non SHG women (N=60)		
	No.	% age	Rank orders	No.	% age	Rank orders
Social barriers						
Lack of working abilities among group women	08	13.00	II a	03	5.00	III
Women earning is usually snatched by drinker husband	07	11.00	III	08	13.00	II a
Casteism hinders in proper SHG formation	08	13.00	II b	09	15.00	I
Chances of dishonesty regarding handling of money.	12	20.00	I	08	13.00	II b

^{1&2} Research Scholars, Department of Extension Education, Instt. of Agril. Sciences, Banaras Hindu University (BHU), Varanasi -221 005. ³ SMS, VPKAS, Almora- 263628, (Uttarakhand) and ⁴M.Sc. Student, Department of Agriculture Extension, NDU&T Kumarganj, Faizabad 224 229.

Financial barriers						
Women have poor economic access to invest in dairy enterprise	09	15.00	I a	05	8.00	II
Spread rumors in society about dairy unit	06	10.00	III	0	0	V
Improper supply and high cost of veterinary services and medicines	09	15.00	I b	06	10.00	I
Loan utilization of their on other enterprises	05	8.00	IV	03	5.00	III
Given amount of loan is insufficient'	08	13.00	II	01	1.00	IV
Technological barriers						
Lack of training programme	13	21.00	I	06	10.00	I
Managerial problem	09	15.00	III	04	6.00	II
Problem in veterinary services for women dairy	07	11.00	IV	01	1.00	IV
Lack of knowledge in preparing balance ration based on available resources	10	16.00	II	02	3.00	III
Marketing barriers						
Lack of proper marketing channels	14	23.00	I	15	25.00	I
Lack of remunerative milk prices	03	5.00	VI	07	11.00	III
Dominance of middleman in dairy market.	11	18.00	III	03	5.00	VI
Proper markets being distantly located are generally inaccessible to rural women for disposal of the milk and milk products.	12	20.00	II	8	13.00	III

Social barriers : The Table 1 indicated that 'chances of dishonesty regarding handling of money' ranked Ist under social barrier category. Problem of 'lack of working abilities among group women' ranked IIa. The problem 'castism hinder in proper SHG formation' ranked IIb. The problem of 'womens earning usually snatched by drinker husband' ranked IIIrd.

In case of non-SHG women, majority of the members faced social barriers such as 'castism hinders in proper SHG formation' (ranked I), followed by 'women earning usually snatched by drinker husband' ranked IIa, 'chances of dishonesty regarding handling of money' (ranked IIb) and 'lack of working abilities among group women' (ranked III).

Financial barriers : Majority of SHG women faced financial barriers such as 'women have poor economic access to invest in dairy enterprise' (ranked Ia). The problem of 'improper supply and high cost of veterinary services and medicines' ranked Ib followed by 'given

amount of loan is insufficient' which ranked IInd. Spread of numerous in society about dairy unit ranked IIIrd. In the case of non-SHG women, majority of the respondents faced the financial barriers such as 'improper supply and high cost of veterinary services and medicines' which ranked Ist, followed by 'women have poor economic access to invest in dairy enterprise' ranked IInd, 'utilization of loan on other household activities' were ranked IIIrd and 'given amount of loan is insufficient' ranked IVth.

Technological barriers : Majority of SHG women faced technological barriers such as 'lack of training programme' which ranked Ist followed by 'lack of knowledge in preparing balance ration based on available resources' (ranked IInd) and managerial problem' (ranked IIIrd). In the case of non-SHG women, majority of members faced technological barriers such as 'lack of training programme' (ranked Ist) followed by 'managerial problem' (ranked IInd), 'lack of knowledge in preparing balance ration based on available resources' (ranked IIIrd) and 'problem in centenary veterinary services for women dairy' (ranked IVth).

Marketing barriers : Majority of SHG women faced marketing barriers such as 'lack of proper marketing channels' which ranked Ist followed by 'proper markets being distantly located are generally inaccessible to rural women for the disposal of milk & milk product' (ranked IInd) and 'dominancy of middleman in dairy market' (ranked IIIrd).

In the case of non-SHG women the maximum members reported marketing barriers such as 'lack of proper marketing channels' (ranked Ist) followed by 'proper markets being distantly located are generally inaccessible to rural women for disposal of the milk and milk products' (ranked IInd), 'lack of remunerative milk prices' (ranked IIIrd), 'misguidance and unhealthy treatment of purchaser harass the women seller in attainment of proper prices' (ranked IVth) and dominance of intermediaries in dairy market (ranked Vth).

Factors influencing the degree of empowerment of dairy women : It is evident from the values of correlation coefficient as appeared in Table 2 that out of 20 variables, 13 variables viz., age, family size, occupation, mass media sources contact, overall extension contact, farm power, agricultural implements, household materials, transportation material possession and scientific orientation were found to be highly significant and positively correlated with degree of empowerment of dairy women at 0.01 per cent probability.

Table 2: Correlation coefficient between different variables with degree of empowerment (social, technical and economical) n=120

Variables	Correlation coefficient (r)
Age	0.272**
Family size	0.307**
Education	0.02
Land holding	0.158
Occupation	0.426**
Formal sources contact	-0.244*
Informal sources contact	0.193
Mass media sources contact	0.312**
Over all extension contact	0.4799**
Farm power possession	0.375**
Agril. implements possession	0.320**
House hold materials possession	0.373**
Transportation materials possession	0.427**
Communication media possession	0.047
Economic motivation	0.114
Risk orientation	-0.220*
Value orientations	0.190
Scientific orientation	0.417**

* Significant at 0.05 probability level 0.1946

**Significant at 0.01 probability level= 0.2540

The variables like education, land holding, informal sources, communication material possession, economic motivation, value orientations were found to be non-significant, but positively correlated with degree of empowerment. The variables like formal sources and risk orientation, were found to be significant and negatively correlated with degree of empowerment of dairy women.

CONCLUSION

The study revealed that the dominant barriers in proper functioning of SHG and non-SHG based dairy enterprise managed by rural women were such as chances of dishonesty regarding handling of money, improper supply and high cost of veterinary services and medicines, lack of training programme and lack of proper marketing channels. There was not much difference found in perceived problems by SHG and non-SHG rural women in undertaking dairy enterprises.

The formation of SHGs by rural women was closely inter-linked with economic, education, social, cultural, religious, psychological and institutional variables. Age, family size, occupation, mass media sources, overall extension contact, farm power, agricultural implements, household materials *etc.* were highly significant and positively correlated with degree of empowerment of dairy women.

Paper received on : September 27, 2014

Accepted on : October 30, 2014

REFERENCES

Kadu, S.S., Kotikhane, R.R. and Nagawade, D.R. 2013. Empowerment of women's SHG through food processing and dairy management practices, *Indian Research Journal Extension Education*, 13 (3), 52-54.

Vani, C.S. 2013. Constraints in management of dairy micro enterprises faced by women entrepreneurs of Andhra Pradesh. *Indian Research Journal Extension Education*,. 13 (3), 106-108

Components of a Successful Model for Economic Empowerment of Rural Youth

Anjani Kumar¹ and Rashmi Singh²

ABSTRACT

Entrepreneurship development has been recognized essential factor, playing great role in agricultural sector in the era of Liberalization, Privatization and Globalization, open competition and free market economy. Agro-based entrepreneurship activities among farmers, farm women and rural youth are vital in the context of generating gainful employment, minimizing the regional disparities and development of socio economic condition. However, rural youth lack in entrepreneurial traits like ability to identify opportunities (Satapathy and Mishra, 2011). It is necessary that rural youth are mobilized to go for entrepreneurship activities as per their resources and market demand of the area, many youth are interested to undertake such activities to earning, but the major problems faced by them are usually lack of skill, financial support during establishment and finally marketing of the produce. Such entrepreneurship development among rural youth can play a vital role in generating self employment there by reducing the unemployment, checking migration from rural areas, better use of locally available resources, balance regional disparities and reducing unrest among youth. Kumar *et.al.* (2012) observed that through the network of KVKs lakhs of people are trained in various areas. Thus KVKs can play a crucial role in promoting entrepreneurship among rural youth through customized trainings. As a part of study of entrepreneurship development among rural youth of Gurgaon district in Haryana, Krishi Vigyan Kendra started a long duration vocational programmes for rural youth & women science 1999. It is heartening to say that since then the KVK has not looked back and had been organizing need based training course having potential for additional income and employment generation and fitting well into eco-socio-cultural and technological system of their project area. Such need based, standardized and well-planned course were conducted by KVK from 2000 to 2014 a period of 15 years. The effectiveness of these training programmes assessed through evaluation and interaction with the farmers from time to time and found quite an encouraging impact. Amongst the vocational course conducted at KVK, the Dairy farming, Beekeeping, Dress designing & tailoring, Preservation of seasonal fruits and vegetables, custom service in Plant protection, Motor winding and tractor repairing were found to be extremely popular and the overall adoption rate is 470. %. This experience very strongly highlights the need for entrepreneurship development for self-empowerment to the rural youth and strengthening the rural youth economy.

Key words: Empowerment, Rural youth, Entrepreneurship development, Vocational trainings, Self empowerment generation, and Market economy.

INTRODUCTION

Entrepreneurship development for livelihood security among rural youth is vital in the present era of Liberalization, Privatization and globalization. More than 70 per cent of the total population of our country is from the rural area and majority of them belongs to farming community. No doubt the agricultural production has risen many folds and have become self sustain in hood. Despite becoming self reliant in food our rural people continue to live in poverty. The world largest no. of those below poverty line is Indians, lives in rural areas and depends largely on agriculture. It is the fact that increasing population leads in decreasing land holding, natural resources and increasing number of small and marginal farmers. Major problem coming in the way of rural development are resource crunch, lack of infrastructure, poverty and large-scale unemployment.

Unemployment is a major problem not only in India but in world also. The absolute number of unemployment increased from 20 million in 83-84 to 35 million in 2002. It is also estimated that out of total unemployment, three fourth are in rural area. Unemployment is a key link in the food security issue in the society these days.

It is necessary to meet the challenge of generating employment, opportunities to ensure the purchasing power to obtained food. To overcome the employment situation in rural areas, entrepreneurship development for self employment generation in agricultural sector as well as non agricultural sectors is essential. Establishment of rural industry and occupational diversification is necessary for empowering employment situation in rural sector. The present study was based upon action research for entrepreneurship development among the rural youth.

¹ Programme Coordinator, KVK (IARI), Gurgaon ² Principal Scientist, (Ag. Extn.), Division of Agricultural Extension, IARI, New Delhi.

METHODOLOGY

The action research had five stages namely, conduction of SWOT analysis, identification of training areas trainees interventions required, identification of trainees, development of course content, arrangement of financial resources, conduction of training, and follow up.

Conduction of SWOT analysis: It is very old concept used by the people since inspection of the civilization. Analysis of the strengths, weaknesses, opportunities and threats provides the success or failure of any programme and helps in assessing the future demand.

Strengths:

- Availability of training center with well-developed infrastructure.
- Qualified and well-trained training staff.
- Enterprising rural youths.

Weaknesses:

- Gap between researcher's interest and farmers need.
- Weak linkage between training centers and agro industries.
- Lack of professional and managerial training to farming community.
- Gap between need of the area and development of enterprises.

Opportunities:

- Untapped employment opportunities in the rural area particularly on agro-based services.
- Information network for production and marketing.
- Increasing demand for processed food and quality agricultural products.
- Increasing diversification and commercialization of agriculture.
- Govt. support of training, technical information and credit.

Threats:

- Increasing monopoly powers of input supply companies.
- Decreasing land holding.
- Trained agriculture manpower opting vocations than agricultural and allied activities.
- Trade liberalization.

Development of strategy based on SWOT analysis

- The training modules for self employment were

developed on need basis.

- More emphasis on diversification and commercialization of agriculture.
- Provide marketing information.
- Change their mind towards quality consciousness.
- To be the job crater rather than job seekers.
- To become export oriented.

Identification of interventions required:

- There is need to convert farm into enterprise and farmers to entrepreneurs through systematic motivational training.
- Entrepreneurship development must be among youths and rural sectors.
- Vocational training programmes on agro basis enterprise can be organized for self-employment generation in rural sector for youth and school dropouts.
- Develop awareness among rural community about new technologies, resources management, opportunities and market potential.
- Develop market information service for entrepreneurs to learn about the demand and supply situation of their produce.
- Formation of Self Help group (SHGs) and trained the members emphasizing on managerial aspects of the business in addition to technical skills.
- Collaboration of Govt. and private sector to enhance the skills of rural youth agricultural as well as non-agricultural sector.
- Entrepreneurs should be able to evaluate the changing situation and adopt the enterprise accordingly.
- After establishment of enterprise, follows up action should be continue. It will help the entrepreneurs to mobilize their resource for the enterprise, upgrade their skills, and develop their business and support during difficulties.
- Expose the entrepreneurs should be given about the Govt. sponsored self-employment scheme like Swarn Jayanti Rojgar Yozna (SJRY), Prime Minister Rojgar Yozna (PMRY) etc. run through Zila Udhog Kendra.
- The financial assistance provided by local bank for establishment of enterprise should be easy process.
- Development of new technologies should be on the basis of feedback given by farmers. Scientist should develop the technology according to need of the farming community so that it can be accepted by larger no. of farmers.

- The Krishi Vigyan Kendra, NGOs and entrepreneurship development Institutes/centers should play an important role in entrepreneurship development programmes for rural youth in agriculture sector.
- There is need to develop awareness among grass root level extension works who are implementing the government scheme.
- Agriculture graduates may be motivated to opt for setting up of their own agro enterprises for entrepreneurship development among rural youths with the mission to convert the job seekers into job creators in the rural area.
- Any new technology developed should be supported by its package to guide them to set up available enterprise.

Benefits expected:-

The benefits of establishment of enterprise in the rural area by the entrepreneurs will be as under:

- Stop migration from rural to urban areas.
- Increasing population in urban sectors will be stopped.
- Rural people will get employment in rural areas itself.
- Rural workforce will be utilized by rural industries.
- Income of rural areas will be increased hence the socio economic condition of the farming community will be enhanced.
- Farmers' exploitation by middle men or trades can be avoided.
- Overexploitation and misuse of natural resources will be minimized.
- Setup of agro industries in rural area will help in reducing cost of transportation and post harvest losses of perishable commodities.
- Employment opportunities in rural sector will be able to utilize the energies of rural youth. This will help in reducing frustration among youths, social evils, mischief in village etc. and a healthy and fruitful society will be developed in the rural area.

In view of situation and issues described above, KVK took initiatives in this direction and more and less succeeded to some extent in helping the rural youths to setup their enterprises for self employment and income generation.

Identification of training areas: Vocational training programmes for entrepreneurship development in rural

area have become a sound activity of this Krishi Vigyan Kendra. Before planning to organize the courses, the needs of the training areas for different categories of rural communities were identified on the basis of PRA. Located in the peri-urban area of NCR, the major areas of need based vocational trainings for rural youths are Quality seed production, Dairy farming, Beekeeping, Dress Designing and tailoring, Preservation of seasonal fruits and vegetables, Gardening and landscaping, Motor winding, Tractor repairing and maintenance, Custom service on plant protection measures *etc.*

Identification of trainees: The trainees of all the vocational courses were selected on the basis of their interest to join course, commitment for establishing the enterprises and interested to become a job creator. The selection criteria also include the entrepreneurial characteristics in them like self confidence, problem solving, goal setting, moderate risk setting, dealing with failure, use of recourses, use of feedback, taking initiative tolerance of ambiguity and uncertainty.

Subject matter content: The course outline is prepared by the subject matter specialist (SMS) from KVK with the help of proper guidance from the scientist of IARI. The emphasis is given on "learning by doing". Based on this, the composition of the course content is prepared with 30 percent theoretical and 70 percent practical aspect. Various training tools like slides, CDs, charts, posters etc. were used to make the training more effective and faithful. The trainees were also visited well established enterprise/unit developed by the ex-trainees in the village to develop their confidence.

Arrangement of financial resources: During training, the trainees were also exposed to Bankers, Insurance, Companies, and NGOs to meet their financial need in establishing the enterprises/business, cover the risk and input support. This helps them to understand the entrepreneurship development programme and help the entrepreneurs in financial assistance.

Establishment of enterprises/units: The entrepreneurs of the different vocations were provided with the proper designing of the enterprises as per their available resources. KVK helped the entrepreneurs in preparing the project report, procurement of inputs/raw materials and guided in marketing of the produce. Marketing of the produce is very crucial factor for the success of any agro-based enterprises and it was properly taken care. The entrepreneurs were made to understand the aspect of group approach. This approach has proved highly successful in general and beekeepers in particular in migration of beehives during offseason, procurement of raw material and marketing of honey.

RESULTS AND DISCUSSION

Impact of the programmes: KVK organized 179 different vocational trainings/entrepreneurship development programmes and 3220 rural youth became entrepreneurs, 1536 established their agro based enterprises in the different areas (Table-1). The impact of such vocations was assessed and analyzed. The outcome emerged that on an average 47.7 per cent enterprises have become sustained and the entrepreneurs are happily enjoying with their enterprises. The enterprises of the entrepreneurs shared, indicated that the bee keepers are earning twenty thousand to two lakhs rupees per annum, farm women are saving 2-3 thousand rupees by stitching garments for their own family and have started training center at village level also; in case of custom service in plant protection they are earning Rs.150-200 per acre, in case of motor rewinding at village level, income comes around 4-5 thousand rupees per month whereas in case of tractor repairing the monthly income varies from rupees 10-15 thousand.

Tale 1: Impact of training programmes

Name of specific technology/skill transferred	No. of training conducted	No. of trainees	No. of enterprises established	n=3220
				Adoption percentage (%)
Dairy farming	25	356	185	51.9
Bee keeping	18	420	191	45.4
Dress designing& stitching	22	617	348	56.4
Preservation of seasonal fruits & vegetables.	19	391	144	36.8
Custom service in plant protection	13	204	68	33.3
Motor rewinding	14	197	70	35.5
Gardening	10	250	200	80.0
Production technology of Vermi-compost	12	199	67	33.6
Management of Hort. Crop (Nursery)	29	344	162	47.0
Tractor repairs and maintenance	05	60	06	10.0
Production technology of Button Mushroom	02	19	07	36.8
Protected cultivation of Off season vegetables	04	82	50	60.9
Value addition in Soybean and Bajra	02	40	26	65.0
Total	179	3220	1536	47.7

Follow-up action: To make any successful enterprise sustainable and successful, constant follow up technical support is necessary. Starting from preparing of project report, procurement of raw material, establishment of enterprise to marketing of produce various constraints like personnel social, technical marketing etc. are faced by entrepreneurs and it was properly taken care by the KVK scientists.

Success Stories:

- If one has the determination to do something then nothing is impossible. This has been proved by Sh.

Prakash of Hayatpur village of Gurgaon. Sh. Prakash is only matriculate who has been doing farming and animal husbandry in a small farm of 4.00 acres. He also established a Gobar Gas Plant. Sh. Prakash was however, not satisfied with his present condition and was in search of some alternative vocation so that he can increase his family income. Through newspaper, he came to know about the vocational training course on Bee keeping organized by KVK, Shikohpur. He attended the vocational training course of two-week duration. After undergoing the training, Sh. Prakash started his bee-keeping unit with five boxes under supervision of the KVK expert. His initial expenditure was only Rs.14800.00. In the first year he sold 110 Kg honey and earned rupees 8800.00. During this year he could add 5 more bee boxes to his unit. In the second year, he spent Rs. 2400.00 and sold 214Kgs honey there by earning Rs. 17121.00 and added 9 more boxes to his unit. In the third year, he got 325 Kg honey from 19 boxes and sold the honey for Rs. 26000.00 But still Sh. Prakash was not satisfied with this level of income. He thought of expending the business much more and took a loan of Rs. 2.40 lakh from Gramin Bank to expand his business. Sh. Prakash has emerged as a successful entrepreneur in this area.

- Sh. Ramesh is only matriculate and is a vegetable producing farmer in Badshahpur village of Gurgaon district. Sh. Ramesh had to use a lot of agricultural chemicals for controlling insect/pests and diseases on his two acre vegetable farm, but still insect/pests & diseases were not controlled completely. After he came to know through newspaper, that a vocational training course on custom service on plant protection is being organized by KVK Shikohpur, Sh. Ramesh joined the two week long training course. After getting this training, Sh. Ramesh is not only able to control insect/pests & diseases in his vegetable farm at a reduced cost but has also been able to reduce the harmful effect of chemicals through use of bio-pesticides. Sh. Ramesh is now being requested by his neighbouring farmers to provide them the bio pesticides so as to reduce the use of chemical pesticides. He has also started giving more emphasis on custom services on plant protection in their farms. Then Sh. Ramesh has purchased three power spares & employed two rural youth for providing custom services to other farmers on their demands.

He charges Rs. 150-200 per acre for this. Sh. Ramesh is earning about Rs. 10000-15000 per annum net profit in addition to his own farming. Sh. Ramesh is now able to identify types of insect/pests & diseases and suggest appropriate treatment like a specialist.

- Sh. Pawan Kumar was an unemployed rural youth of Shikohpur Village. When he could not get any job after studies, he started part time job in an electric shop in nearby village Naurangpur at a meager salary of Rs. 1000/- per month., Sh. Pawan Kumar come to know about the vocational training course on 'Motor Rewinding' at Krishi Vigyan Kendra, Shikohpur through his friend in the village and he left his job to attend the three week training course. Sh. Pawan Kumar thought of establishing his own workshop of 'Motor Rewinding'. He took a shop in Shikohpur Village on hire basis and made his dream come true by establishing his own workshop in Dec. 2002. He spent Rs. 10000/- as initial cost & started rewinding all types of electric motors. Sh. Pawan Kumar rewinds about 20-25 electric motors in a month. He is now earning about Rs. 25-30 thousands per month. He is also thinking to employ another rural youth in his workshop so as to expand the business activity.

- Sh. Satya Narayan of Puchgaon village, a matriculate, was in search of vocation after completing this study. When he come to know through news paper that a vocational training course on tractor repairing is being organized at KVK, Shikohpur, he immediately came to KVK and registered his name for the course. Sh. Satya Narayan underwent the month long training course and then established his own workshop in partnership with Sh. Ramesh Kumar, who was also trainee in the same course. They both started repairing, cleaning & greasing of tractors. A spare parts shaft was also started side by side. They spend Rs. 1, 50,000/- and also engaged a farm youth for their help, at a salary of Rs. 5000 per month. Now they are getting about 15 tractors and jeeps for repairs and services in a month. Sh. Satya Narayan is now earning Rs.25-30 thousands per month as net income after excluding all his expenses. Sh. Satya Narayan very confident that his business will further prosper.

- Smt. Sarvesh Yadav of Shikohpur village is a poor lady. She joined training course of stretching and tailoring at KVK in Jun 2000. After training she started sewing cloths of her family and also the other families of the villages. The earning was around Rs. 800-1000 per month. The quality of her work was excellent and the demand for stitching was inversed. The income level inversed upto Rs. 8000 per month. She also established a shop and started selling cloths. The average income from shop is around Rs. 8-10 thousand per month. Further she started taking order to make uniform of the schools. She also provided her service as trainee in the training programme of KVK, school and other organizations. The overall income is around Rs. 2-2.5 lakhs per annum. She was recognized and awarded by Hon'ble president of India during 2006.

CONCLUSION

On the basis of experiences and impact of intervention by KVK, it has been realized that the promotion and development of agro-based enterprises in the rural sector can play an important role in diversification of economic activities and generation of employment opportunities for the rural youth. However, there exist training gap between the actual and desired levels of technical skills among the rural youth for promotion for agro-based enterprises in rural area. Besides the vocations taken into consideration by KVK, there are so many vocations for which training can be imparted by agencies involved in empowerment of rural youths for self employment generation.

It is high time that all the unemployed rural youth should be given tailor-made training programmes for entrepreneurship development to empower them to take up self-employment.

Paper received on : September 27, 2014
Accepted on : October 30, 2014

REFERENCES

Chand, R. Chandra, S. Kumar and A (2003) Combating Unemployment of rural youth through technological empowerment, proceeding of ISEE National seminar, New Delhi.

Jahmtani, A. Sharma, J.P. Sharma, P (2005) Micro enterprises in agriculture for sustainable development, "Micro enterprises promotion in agriculture" Ambika book agency, New Delhi

Kalra, R. Hansra, B.S. (2003) Entrepreneurship development among rural youth in Punjab. Proceeding of ISEE National seminar, New Delhi

Kumar, Surendra; R.P.Singh, and Saurabh Sharma.2012. Evaluation of training on poultry: a case of entrepreneurship development among small and marginal farmers. *Indian Journal of Extension Education*. Vol.48(1&2).pp 65-67.

Prasad, C. (2005) "Vocational training and entrepreneurship development in agriculture" Lead paper and abstracts of ISEE National Seminar, New Delhi

Satapathy, C. and Sabita Mishra. 2011. Agri-business in the vision of rural youths: a study in Odisha. *Indian*

Journal of Extension Education. Vol. 47(3&4), pp 1-5.
Singh, B. Badal, P.S. and Sharma, P (2005), Re-orienting farm education for entrepreneurship development and self employment, "*Micro enterprises promotion in*