Research Article

Indian Journal of Extension Education
Vol. 58, No. 2 (April–June), 2022, (104-109)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Implementing Indian Innovations through Trained Extension Functionaries for Improving the Agriculture in Africa and Asia

Mahantesh Shirur[1], H. N. Sharath[2], Goldi Tewari[3] and K. C. Gummagolmath[4]

[1]Deputy Director (AE), [2]Consultant, National Institute of Agricultural Extension Management (MANAGE), Hyderabad-500030, Telangana, India
[3]Programme Manager, Feed The Future India Triangular Training, MANAGE, Hyderabad-500030, Telangana, India
[4]Director, (M & E) National Institute of Agricultural Extension Management (MANAGE), Hyderabad 500030, Telangana, India
Corresponding author email id: maha.shirur@manage.gov.in

ARTICLE INFO

Keywords: Agribusiness, Management, Cooperatives, Good agricultural practices

http://doi.org/10.48165/IJEE.2022.58220

ABSTRACT

Agriculture in India has metamorphosed a lot during the last seven decades from being a subsistence farming to commercial agriculture. The innovations in Indian agriculture have paved the way for seeing agriculture as an agri-business enterprise. The creation of diverse agribusiness opportunities amidst the existing constraints and challenges has reoriented the farming in India. Having seen the positive changes in agriculture due to the agribusiness orientation in India, other countries in Asia and Africa are keen to adopt this approach in their countries. The selected officials representing Government, civil society and private firms from Africa and Asia were trained under Feed the Future India Triangular Training during 2019 on Agribusiness innovations in India and the opportunities for their countries. Following the training, the research study conducted showed that, Indian agribusiness innovations in supply chain management, good agriculture practices and promoting Farmer Producer Companies (FPCs) are perceived as best interventions by the trainees to address the problems of lack of improved technologies for small farmers, unorganized market, lack of institutional resources and lack of agri mechanization in their countries.

INTRODUCTION

Agribusiness is a combine term for increasing the scope of monetising production, processing and marketing in agriculture. The agribusiness sector is comprised of interrelated subsectors working in concert to provide goods and services to consumers around the world (Gunderson et al., 2014). It is the business sector consisting of agriculture and agriculture-related commercial activities. But the scenario of agribusiness varies among nations. Good policies, business environment, and support from governments can help agribusiness achieve its set objectives. The once food-deficient country, India is self sufficient now in its food grain requirement. The Indian agriculture has accumulated diverse experiences through the implementation of several programmes since independence. In the pre-liberalisation era (Prior to 1990s) India was primarily addressing the food security and employment issues. Post liberalisation, the programmes and the efforts in India were directed towards creating the agribusiness opportunities in Indian agriculture associated with several micro and macro financial reforms (Goyal & Shrama, 2013).

In Africa, the scenario of agribusiness is different. Africa is now at a crossroads, from which Africa need to focus on the steps to realize its potential or else Africa will continue to lose employment, food security, competitiveness and missing a major opportunity for increased growth (The World Bank, 2013). Many countries in Asia face similar challenges. These problems can be overcome by inclusion of more number of people in agriculture, value chain system, agricultural cooperatives and with better policies. In this context, several successful Indian innovations and experiences in the field of agribusiness can be helpful to the agriculture sector in several African

Received 04-01-2022; Accepted 14-02-2022

and Asian countries. With this idea, the field extension officers from Asian and African countries were trained on Indian experiences in agribusiness management practices so that, they can implement the successful Indian interventions in their countries. To meet this objective, the international training on 'Agribusiness and management' was organized under the Feed The Future India Triangular Training (FTF ITT) program supported jointly by USAID India and the Government of India. The present study primarily discusses the perception of field extension functionaries from Africa and Asia in framing the Back At Work Plan (BAWP) to address the problems identified by them in their country through Indian agribusiness innovations.

METHODOLOGY

The 35th FTF-ITT program on Agribusiness and Management was organized at National Institute of Agricultural Extension Management (MANAGE), Hyderabad during 18th June to 2nd July, 2019. The FTF ITT was part of the new agriculture partnership implemented by the USAID India representing US Government and National Institute of Agricultural Extension Management (MANAGE), Hyderabad representing Ministry of Agriculture, Government of India. FTF ITT is having a target of organising 44 training and capacity development programmes for the field level officers of Africa and Asia during 2016-20. The partner countries in the programme included: Afghanistan, Bangladesh, Botswana, Cambodia, Democratic Republic of Congo, Ghana, Kenya, Lao PDR, Liberia, Malawi, Mongolia, Mozambique, Myanmar, Nepal, Rwanda, Sri Lanka, Sudan, Tanzania, Uganda and Vietnam. As per the mandate of the FTF ITT, the nominations for the training program were invited from 17 countries of Africa and Asia. From the nominations received, 26 candidates representing 7 countries were selected based on their job profile and institutional mandate and were invited to attend the training. The profile of the trainees was assessed on parameters such as nationality, age, education, gender, marital status, professional field, type of institute they represent, present position, job role and number of years of experience.

As part of the training program, the trainees are expected to prepare a 'back at work plan' (BAWP), intended to implement the learnings from the training program in their respective countries. In this process, trainees may identify specific problems in their work area and prepare a plan of action to solve the same with the help of knowledge and skill acquired during the training programs in India.

In order to facilitate the trainees to prepare a BAWP, a set of 17 questions including the statement of problem, objectives, description of the problem, their action etc. was developed. The back at work plan is intended to ensure that new technology or knowledge or skill acquired by the participants may be implemented at their work place to find a solution for the specific problem identified by them. The responses of all trainees to the selected questions related to BAWP are analysed using descriptive statistics.

RESULTS AND DISCUSSION

Nationality and profile of the trainees

There were twenty six (26) participants from seven different nations. The details of the same is given in the Table 1. It is revealed from the table that highest number of participants were from Sri Lanka and Mongolia (6 each), followed by 4 each from Uganda and Nepal. Malawi was represented by 3 members followed by Cambodia (2) and Tanzania (1).

he majority of the trainees were graduates (65.38%) and 30.77 per cent were post graduates. Male members were higher in number (53.85%) as compared to female participants (46.15%). Majority of them are working in agriculture sector followed by livestock, rural development and academics. Majority of the trainees represented the government sector (76.92%) of different nations and 11.54 per cent trainees represented the NGO/SHG/FO and same number from private sector. Job role of the participants indicated that about 70 per cent of them were working in management positions followed by extension, training, technical and research. The profile of all the trainees appears apt for an International training program as they had higher education, representing agriculture and development sector and diverse background of type of institute and job roles.

The data on the professionals experience revealed that majority of the respondents (46.15%) had an experience of 3-10 years followed by 42.31 per cent of them with more than 10 years of experience and 11.54 per cent had less than 3 years of experience.

Problem identification for work implementation

Problem identification is the key step to take up the work as it will help to explore solutions to the causation of problems. The training enabled the trainees to identify a local problem in their country on which they want to work. The major problems identified by trainees in their provinces are discussed below. Most of the trainees (23.08%) quoted lack of improved technologies for small farmers as major problem in their area. Their problem is contextual as small farmers are unable to invest on expensive technology. Agricultural R&D institutions are unable to produce the technology which can be offered to small farmers.

Many of the trainees (11.54%) mentioned unorganized market as major problem in their area. Most often, marketing of agriculture produce is the major issue affecting the income generation of the farm in most of the developing countries. In fact, the cropping pattern for the next year often depends on lagged prices of agriculture commodities. The marketing constraints are compounded by the input supply market being not responsive to the temporal, spatial and package needs of farmers (Mutambara & Munodawafa, 2014).

Table 1. Problems Identified by trainees in their region

S.No.	Problem identified in service area/province/region	Per cent
1	Lack of improved technologies for small farmers	23.08
2	Unorganized market	11.54
3	Lack of institutional resources eg: Money	11.54
4	Lack of mechanization in agriculture	7.69
5	Pest and disease infestation	7.69
6	Excessive use of pesticides and chemical fertilizer	7.69
7	Lack of teaching aids	7.69
8	Migration of rural youth from farming	7.69
9	Lack of group approach from farmers	7.69
10	Post-harvest losses	3.85
11	Lack of technical skills among the farmers	3.85

Lack of institutional agencies for credit is another major issue identified by the trainees. Nationalized banks and co-operatives have not proved a successful means of bringing credit to the small farmers, in spite of special assistance and encouragement by the Government. Rural institutions designed to assist the small farmers could not ensure them access to needed resources of technical advice and information nor the cooperation of their peers (Jaiswal & Srivastava, 1976). There are several barriers to access Agricultural credit in Africa, and in other developing countries. Number of factors, including land tenure systems that prevent the use of land as collateral, the absence of physical collateral, the high risk associated with rain–fed agriculture and sharp commodity price fluctuations, and poor transport and communication facilities are few of the barriers. However, the experience of successful agricultural exporting countries, such as Côte d'Ivoire, shows that bank financing is plentiful for bringing export crops to the market, and to finance the production and processing (Sacerdoti, 2005). Access to bank credit can address the problems identified trainees such as lack of mechanization in agriculture, group approach from farmers (7.69% each) and post-harvest losses (3.85). Farm mechanization as problem to address can contribute significantly to on-farm and off-farm employment opportunities thereby leading to improved local food security status (Khatri et al., 2012). The farm mechanization has the potential to create new job opportunities like driving, marketing, agriculture tools trading and mending, agro-vet enterprises, vegetable stall keeping while it reduced the existing manual and works high on drudgery.

Pest and disease infestation was identified as a problem by 7.69 per cent, as it is a common problem in farming. One of the study shows that both primary (26%) and secondary yield losses (38%) caused by foliar pests and diseases can be severe in a perennial crop. Efforts to estimate yield losses have increased in the last decades, but most of them are continued to annual crops and focused on primary yield losses. Hence, identification of this problem assumes significance as it can potentially save the farmers from losses. Excessive use of pesticides and chemical fertilizer (7.69%), was also a major identified problem by trainees because indiscriminate use of pesticides and chemical fertilizers will lead to deplete all of the resources and also may cause potential threat to the ecology and environment. The adverse effect of these synthetic chemicals on human health and environment can only be reduced either by applying appropriate doses of pesticide and fertilizer or by the use of organic inputs such as manure, bio fertilizers, bio pesticides, slow release fertilizer and nano fertilizers etc. These practices could ensure efficiency of the fertilizers (Chandini et al., 2019).

Lack of teaching aids (7.69%) was another problem identified by the trainees. To develop one's knowledge and adequately apply the gained knowledge and information, it is important for the educational institutions, organizations, companies and the instructors to formulate proper extension teaching methods. Since the extension functionaries are professionally competent to train stakeholders to effect change in behaviour, lack of teaching aids affect their job performance. In view of higher proportions of small and marginal farms in Asian and African nations, aggregation of farmers into FPO is emerging as an effective tool for solving the problem of the farmers. Now a days farmer's group approach is an emerging tool in farming as well as marketing which made trainees to quote lack of group approach from farmers (7.69%) as problem in their area. Post-harvest losses (3.85%), is another area of problems identified by the trainees the post-harvest losses are a serious problem, and their scale is different for different crops, practices, climatic conditions, and the economic situation of a given country (Sawicka, 2020).

Back at work plan solutions and interventions identified by participants

A systematically organised training programme aids in the production of desirable changes in the behaviour of people (Singh et al., 2021). Training process is very much closely related to trainees' professions/jobs. If the examples and exercises presented during training are inspired by the trainees' job-related activities or the trainer demonstrated how the new knowledge and abilities should be implemented in the workplace, it is very likely that trainees' post-training behavior in their workplace would change according to what they have learned during their participation in the training programme (Diamantidis & Chatzoglou, 2014). The trainees in this case identified the back at work plans themes to bring desirable change in their region based on the 'theory of change'.

The solutions and first intervention identified by trainees for their Back at Work Plan by trainees are given in Table 2 and 3 respectively. Majority of the trainees have identified implementation of improved value chain system and methods (26.19%), followed by introduction of Indian Good Agricultural Practices (GAP) in their areas (14.29%), establishment of Farmer Producer Company (FPC)/ Farmer Producer Organization (FPO)

Table 2. Preference of trainees as solutions for BAWP (Multiple responses)

S.No.	Solutions identified by trainees for BAWP	Per cent
1	Implementation of improved value chain system and methods	26.19
2	Introduction of Indian good agricultural practices (GAP) to their areas	14.29
3	Establishment of farmer producer company (FPC), farmer producer organization (FPO) and farmers cooperatives	11.90
4	Promotion of cooperative Agribusiness system eg. Mulkanoor cooperative society	11.90
5	Application of improved supply chain management methods	7.14
6	Contract farming with increased security to tenant and owner	7.14
7	Simplification of export policies	7.14
8	Organized market system	7.14
9	Documentation and record keeping of business activities	4.76
10	Promotion of climate smart agriculture	2.38

and farmers cooperatives (11.90%), promotion of cooperative Agribusiness system (11.90%). Around 7.14 per cent of each of them identified supply chain management, contract farming, export policies and organized marketing system. About 4.76 per cent and 2.38 per cent of them identified record keeping and climate smart agriculture, respectively. The concept of FPOs appears very appealing and attractive to ensure economic empowerment of small holder farmers through innovative and entrepreneurial initiatives (Singh et al., 2022). For their obvious advantages, including the role of FPOs on value chain strengthening, the trainees have collectively given much importance to starting FPOs and Farmers cooperatives as part of their back at work plan to increase farmers income.

The first intervention planned by majority of the trainees is creating awareness among farmers about GAP and capacity building of subordinates to train farmers in their countries. Farmers training through formally arranged, well designed courses are considered instrumental for intensive teaching activity to educate the participants (Sajeev et al., 2021). Hence, the planned activity by the trainees is of significance for farmers and their stakeholders. The other notable interventions planned by the trainees are formation of FPOs through the help of local self-government and pursuing policy changes to augment value chain management environment to boost agriculture sector. Most of the interventions planned by the trainees reflect the sentiments of Indian farmers. In India farmers opined that, mobilizing and allocating resources for scaling up of technological activities, sharing of available knowledge on new technologies and innovations were major factors in maximizing farm income. Among others, the farmers had preference for introduction of innovative production enhancing technologies, development of commodity value chains with farmers' organisations and emergence of large-scale agribusinesses (Nain et al., 2019). The results also confirm that, the Indian innovations and technologies are most suited for agriculture system in Africa and Asian countries.

The duration of the back at work plan largely depends on nature of the task undertaken, administration, other responsibilities, resources available. etc. It was apparent that 34.62 per cent trainees proposed 6-12 months and 30.77 per cent trainees expected 1-2 years, to complete their responsibility of implementing the lessons learnt from the training. It can be inferred that, maximum trainees expect six months to two years to see the results of capacity development activities translating into implementation of actions. While 19.23 per cent of them planned for less than six month and 15.38 per cent of them proposed more than two years to complete their task. In less than six months the activities related to trainings and workshops are planned to implement the lessons learnt. In more than two years, the issues related to policy change and large stakeholder participation programs are planned by the trainees.

It is important to determine that individuals are making complete use of the knowledge and skills that they have acquired in the training program. But for this to happen, trainees should implement their BAWP. While pursuing implementation of BAWP, trainees have to overcome many hurdles such as archaic policies, outdated technologies, old methods etc. In anticipation of their efforts, the trainees were expecting the theory of change to effect changes through their identified solutions and first interventions.

The details of expected change indicated by trainees are very diverse and appear overlapping. Some have given more than one anticipated change. Hence, the data (Table 4) was tabulated and categorised for presentation based on key words and type of outcome. It is revealed from the table that 25.81 per cent of the respondents expect a change in policies related to value chain and supply chain. On the other hand, 22.58 per cent expected change in knowledge and in creating awareness among stakeholders. Sizeable number of respondents expected a change on creating and strengthening cooperatives (16.13) which was due to the exposure of trainees to many successful cooperatives in India including the Mulkanoor Cooperative society. Around 12.90 per cent each of the respondents expected helping farmers to realise remunerative prices to farmers through Farmer producer companies and accessibility of credit through rural cooperatives. Few members (9.68%) anticipated improvement in infrastructure, transport, mechanisation and storage from their work implementation.

The FTF ITT trainees anticipated some challenges during their BAWP implementation. The challenges foreseen by them are given in Table 5. The challenges mostly extend to low finance, distribution of inputs on time, administrative and technical problems and attitude of the people. The problems affecting implementation of planned activities mostly emerge due to infrastructure, human

Table 3. First intervention planned by trainees to achieve their objectives

S.No.	First intervention planned by trainees	Per cent
1	Creating awareness about good agricultural practices (GAP) among the farmers	26.92
2	Capacity building among the subordinates to train farmers on agribusiness solutions	26.92
3	Promote the establishment of farmer producer companies and farmer producer organization	23.08
4	Approaching higher authorities to frame new policies (on supply and value chain management and cooperative societies)	19.23
5	Approaching higher authorities to establish an organized market	3.85

Table 4. Expected change with identified solution (Multiple responses)

S.No.	Expected change with identified solution	Per cent
1	Change in policies related to value chain and supply chain system	25.81
2	Awareness about good agricultural practices and upgradation of knowledge	22.58
3	Establishment / strengthening cooperatives	16.13
4	Remunerative prices through Farmer producers organization, farmer producing company	12.90
5	Easy accessibility of credit through rural cooperative societies	12.90
6	Improvement in infrastructure, transport mechanisation and storage facilities	9.68

Table 5. Challenges in working with BAWP (Multiple responses)

S.No.	Challenges in working with BAWP	Per cent
1	Low financial capacity and high interest rates	23.08
2	Timely distribution of quality inputs	19.23
3	Non-cooperation from superiors and subordinates	15.38
4	Negative attitude of rural youth towards farming	15.38
5	Lack of technical guidance & technologies to promote good agricultural practices (GAP) among farmers	11.54
6	Resource barriers	11.54
7	Lack of time	11.54
8	Barrier in languages	7.69

resources and staffing issues, resources allocation and geography, referrals and marketing, leadership support, and team dynamics and processes (Sullivan et al., 2018).

Notable success of trainees

An Agricultural Extension Officer Mr. Alfred Kilama from Nyowa District, Uganda, took large interest in seed industry and their business in India during the training. Based on the training sessions on seed production and its importance for agribusiness and management, he took the initiation on sensitizing small farmers who were still practicing subsistence farming about commercial seed production technique to enhance their farm income. He conducted many trials and result demonstrations in the farm fields of small farmers of Nyowa district (County), Uganda with the help of his subordinate officers to spread the idea of quality seed production in large scale. Uganda government (Ministry of Agriculture) provided him a tractor with disc plough and disc harrow to help his team to expand acreages of seed production from 30 acres to 160 acres. In Malawi, a farmer group called 'Salima Dairy Farmers Cooperative Society Limited' formerly known as 'Liganga Milk Bulking Group'. The farmers here were always facing the problem of better breeds and lack of financial support. But due to practical visits to cooperative society during training program made a trainee from Malawi to bring the transformation in the life of those farmers. Trainee shared the knowledge on structure and operation of Indian cooperative society with the Malawi farmers and also trained them. Now, Salima Dairy Farmers Cooperatives Society Limited has managed to put an extra gear with adopting the approach of better technology adoption and planned commercial operations. Independency from government/NGO to set up office meetings and other infrastructure like milk coolants to reserve the milk and collection centers. Cooperative started procuring the maize mill in order to mill the left over maize ('Madeya' in Malawi) which will be used to make feed for the dairy animals at the cheaper fares. The practical visit to cooperative society during the training program made one of the trainee from Mangolia to organize a training program on "milk production technology" at Jargalant town, Khovd Province, Mongolia.

CONCLUSION

The twenty six trainees from Asia and African continents were trained on agribusiness ideas, incubation, commercialization and technology dissemination under Feed The Future India Triangular Training Program (FTF-ITT) at MANAGE, Hyderabad. At the end of the training program, the trainees were in a position to identify the problem in their region related to agribusiness based on a novel idea learnt during the training program. Trainees identified lack of improved technologies for small farmers, unorganized market, lack of institutional resources, mechanization, micro credit schemes as major problems. Value chain system, group farming, good agricultural practices, cooperatives were identified as desirable solutions to address their identified problem. The trainees based on their major problems related to farming, developed a back at work plan to implement the learnt technologies and practices to solve it. The trainees also planned the follow-up actions to their back at work plan.

REFERENCES

Chandini, Kumar, R., Kumar, R., & Prakash, O. (2019). The impact of chemical fertilizers on our environment and ecosystem. *Research Trends in Environmental Sciences*, February, 69–86.

Diamantidis, A. D., & Chatzoglou, P. D. (2014). Employee post-training behaviour and performance: Evaluating the results of the training process. *International Journal of Training and Development, 18*(3), 149-170. https://doi.org/10.1111/ijtd.12034

Goyal, M., & Shrama, A. (2013). Changing face of Indian agriculture in global scenario. *International Journal of Agricultural Science and Research, 3*(1), 217-224.

Gunderson, M. A., Boehlje, M. D., Neves, M. F., & Sonka, S. T. (2014). Agribusiness organization and management. In Encyclopedia of Agriculture and Food Systems. https://doi.org/10.1016/B978-0-444-52512-3.00117-0

Jaiswal, N. K., & Srivastava, K. B. (1976). Transfer of farm technology to small farmers: A study of organisational problems in India. *Agricultural Administration, 3*(4), 249-262. https://doi.org/10.1016/0309-586X(76)90002-9

Khatri, P., Sirota, M., & Butte, A. J. (2012). Ten years of pathway analysis: Current approaches and outstanding challenges. *In PLoS Computational Biology, 8*(2). https://doi.org/10.1371/journal.pcbi.1002375

Mutambara, S., & Munodawafa, A. (2014). Production challenges and sustainability of smallholder irrigation schemes in Zimbabwe. *Journal of Biology, Agriculture and Healthcare, 4*(15), 87–96. http://iiste.org/Journals/index.php/JBAH/article/view/14210

Nain, M. S., Singh, R., Mishra, J. R., Sharma, J. P., Singh, A. K., Kumar, A., Gills, R., & Suman, R. S. (2019). Maximising farm profitability through entrepreneurship development and farmers' innovations: Feasibility analysis and action interventions. *Indian Journal of Agricultural Sciences, 89*(6), 1044–1049.

Sacerdoti, E. (2005). Access to Bank Credit in Sub-Saharan Africa: Key Issues and Reform Strategies. IMF Working Papers, 05(166), 1. https://doi.org/10.5089/9781451861853.001

Sajeev, M. V., Venkatasubramanian, V., & Singha, A. K. (2021). Identifying Training Needs of Farmers and Rural Youth of Nagaland. *Indian Journal of Extension Education, 57*(2), 115–122.

Sawicka, B. (2020). Post-Harvest Losses of Agricultural Produce. *Zero Hunger*, pp 654–669. https://doi.org/10.1007/978-3-319-95675-6_40

Singh, M., Tiwari, D., Monga, S., & Rana, R. K. (2022). Behavioural Determinants of Functionality of Farmer Producer Organisations in Punjab. *Indian Journal of Extension Education, 58*(1), 130–135.

Singh, N., Gupta, B. K., & Gautam, U. S. (2021). Training Needs Assessment of Agro-input Dealers in Banda District of Uttar Pradesh. *Indian Journal of Extension Education*, *57*(2), 56–62.

Sullivan, J. L., Adjognon, O. L., Engle, R. L., Shin, M. H., Afable, M. K., Rudin, W., White, B., Shay, K., & Lukas, C. V. D. (2018). Identifying and overcoming implementation challenges: Experience of 59 non-institutional long-term services and support pilot programs in the Veterans Health Administration. *Health Care Management Review*, https://doi.org/10.1097/HMR.0000000000000152

The World Bank. (2013). Growing Africa: Unlocking the Potential of Agribusiness. In Growing Africa. https://doi.org/10.1596/26082