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Impact analysis of Farmer FIRST Programme in Haryana

MANJEET*, JOGINDER SINGH MALIK, RAM NIWAS and RUPENDER KUMAR

CCS Haryana Agricultural University, Hisar 125 004, India

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ABSTRACT

The study was carried out to assess the impact of Farmer FISRT Programme on agricultural practices and economics in two purposively selected districts of Haryana namely Karnal and Hisar where Farmer FIRST programme was implemented by NDRI and CCSHAU respectively. In total 240 farmers, viz. 120 farmers from each district comprising 60 farmers each from adopted and non-adopted villages were selected at random as a beneficiary and non-beneficiary for present study. The study was conducted in 2018 and impacts of FFP were assessed using standard methodology. Results revealed that beneficiaries of FFP had high extension contact (41.67%), mass media exposure (25.00%), scientific orientation (72.50%), economic motivation (65.84%) and risk orientation (25.84%). The findings of the study revealed that there was a considerable difference between adopted and non-adopted villages about the concerning farmer's adoption of recommended agricultural practices, viz. information of seed and variety, on water supply, fertilizer management, weed management, plant protection, information of marketing and the information of supporting factors. This showed the positive impact of FFP on agricultural practices and made a desirable outcome in the study. Based on the finding government should implement such programme on broad level to increase the interaction between farmer and scientist community.

Key words: Adoption, Agricultural Practices, Farmer FIRST, Impact

Government of India has realised the potential of science and technology in the development of the agricultural sector to make self-sufficiency in food and other commodities. For this, government ensures a major priority to agriculture by starting big investment in infrastructure, irrigation facilities, power, credit and research as well as in extension. Efforts made in the past have helped in raising production and productivity in most animal products. Consequently, India could achieve milk production of 155.6 MT, meat production of 3.04 MT, fish production of 10.16 MT and egg production of 78.48 billion during the year 2015-16 (Ponnusamy and Pachaiyappan 2018). However, production per unit area is very low as compared to other countries of the world due to several bio-physical and socio-economic constraints which need to be addressed in a farmers participatory mode.

Generally, scientists tend to work out relatively rigid research plans that cannot be easily modified during the research process (McDougall and Braun 2003). Such rigid planning may inhibit local stakeholders and farmers from influencing methods and experiments and to negotiate certain aspects of the research plans with the researchers. An open and flexible plan, on the other hand, can be more receptive to stakeholders' priorities, experiences and perspectives and provides space for the negotiation of methods, experiments and adaptation to new technologies.

To overcome these problems, ICAR launched a programme named farmer FIRST in 2015 throughout the country for the farming community by applying bottom-up approaches. The Farmer FIRST programme as a concept of ICAR is developed as a farmer in a centric role for research problem identification, prioritization and conduct of experiments and its management at farmers' conditions. The focus is on Farmer's Farm, Innovations, Resources, Science and Technology (FIRST). The Farmer FIRST Programme (FFP) is an ICAR innovative approach to move beyond the production and productivity, to privilege the smallholder agriculture and complex, diverse and risk-prone realities of the majority of the farmers through enhancing the farmers-scientists interface.

MATERIALS AND METHODS

The study was conducted in the purposively selected two districts of Haryana state namely Hisar and Karnal where the farmer FIRST programme was being implemented by CCS Haryana Agricultural University and ICAR-National Dairy Research Institute respectively in the Year 2018. From Hisar, Gurana was taken as adopted village and Datta as non-adopted village, whereas from Karnal, Garhi Gujran was taken as adopted and Samora as a non-adopted village. Total 240 farmers were selected, viz. 120 from each district comprising 60 farmers from each adopted village and non-

*Corresponding author e-mail: manjeetpanwar365@gmail.com

adopted village. Data for the present study were collected by personal interview of the selected farmers.

Simple statistical tools were used, viz. frequency, percentage, Karl Pearson's Correlation Coefficient (r) and paired t test. The impact of farmer FIRST Programme was assessed by comparing the response in the form of weighted mean and t test of respondents of adopted and non-adopted villages towards some common agricultural parameters, viz. improved agronomic crop practices.

RESULTS AND DISCUSSION

Personal variables of FFP adopters and non-FFP adopters

It represents the information regarding socio-personal characteristics of farmers which included age, education, socio-economic status, source of irrigation, extension contacts, mass media exposure, scientific orientation, economic motivation and risk orientation. In case of age, majority of both the categories adopted and non-adopted village respondents belonged to the middle age group (43.33% and 46.68%) respectively followed by 35% and 33.33% young, whereas only 21.67% and 20% belonged to the old age group. Often middle age group of the farmers are zealous and have more workability as well as efficiency than younger and older category of farmers. Along with this, they have more family and social responsibility (Kharatmol 2006).

The educational qualification was categorized into four categories (Table 1) which revealed that most of the respondents belonged to metric pass in adopted (39.16%) and non-adopted village (37.50%) respectively. This data clearly showed that adopter farmers and non-adopter farmers were found to posses almost similar educational status. The results are in agreement with the observation of Kharatmol (2006).

It was quite clear from the data in Table 1 that farmer from FIRST programme adopted villages had more mass media exposure than the non-adopters. About 88.34% adopters fell in the categories of medium and high extension contacts and only 11.16% farmers fell in the category of low level of extension contacts. But in case of non-adopted villages, only 38.34% farmers belonged to medium and high extension contacts and more than 61.66% non-adopted villages' farmers had low extension contacts. The probable reason for this finding was due to frequent visit of project staff in adopted villages, interest of farmers in extension activities which have directly helped them to the information about latest innovation and technologies.

Table 1 Personal variables and their relationship with adoption of agricultural practices (N=240)

Variable	Category	AV (n=120)	NAV (n=120)	(AV) (r) n=120	(NAV) (r) n=120
Age	Young (up-to 30yrs)	42 (35.00)	40 (33.33)		
	Middle (31-50 yrs)	52 (43.33)	56 (46.67)	-0.247	-0.221
	Old (above 50 yrs)	26 (21.67)	24 (20.00)		
Education	Middle (up-to 3)	37 (30.83)	42 (35.00)		
	Metric (4-5)	47 (39.16)	45 (37.50)	0.252*	0.223*
	Sr. Sec. (above 5)	21 (17.50)	17 (14.16)		
	graduate (above 12)	15 (12.50)	16 (13.34)		
Extension contacts	Low (up-to 6)	14 (11.66)	74 (61.66)		
	Medium (7-10)	56 (46.67)	35 (29.16)	0.282*	0.256 ^{NS}
	High (above 10)	50 (41.67)	11(09.17)		
Mass media Exposure	Low (up-to 7)	21 (17.50)	32 (26.67)		
	Medium (8-11)	69 (57.50)	63 (52.25)	0.240*	0.236 *
	High (above 11)	30 (25.00)	25 (20.84)		
Scienticism	Low (up-to 16)	13 (10.83)	38 (31.66)		
	Medium (16-18)	20 (16.67)	31 (25.83)	0.301*	0.279^{NS}
	High (above 18)	87 (72.50)	51 (42.50)		
Economic motivation	Low (up-to 23)	13 (10.83)	28 (23.33)		
	Medium (24-28)	28 (23.33)	33 (27.50)	0.294*	0.267*
	High (above 28)	79 (65.84)	59 (49.17)		
Risk orientation	Low (up-to 15)	12 (10.00)	38 (31.66)		
	Medium (16-18)	77 (64.16)	63 (52.50)	0.093^{NS}	0.079 ^{NS}
	High (above 18)	31 (25.84)	19 (15.84)		

Figures in parentheses indicate percentage. AV [adopted villages] and NAV [Non-adopted villages]. **significant at 5% level of significance. r= Pearson correlation coefficient

A close examination of data given in Table 1 showed that 82.50% farmers in adopted villages and 73.09 non-adopted villages had high and medium mass media exposure. Only 17.50% adopted villages' farmers and 26.67% non-adopted villages farmers had low level of mass media exposure. The probable reason for the majority of the farmers of adopted and non-adopted villages to be regular and occasionally listener, viewers and readers of the radio, T V and Newspaper with regard to agricultural programmes might be due to their interest in acquiring latest information in agriculture (Mali 2013).

It can be inferred from data given in Table 1 that 89.17% farmers from adopted villages had high and medium range of scientific orientation while it was 68.33% in case of non-adopted villages farmers. With respect to economic motivation, 89.17% farmers from adopted villages had high to medium level of economic motivation and only 10.83% farmers fell in the category of low level of economic motivation. In case of non-adopted villages, 76.67% of farmers belonged to high to medium level of economic motivation. Adopted villagers had frequent training about scientific cultivation practices and exposure visit as well as a technology demonstration in adopted villages by project staff (Kumar 2013).

It is clear from the Table 1, that 90% farmer adopted villages and 68.34 % in non adopted villages had medium to high level of risk orientation. The farmers in adopted villages had strong motivation and awareness to achieve and attain a higher status and their aspirations were comparatively higher which created an urge to excel in life (Gotyal 2007).

Relationship between independent variable and the adoption of agricultural practices presented in Table 1 reveal that respondents from FFP adopted villages having education (0.252), extension contact (0.282), mass media exposure (0.240), scienticism (0.301) and economic motivation (0.294) showed positive and significant association with their adoption level of agricultural practices.

Whereas in case of respondents from non-adopted villages, out of seven independent variables, only three variables, viz. education (0.223), mass media exposure (0.236) and economic motivation (0.267) exhibited positive and significant correlation with their adoption level about crops production practices. Age exhibited a negative relationship with the adoption level in both the adopted and non-adopted villages of respondents. The result was in agreement with Mittala *et al.* (2015) showed that socio-economic characteristics of farmers were significantly related to different sources of agricultural information. From the above results, it could be concluded that except age improvement in the independent variables would lead to a higher level of adoption of recommended practices of agricultural production among farmers in the study area.

The impact of farmer First programme on the adoption of agricultural practices by farmers presented in Table 2 revealed that in adopted village, there was maximum adoption of recommended seed rate (2.93) practice followed by seed treatment (2.85), proper seed selection (2.71), whereas in non-adopted villages, maximum adoption against the seed and variety practices was of recommended seed rate (2.75) followed by seed treatment (2.47) and proper seed selection (2.32). The higher adoption in the adopted villages might be due to the distribution of HYV seed by project staff to beneficiaries' farmers for demonstration. Secondly, in adopted villages farmers had more extension contacts, mass media exposure, scientific orientation, economic motivation and training conducted by project staff. Similar findings were reported by Uday *et al.* (2017).

It was found from Table 2 that impact of FFP on the information of fertilizer management by farmers in the adopted villages of various parameters, highest impact was observed with place of availability of fertilizers (2.75) followed by making organic manure from farm waste (2.31), application of organic manure (2.24). In case of the non-adopted villages, highest impact was observed with place of availability of fertilizers (2.48) followed by organic manure application (2.17), making of organic manure from farm waste and method and time of fertiliser application (1.99). The results of higher adoption in the adopted villages might be due to the farmer training about balanced fertilizer management and input given by balanced fertilizer and more contact with extension personnel and scientific orientation. The statements were supported by the finding of (Annual Report, AICRP on Sesame and Niger-2012) and Nirmala (2015).

In relation to weed management practices, data presented in Table 2 indicated that in the adopted villages, maximum adoption was with chemical weed management (3) followed by mechanical cultivation (2.70), price of weedicide (2.01). In non-adopted villages, weighted mean score about various practices was found maximum with chemical weed management (2.94) followed by mechanical cultivation (2.68), and place of availability of weedicide (1.91). Data showed the clear difference in the adoption of practice which were high in adopted villages and had a positive impact. Reasons for this is due to the good quality of weedicides provided as an input to the adopted villages. Above findings were supported by the study of Bala *et al.* (2006).

From perusal of data pertaining to plant protection in crop in Table 2 it was observed that in adopted villages highest adoption was with method of preparation of solution of insecticides/pesticides (2.29) which was closely followed by identification, nature of damage and control measures for insects/pests/crops diseases (2.09) and integrated pest management (IPM) of crops (1.90). While in the non-adopted villages, method of preparation of solution of insecticides/pesticides (2.10) recorded the highest adoption while identification, nature of damage and control measures for insects/pests/crops diseases (21.88) and integrated pest management (IPM) of crops (1.68) recorded the lowest adoption. Good reason for this might be due to a demonstration conducted in farmer field by projects regarding plant protection technique and input provided by staff in the adopted villages. The above results

Table 2 Impact of FFP on the adoption of agricultural practices

Area of information	Weight frequency score n=120	Adopted villages (WM)	Weight frequency score n=120	Non-adopted villages (WM)
Seed and variety				
Availability of seeds	320	2.66	247	2.05
Use of high yielding variety	299	2.49	278	2.31
Seed-borne diseases	250	2.08	217	1.80
Seed treatment	343	2.85	331	2.75
Recommended seed rate	352	2.93	297	2.47
Fertilizers Management				
Place of availability of fertilizers	357	2.75	298	2.48
Method and time of fertilizer use	268	2.23	239	1.99
Calculating the dose of chemical fertilizer	165	1.37	151	1.25
Making organic manure from farm waste	278	2.31	233	1.99
Organic manures application	269	2.24	261	2.17
Crop residue management practices	216	1.80	199	1.65
Weed management				
Chemical weed management	360	3	353	2.94
Price of weedicides/herbicides	242	2.01	230	1.91
Place of availability of weedicides/herbicides	250	2.08	236	1.96
Mechanical cultivation	326	2.70	322	2.68
Plant Protection				
Identification, nature of damage and control measures for insects/pests/crops diseases	251	2.09	226	1.88
Integrated pest management (IPM) of crops	229	1.90	202	1.68
Method of preparation solution of insecticides/pesticides	275	2.29	253	2.10

Overall impact of FFP on agricultural practices

Item	*Mean*		*Mean difference*	*% difference*	*t- value*
	Adopted	*Non-adopted*			
Seed and variety	20.591	18.125	2.466	11.976	13.1024**
Fertilizer management	23.391	20.350	3.041	6.691	8.6840**
Weed management	18.391	15.675	2.716	6.771	7.989**
Plant protection	23.766	18.866	4.900	4.850	18.197**

Figures in parentheses indicate weighted score WM- [Weighted mean] ** Significant at P<0.01.

are supported by Nirmala (2015).

Data presented in Table 2 show that findings of FFP intervention on agricultural practices in the study area had made a significant impact in the adoption of agricultural practices namely, seed and variety, weed management, fertilizer management and plant protection found highly significant in the adopted village.

Conclusion

This study analyzed the impact on agricultural practices due to focused interventions under Farmer FIRST programme in two mixed cropping districts in Haryana, India. The findings of the study showed majority of the farmers from adopted villages had more contact with extension workers, possessed scientific orientation, economic motivation and risk orientation. High level of adoption of agricultural practices was found particularly regarding seed and variety, information on water supply, fertilizer management, and weed management, plant protection practices, marketing information and supporting information. This shows the positive impact of FFP programme on agricultural practices.

From non-adopted villages, adoption was low due to lack of awareness and distances played as important barriers that restrict farmers' access to extension advisory services. Lack of human resources and infrastructure is important concern among non-adopted villages, where each extension worker is responsible to provide services to more than 1000 farmers at a time. Further, logistic facilities given to

extension workers also are very limited. To improve the access and effectiveness of extension services and coverage, there is a strong need for local skill building of farmers through various extension tools and techniques.

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