

A Comparative Study of Farmer FIRST Programme on Adoption of Agricultural Practices in Haryana

By
MANJEET
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CERTIFICATE-I

This is to certify that this thesis entitled “**A Comparative Study of Farmer FIRST Programme on Adoption of Agricultural Practices in Haryana**” submitted for the degree of **Doctor of Philosophy** in the subject of Extension Education of the **Chaudhary Charan Singh Haryana Agricultural University, Hisar** is a bonafide research work carried out by **Mr. Manjeet** under my supervision and that no part of the thesis has been submitted for any other degree.

The assistance and help received during the course of investigation have been fully acknowledged.

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CERTIFICATE-II

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CONTENTS

CHAPTERS	TITLE	PAGES
I	INTRODUCTION	1-5
II	REVIEW OF LITERATURE	6-13
III	RESEARCH METHODOLOGY	14-24
IV	RESULTS	25-51
V	DISCUSSION	52-60
VI	SUMMARY AND CONCLUSIONS	61-64
	BIBLIOGRAPHY	i-vii
	APPENDICES	I-XII

LIST OF TABLES

Table No.	Particulars	Page No.
4.1	Distribution of respondents according to personal variables	25
4.1.1	Farming system adopted by farmers	27
4.2	Extent of farmer's participation at various stages of farmer FIRST programme, in different categories	29
4.3	Impact of FFP on the information on seed and variety	30
4.4	Impact of FFP on the information on water supply	30
4.5	Impact of FFP on the information on seedling of crops	31
4.6	Impact of FFP on the information of land preparation and sowing	31
4.7	Impact of FFP on the information on fertilizer management	32
4.8	Impact of FFP on the Information of weed management	33
4.9	Impact of FFP on the Information of irrigation management	33
4.10	Impact of FFP on the information of plant protection	34
4.11	Impact of FFP on the information of harvesting, post harvesting and storage technology	34
4.12	Impact of FFP on the Information of marketing	35
4.13	Impact of FFP on the Information of supporting factors	35
4.14	Overall Impact of FFP on agricultural practices	36
4.15	Impact of FFP on the information of animal breeding and reproduction practices	37
4.16	Impact of FFP on the information of animal feeding practices	37
4.17	Impact of FFP on the Information of animal management practices	39
4.18	Impact of FFP on the Information of animal health care practices	40
4.19	Impact of FFP on the information of marketing of dairy product	40
4.20	Overall impact of FFP on the information of animals husbandry practices	41
4.21	Perceived economic impact of farmer FIRST programme	42
4.22	Benefits derived by farmer in FFP programme	44
4.23	General faced by Respondent's in implementation of farmer FIRST Programme	46
4.24	Economical constraints faced by Respondent's in implementation of farmer FIRST programme	46
4.25	Organizational constraints faced by Respondent's in implementation of farmer FIRST Programme	48
4.26	Communicational faced by Respondent's in implementation of farmer FIRST Programme	48
4.27	Relationship between respondent's personal variables and their extent of participation in implementation of farmer FIRST Programme	49
4.28	Relationship between respondent's personal variables and adoption of agricultural practices	50
4.29	Relationship between respondent's personal variables and adoption of animal husbandry practices	51

LIST OF FIGURES

Fig. No.	Particulars	Page No.
3.1	Sampling Plan	15
3.2	Study area map	16
4.1	Main cropping system of respondents	28
4.2	People participation in FFP	29
4.3	Perceived economic impact of farmer FIRST programme	43
4.4	Perceived economic impact of farmer FIRST programme	43
4.5	Perceived economic impact of farmer FIRST programme	43
4.6	Benefits derived by farmers in FFP	45
4.7	Benefits derived by farmers in FFP	45

LIST OF PLATES

Fig. No.	Particulars	Page No.
1	Glimpses of data collection	23
2	Glimpses of data collection	24

ABBREVIATION

FFP	-	Farmer FIRST Programme
FIRST	-	Farmer's farm, Innovation, Resources, Science and Technology
GDP	-	Gross Domestic Product
FAO	-	Food and Agriculture Organization
IADP	-	Intensive Agriculture Development Programme
VHP	-	Village Housing Programme
ICAR	-	Indian Council of Agricultural Research
CIP	-	Crop Intensification Programme
PAES	-	Public Agricultural Extension Service
NSHWDP	-	NABARD Supported Holistic Watershed Development Programme
CBA	-	Community Based Approaches
WIA	-	Women in Agriculture
GAP	-	Good Agricultural Practices
MGNREGA-		Mahatma Gandhi National Rural Employment Guarantee Act
ADP	-	Agricultural Development Programmes
KVK	-	Krishi Vigyan Kendra (Farm Science Center)
DWCRA	-	Development of Women and Children in Rural Areas
CCSHAU	-	Chaudhary Charan Singh Haryana Agricultural University
NDRI	-	National Dairy Research Institute
UNDP	-	United Nations Development Programme
DDA	-	Deputy Director Agriculture
SDAO	-	Sub Divisional Agriculture Officer
SMS	-	Subject Matter Specialist
ADO	-	Agriculture Development officer
VEW	-	Village Extension Worker
BDPO	-	Block Development and Panchayat Officer

CHAPTER-I

INTRODUCTION

Agriculture is one of the oldest and major occupations of the human race from ancient times, for their livelihood. From the ancient time to the modern era, agriculture occupation passed through various phases to improve its way as well as to increase the production to fulfil the human food security across the globe.

Similar to most developing countries, Agriculture in India is observing a structural transformation with the share of agriculture sector in total Gross Domestic Product (GDP) declining and that of non-agriculture (industry and services) increasing. Between 1992-93 and 2013-14 the share of agriculture in total GDP declined from 29 to 17.4 per cent. Despite this decline, India continues to be predominantly an agrarian rural economy, with around 69 per cent of its population living in rural areas (Anonymous, 2011) and around 47 per cent of the workforce engaged in agriculture (Anonymous, 2015-16). Moreover, around 270 million people in India (22 per cent of India's population) live below the poverty line, of which 80 per cent reside in rural areas.

Agricultural growth has special powers in reducing poverty across all country types. Cross-country estimates show that GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture along with this Improving the productivity, profitability, and sustainability of smallholder farming is the main pathway out of poverty in using agriculture for development. A mix of centralized and decentralized services by bringing government closer to rural people, decentralization holds the potential to deal with the localized and heterogeneous aspects of agriculture, especially for extension (Anonymous, 2008).

Lifting the incomes of the rural poor above the extreme poverty line in Asia (particularly in China and India) would require an average increase in income of at least 30 percent above the estimated average income of the poor in 2010 (Yoshida, Uematsu and Sobrado, 2014). In this context, agricultural policies play an important role in pro-poor growth. They could support increases in productivity and profitability in a number of ways: for example by providing efficient extension and advisory agricultural services, improving coordination along value chains and ensuring that the weaker segments in the chain reap the benefits of the integration of agriculture into markets.

Demand for food and other agricultural products also projected to increase by 50 percent between 2012 and 2050. Demand will undergo structural changes, owing to factors such as population growth, urbanization, and per capita increases in income. While, the natural resource base upon which agriculture depends will become increasingly stressed

producing more with less, while preserving and enhancing the livelihoods of small-scale and family farmers, is a key challenge for the future (Anonymous, 2017).

Looking back in history, after the independence of India the first Prime Minister Jawaharlal Nehru once quoted, “Everything can wait but not agriculture”. Government of India has realised the potential of science and technology role in the development of the agricultural sector to make self-sufficiency in food. For this, government gave a huge priority to agriculture by making big investments in infrastructure, irrigation facilities, power, credit, research and as well as in extension. The agricultural policy of the government was considered as “food policy”. The emphasis was given on enough food grain production and to make India free from dependence on import from other countries.

During the fifties, the main emphasis was on irrigation, fertilizers, power and transportation that put the foundation of modern agriculture. In the sixties, emphasis was shifted from crop production to agricultural and rural industries. During these various agricultural and rural development programmes like Khadi and Village Industries Programme and IADP were implemented. Along with this, introduction of HYV programme was implemented to increase the food grain production.

During the seventies, the main attention was on the diversification of the agricultural sector by dairy, fishery, poultry, piggery and horticultural crops to achieve food security along with employment generation. In eighties, the priority was given to oilseeds and pulses production with conservation of natural resource and Integrated Pest Management of crops. During the time of nineties, center of attention was on diversification of agriculture, quality improvement and post-harvest technologies. In the twentieth century, agriculture policy of India was to actualise the vast untapped growth potential of Indian agriculture, strengthen rural infrastructure to support faster agricultural development, promote value addition, accelerate the growth of agri-business, create employment in rural areas, secure a fair standard of living for the farmers and agricultural workers and their families, discourage migration to urban areas and face the challenges arising out of economic liberalization and globalisation. In the current decade, the main priority area of the government is doubling the farmers income, conservation of natural resources and protection of environment, accelerate the untapped potential of our soil and water resources and farming systems, developing effective and credible technology, procurement, assessment and transfer and extension system involving appropriate linkages and partnerships and emphasis on reaching the small farmers, reliable and timely availability of quality inputs at reasonable prices, institutional and credit support, especially for small and resource-poor farmers.

There is no doubt that overall agricultural production increased manifold after independence due to Green Revolution and others programme for agricultural development, but production per unit area is very low when compared to other countries.

Indian agriculture is still facing many hurdles in respect of crop failure due to climatic variability and diseases infestation, lack of effective agricultural development programmes and their implementation, lack of awareness among the farming community regarding development programme that result in low income of the farmers. There are also other reasons for the poor development of farming like low level of education, small land holding and lack of improved and location specific technology and machinery.

It is evident that at the existing level of availability of technology, there is considerable scope for identifying constraints and steps to be taken to remove them. The pre-requisites are the successful transfer of appropriate technology from scientist to the farmer. It has been realized that there is much gap between what has seem achieved at research stations is and what farmer knows and how to apply in farm condition. Now it's time to bridge the gap by taking farmers in a centric role for research problem identification, prioritization and conduct of experiments and its management at farmers' conditions.

As far as the nature of agricultural development programmes is concerned, it plays an important role especially in a developing country, where a high percentage of the poorer section of the society depends on this sector for subsistence. An effective development programme warrants closer relationship between the levels of agricultural development. It plays a very significant role in accelerating agricultural production. Around 600 million people of India live in nearly six lakh villages scattered all over the country. Agricultural development programme accelerates efficient delivery of farm inputs and enhances special agricultural production and distribution.

In the previous scenario, the main focus was to increase the production on top-down approach basis, where already planned strategies were imposed on farmers situation without considering their real problems at grass root level because there was very less interaction between extension personnel and farmer at all stages of the programme implementation. 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 provide space for the negotiation of methods, experiments and adaptation to new technologies.

To overcome these problems, ICAR launched a programme named Farmer FIRST (FFP) in 2015 throughout the country for the agricultural community by applying bottom-up approach.

The Farmer FIRST programme as a concept of ICAR was 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). Two terms 'enriching knowledge' and 'integrating technology' qualify the meaning of Farmer FIRST in the Indian context. Enriching knowledge signifies the need of the research system as well as a farmer to learn from each other in the context of the existing farm environment, perception of each other and interactions with the sub-system established around. Technology integration is looked from the perspective that the scientific output coming out from the research institutions, many times do not fit as such in the farmer's conditions and thus, certain alterations and adaptations are required at field level for their acceptance, adoption and success. The Farmer FIRST Programme is an ICAR innovative approach to move beyond the production and productivity, to privilege the small holder agriculture and complex, diverse and risk-prone realities of the majority of farmers through enhancing farmers-scientists interface.

Why Farmer FIRST Programme

The past efforts brought a lot of success in terms of raising production and productivity and addressing issues of the farmers and technology was considered as a vital factor in the production system and farmer as a recipient of the technology outputs. The knowledge and innovations of the farmers were not valued much and their presence was relegated at most as a participant but not as a partner in the experimentations. The wisdom available with the farmers was also not channelized so much to derive suitable options for different production systems. The participation of multiple stakeholders was also not taken up in perspective for technology development, integration and adoption. Now the situation has changed drastically in terms of an increased number of smallholders, growing proposition of women-led agriculture, need for higher return per unit area and addressing the changing socio-economic environment, etc. This necessitates a new approach for project development involving innovation and technology development with the strong partnership of the farmers for developing location specific, demand driven and farmer-friendly technological options.

Applying Farmer FIRST Approach

Farmers tend to face problems related to production and natural resource management but they might not have found out solutions to overcome them. In such situations, Farmer FIRST is an opportunity for the researchers, extension professionals and farmers to work together and find appropriate ways through assessing different solutions. During the production process, farmers often evolve new ideas to improve their cultivation and natural resource management activities. This creates a space for researchers, extensionists and farmers to design and organize new experiments. Farmer FIRST can be applied not only at the household level but also at the village and community level as community experimentation. Farmer FIRST is creating linkages between farmers-researchers and

extensionists to support farmers to conduct appropriate experiments selected by them. It helps researchers and extensionists understand and know the real needs of villages. In this process, priority does not come from researchers or extensionists but from the end users of results of research and technology development.

Problem Statement

The present study aims to find out the effectiveness of the programme at its various stages of implementation and its impact on agricultural practices.

The study aims finding the answers to the questions as below:

1. What are the factors affecting the farmers participation in agricultural programme?
2. Is there similarity in the extent of adoption of recommended agricultural practices?
3. Which technology or practice among adopted and non- adopted village has higher adoption?
4. What are the significant factors responsible for difference in recommended technology or practice being adopted by farmers?

To answers the above questions and importance of Farmer FIRST programme this study was undertaken with specific objectives as follow:

Objectives of the study:

1. To study the extent of farmer's participation in Farmer FIRST programme
2. To study the impact of programme on agricultural practices and their economic condition
3. To assess the constraints faced by respondent during adoption of the programme
4. To analyze the association of various independent variable with the dependent variables

Scope of the Study

The present study was conducted to assess the impact of Farmer FIRST programme on the farming community in terms of adoption of improved crop production and animal husbandry practices. It was also proposed to assess the extent of participation of people in this programme and constraints faced by farmers during programme implementation. The findings of the present study will be of considerable value for funding agencies of Farmer FIRST programme development and strengthen the hands of decision makers for formulating and implementing Farmer FIRST programme in a more confined manner for its overall development.

Limitations of the Study

The present study had obvious limitations of time and resources usually faced by a student investigator. However, considerable care and thought were exercised in making the study as objective as possible. Since the researcher has conducted a study only in four village of Haryana with a sample size of 240 farmers only. Its generalization will be limited to only those areas which are similar to the area of investigation.

CHAPTER-II

REVIEW OF LITERATURE

In any scientific investigation a comprehensive review of literature is needed to find out the path for further investigation in the particular area. A literature review is an evaluative report of research findings of past and present related to the current study. This chapter gives a theoretical base for the research and helps to determine the various dimensions of study and its related aspects. Till now only few comparative studies have been conducted of farmer FIRST programme on adoption of agricultural practices in Haryana. Studies having direct or indirect link with the present investigation have been reviewed and presented under the following major heads:

- 2.1 To study the extent of farmer's participation in Farmer FIRST programme
- 2.2 To find out the impact of the programme on agricultural practices and their economical condition
- 2.3 To assess the constraints faced by respondent during adoption of programme

2.1 To study the extent of farmer's participation in development programme

Madhavareddy (2001) revealed that majority of the NGO beneficiaries had high level of participation in the watershed development programme activities like planning steps viz., collection of facts (66.70%), analyzing the situation (80%), identifying the problem (78.30%), deciding objectives (68.30%), developing a plan of work (66.80%) and execution of plan (66.80%) and medium level of participation was observed in determining the progress (63.40%) and reconsideration with evaluation (66.80%).

Kumba (2003) stated that the extent and levels of participation by communal farmers in agricultural programs was mostly at the lower levels, while participation by commercial farmers was usually at the higher levels. Continuous training and orientation programs to enable positive changes in the attitudes of agricultural professionals towards farmers' effective participation in agricultural development programs were suggested.

Chandran and Chackacherry (2004) Farmer participation is critical to improve on-farm water management and crop productivity under the Command Area Development programmes. Ensuring adequacy, timeliness and equity of irrigation water, therefore, plays a major role in motivating the farmers to participate effectively in water-user associations (WUA) activities. Furthermore, socio-psychological variables, namely, social participation and attitude of the individuals significantly influenced the extent of participation.

Badal *et al.* (2006) studied that peoples' participation in watershed development programmes in Rajasthan has revealed that a very low proportion of beneficiaries is contributing at different stages of the programme in terms of either labour or finances or both. The other factors positively related to peoples' participation are the training of farmers, age, and frequency of the visit of extension workers.

Samah and Fariborz (2009) reported that the people's participation in community development activities is viewed as a process by individuals are involved in initiating, deciding, planning, implementing and managing the group and its activities. It is also a process of social development in which people, as subjects in their own environment, seek out ways to meet their collective needs and expectations and to overcome their common problems.

Rashid and Sen (2010) reported that self mobilized participation of people in rural development is a critical factor, which is possible through a vibrant and powerful Gram Sabha. Unfortunately, participation of rural people in Gram Sabha is very low in the villages of Bihar. Two prominent groups of people lead the Panchayat the first group include traditional influential persons, and the second group consists of new and raw entrants. Significance of participation in the panchayat activities and implementation of rural development programs has not yet been realized by the common man. Women representatives are much neglected.

Phadnis *et al.*, (2010) publicized that socially and environmentally sustainable development and management of irrigation and drainage scheme is a critical and complex issue for both rich and poor countries. To meet the demand of water users, management of water resources demands an integrated and participatory approach. Active participation of farmers without gender bias and their contribution in any water conservation and management programme is an absolute necessity in present time. Information dissemination, Education and Training is an important aspect to the success of Water conservations and management programmes. And concluded that participatory approach is a key to the success of developmental schemes in the water sector and to protect the environment and maximize benefits of schemes.

Jiril and Kumar (2010) conducted a study in Unnnao district of U.P during 2005-08. Majority of the respondents (51.43 per cent) were found to have moderate participation in watershed development programme whereas 30.00 and 18.57 per cent respondents had less and more participation level, respectively.

Mkhize *et al.* (2010) reported that community-driven development, in which decisions are made and budgets are allocated locally, can deliver potential outcomes at low cost than centrally managed programmes, while also conferring better governance in terms of local accountability, transparency and empowerment.

Lodhiya (2011) revealed that problem-related to watershed resources and environment must be tackled through the participation of local people living therein. By implementing integrated approaches of conservation and development, involving people in the watershed level, we can not only improve the natural resources but also help in the mitigation of climate. Involvement of people in planning, designing, production and consumption cycle can play a lead role and must be considered in various conservation and protection and developmental programme.

Farshid (2011) found in his study that farmers' participation in agricultural planning and evaluation decision making was not fully considered. Decisions making in agricultural policy were mostly done by mainly government organizations. Thereafter, some attention was given to farmers' participation in project planning and implementation. However, incentives for participation were scarce. Various obstacles to participation exist as well as the lack of capable organizations was an important element contributing to limited farmers' agricultural development. Based on the findings, empowerment can be a tool for the development of farmers in agriculture planning and policy.

Chhetri (2013) found that people's participation in decision making, planning and evaluating policies plays a key and supportive role in local governance leading to sustainable rural development. The participatory approach helps to reduce development cost, increase perceived and actual benefits and increase awareness among the people and help in the mobilization of local resources, facilitates smooth and easy project implementation.

Tologbonse et al. (2013) showed that level of education, age and marital status were significantly related with level of participation. The mean output of Women in Agriculture programme (WIA) participants was significantly higher than non-WIA participants. The difference in the mean output levels was largely attributed to participation in WIA programme. The findings concluded that the difference in the mean income could be attributed to their participation in WIA programmes.

Wright *et al.* (2014) concluded that emerging evidence adaptation programmes and strategies for agriculture and are more likely to be effective if they directly involve communities that are innovating and implementing Community-Based Approaches (CBA) at local levels. In India, the enthusiasm of young farmers in community-based organizations enabled the adoption, piloting and subsequent wider dissemination of adaptation technologies, and overcoming social barriers to adaptation.

Bagdi and Kurothe (2014) in his study indicated that the extent of people's participation in planning was 63.7 per cent, in implementation was 57.7 per cent and in maintenance was 75.1 per cent. It shows that the extent of people's participation in NSHWDP in the six distressed districts of Vidarbha region of Maharashtra was moderate during

watershed programme planning and implementation phases, whereas, high level of participation was exhibited during the maintenance phase.

Wasihun *et al.* (2014) studied that farmers in Soddo-zuria Woreda in Southern Ethiopia perceived their level of participation to be low, and had a significant correlation with sex, educational status, wealth status and frequency of contact with extension agents. Female, illiterate and poor farmers' perception of participation in the Public Agricultural Extension Service (PAES) was found to be lower than their male, literate and resource-rich counterparts respectively.

Raghupathi and Venkatesha (2017) reported that extent of people involved in the watershed programme was low (64%), as they were not fully motivated, to have a sense of belonging and owning it and owe to preserve and undertake developmental activities with Govt., Private and NGOs; collaboration. This requires, the human resource development initiatives of capacity building activities involving all the stakeholders, to reap the fruits of the watershed activities to the people and sustainable development and restoring the ecology.

Sangtam and Yaden (2017) found that the failure of the development strategies for the last few decades has been widely attributed to the absence of people's participation. In fact, it has become a worldwide accepted notion for all the development activities. Unless the common people of the rural population are willing to participate to develop themselves, the programmes of rural development cannot be successful. As the rural development programme is for the people, it should certainly be the programme of the people and by the people.

2.2 To study the impact of the programme on agricultural practices and their economical condition

Demont *et al.* (2001) reported that the introduction of new technologies has impacts far beyond the farm or the consumer alone. Whereas the negative effects or 'costs' of pesticides are currently 'paid' by the environment. This means that the market optimum of agricultural technological innovations does not include any guarantee for 'sustainability' yet, since we may be excessively exploiting our natural resource base. Therefore, we might want to reconsider the conventional 'private' welfare framework of agricultural innovations by including 'social values', like environment, society, consumer views, and animal welfare, transforming it into a 'social' welfare framework.

Palanisami and Suresh (2009) reported that the watershed development activities have made significant positive impacts on various biophysical aspects such as soil and water conservation, soil fertility, soil and water erosion in the cropped area, changes in cropping pattern, cropping intensity, production and productivity of crops. Watershed development activities have shown significant positive impacts on the water table, water availability for cattle and other domestic uses.

Owombo *et al.* (2012) revealed that education, extension visit and machine access were significant determinants of adoption of mechanization practices. Hence, there is the need to put appropriate policies that would create better access to these technologies and types of equipment at the right time and at minimum cost. This would enhance their productivity which will, in turn, increase their income and thus ensures a better livelihood.

Idris *et al.* (2012) reported that the Integrated Agricultural Development Project (IADPs) have a significant impact on socio-economic livelihoods of rural farmers. The IADPs reduce the incidence of poverty, increase the income of the rural farmers and attract opportunities for job development in their lives and families. The study revealed that the incidence of poverty has decreased by 34.0% from 53.6% in 2000 to 19.6% in 2005. This shows a decrease of 6.8% per annum due to socio-economic interventions in developing IADPs rural farmers.

Ezeh *et al.* (2012) reported that the agricultural development programmes (ADP) impacted positively and significantly on rural women contact farmers' farm income, farm size and fertilizer use levels at 5.0 per cent risk level. The multiple regression analysis with a double log as the lead equation showed that the critical determinants of gross expenditure of the rural women contact farmers include household size, farm size, labour use levels and farm incomes at given levels of significance.

Taye (2013) reported that various extension programmes have been launched in sub-Saharan Africa with the aim of improving agricultural production and productivity. However, agricultural production and productivity are not growing as it should be in the region. Despite this fact, most of the impact evaluation studies conducted on agricultural extension programmes in the region have reported positive and significant impacts. This does not only contradict the reality in terms of agricultural productivity growth but also the impact evaluation studies reported contradictory results in a given country. The reasons for such contradictions emanate from the nature of impact evaluation, agriculture, extension, and factors related to the methodologies used for impact evaluation, data and capacity.

Panda and Majumder (2013) reported that rural development generally refers to the process of improving the quality of life and economic well-being of people living in relatively isolated and sparsely populated areas. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is considered as a "Silver Bullet" for eradicating rural poverty and unemployment, by way of generating demand for the productive labour force in village. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labour, alleviating poverty, and making village self-sustaining through productive assets creation such as road construction, cleaning up of water tanks, soil and water conservation work.

Ojo *et al.* (2014) revealed that agricultural development programmes have significantly increased food production in the locality through increased provision of

pesticides and improved seeds to farmers, the establishment of new infrastructure and provision of fertilizers. The analysis of the evidence from the result, however, reveals that accessibility of credit by farmers has no significant effect on increased agricultural productivity.

Sangha (2014) reported that the modern agriculture systems were introduced with green revolution largely at the expense of over and misuse of land and water resources and loss of biodiversity. It evaluates the impact of changes in agricultural systems on the breakdown of socio-cultural fabric. Rural people, particularly agricultural communities are facing many serious problems including farmer's suicides and health problems. Investigation calls for an urgent need to work collectively not just to improve the agricultural systems but to save the social, natural and cultural capital so that agricultural and other rural communities, as well as their natural systems, can sustain over a long term.

Nirmala (2015) found in her study that women farmers who were involved in on-farm demonstrations, farm field schools, training, field days, exposure visits and were also connected to ICT tools through SMS alerts for Good Agricultural Practices (GAP) technologies included are soil test based fertilizers, application of biofertilizers, seed treatment of pulses, plastic mulching and stacking of tomatoes, zero tillage of maize and technologies for reducing post-harvest losses and other animal production practices. It was evident from significant differences in knowledge levels between beneficiaries and non-beneficiaries that reflected from high mean scores.

Sahu and Das (2015) reported that adoption has a positive impact on consumption expenditures and negative on poverty reduction. Though there is a large scope for boosting the role of agricultural technology in anti-poverty policies in rural areas. Better targeting of agricultural research on resource-poor producers might be the main vehicle for maximizing direct poverty-alleviation effects. Improved agricultural technology, improved rural infrastructure, improved irrigation systems, maintenance of livestock, physical assets, better access to education, secure land tenure, and reasonable access to extension services all play a significant role in encouraging productivity growth and poverty reduction.

Pandey *et al.* (2015) reported that rural development interventions have revealed various factors which are essential to be modified and changed for the achievement of its objectives for the potential growth of the region. Rural development interventions create a healthy ground for the upliftment of the rural people by providing various employment opportunities and infrastructure facilities. Whereas the role of these organizations are highly pro-people but the extent of benefits to the target group is not as effective as it is required. This requires strict monitoring of the implementation of the programme by the rural development interventions.

Nirmala *et al.* (2016) studied the impact of Direct Seeded Rice (DSR) on the profitability of farmers of Raichur and Koppal districts of Tungabhadra Command area of

Karnataka, the study revealed that majority of the farmers had adopted DSR practice as a farmer to farmer spread of technology. The adoption of DSR has resulted in a reduction in the cost of cultivation by Rs.13,433/- per hectare. The net returns were Rs. 44,796/- per hectare for DSR and Rs. 25,482/- per hectare for transplanting method. Partial Budgeting technique of DSR vs transplanting method revealed that the farmers could save on various inputs like seed, irrigation, fertilizer, human and machine labour, but had to spend more on herbicides in DSR.

Anithakumari and Chandrika (2017) found that the mean average knowledge index of the FFS farmers (51.31) was 65 per cent more than the non-FFS farmers (31.10). The difference in the knowledge level of farmers of both genders was non-significant indicating effectiveness of FFS methodology in improving knowledge regardless of the gender. The study also indicated non-significant difference among FFS and Non-FFS men and women farmers on all the knowledge items and a significant difference between FFS and Non-FFS farmers of both the gender.

2.3 Constraints faced by respondent during adoption of programme

Upadhyay (2000) in the study on constraints faced by the DWCRA beneficiaries, highlighted that the major constraints perceived by the women beneficiaries included personal and family constraints, infrastructure constraints, technical constraints, operational and resource constraints and social constraints. Under the personal constraints, non-cooperation from family members was the major constraint perceived by the women. With respect to infrastructure and resource constraints, lack of modern tools and types of equipment, non-availability of conveyance facility, inadequate funds and lack of sufficient programme functionaries were the main problems. Lack of technical guidance for the establishment of trade, insufficiency of training to build confidence and improper assessment of trades were the technical constraints realized by the beneficiaries. In the case of social constraints, lack of unity and general concurrence among group members and improper interpersonal relations were the major problems faced by the beneficiaries.

Sisodia and Sharma (2008) in a study revealed that among technical constraints, improved breed of buffaloes and ram were not provided to the farmers. The training was not given under household production system to the masses of backward castes and high mortality of horticultural plants.

Kumari (2012) revealed that the respondents were facing a number of constraints that restricted their action towards the adoption of IPM practices. Lack of knowledge, lack of skill, the laborious and complex nature of IPM practices and non-availability of inputs and tools of IPM were the major constraints reported by the respondents. Small farm size and lack of information about recent pest management strategies, extension services, the involvement of IPM, community participation were also reported by respondents as major constraints.

Khatun and Roy (2012) reported that the main constraints faced by the households in diversified area are: poor asset base, lack of credit facilities, lack of awareness and training facilities, fear of taking risk, lack of rural infrastructure, and lack of opportunities in non-farm sector, while the main constraints in less diversified area are: poor transport facilities, poor asset base, unfavourable agro-climate, lack of credit facilities, lack of awareness and training, and lack of basic infrastructure.

Gupta (2014) reported that the constraints in transfer of technology to the women farmers through KVK were lack of resources, input, motivation and recognition and due to this farm women did not participate in the KVK programme implementation effectively. Other factors associated with in was lack of interpersonal relationship, transport, training facilities and lack of leadership which were also a major hurdle regarded as in effective programme implementation.

Pandey and Singh (2014) found that caste structure of the village discouraged the execution of some activities as the constraint number one, as it obtained the highest percentage (89.58%) with the first rank. Further biased attitude of the officers involved in the project and office staff cannot solve non-technical problems of farmers were the other primary constraints of the watershed beneficiaries which were expressed by all the respondents (100 %). The findings also indicate a need for closer co-operation and regular contact among beneficiates and officials.

Kumar *et al.* (2016) found that lack of skill about employment generation activities, timely unavailability of seeds, lack of credit facility, lack of training institution for training of farmers/ farm women, fatalistic attitude towards employment generation activity, etc. were important problems perceived by the tribal farmers in taking up employment generation activities.

Samitha and Kumar (2017) reported that the major constraints in the planning stage was that the padashekarasamithi was merely looked upon as a supplier of inputs provided by Krishi Bhavans and thereby ignored its crucial role in the sustainable development of the group farms. Labour unavailability was found to be the foremost constraint in the implementation phase.

CHAPTER-III

RESEARCH METHODOLOGY

The present course of investigation entitled “A comparative study of farmer FIRST programme on Agricultural practices in Haryana” was carried out in Hisar and Karnal districts of Haryana state during 2017-18. This chapter gives a detailed explanation of the methodological procedure and steps followed during the time of the investigation.

The relevant information on methods and steps pertaining to the study have been presented under the following sub-heads:

3.1 Locale of the study

3.2 Sampling procedure

3.3 Variables and their measurements

3.4 Construction of interview schedule

3.5 Collection of data, tabulation and analytical procedure

3.1 Locale of the study

The study was conducted in two districts of Haryana state namely Hisar and Karnal which were selected purposely because the farmer FIRST programme was implemented in these districts by CCS Haryana Agricultural University and National Dairy Research Institute respectively.

3.2 Sampling procedure

Multi-stage sampling technique was adopted for the selection of District, village and the respondents as per the procedure given below.

3.2.1 Selection of villages

The study was conducted in the Haryana state, in two Districts Hisar and Karnal selected purposely. From Hisar, Gurana was selected as adopted village and Datta as non-adopted village. From Karnal, Garhi Gujran was selected as adopted village and Samora as non-adopted village.

3.2.2 Selection of respondents

Total 240 respondents were selected i.e., 120 from each district, @ 60 farmers from each adopted village and non-adopted village who were interviewed for the present study.

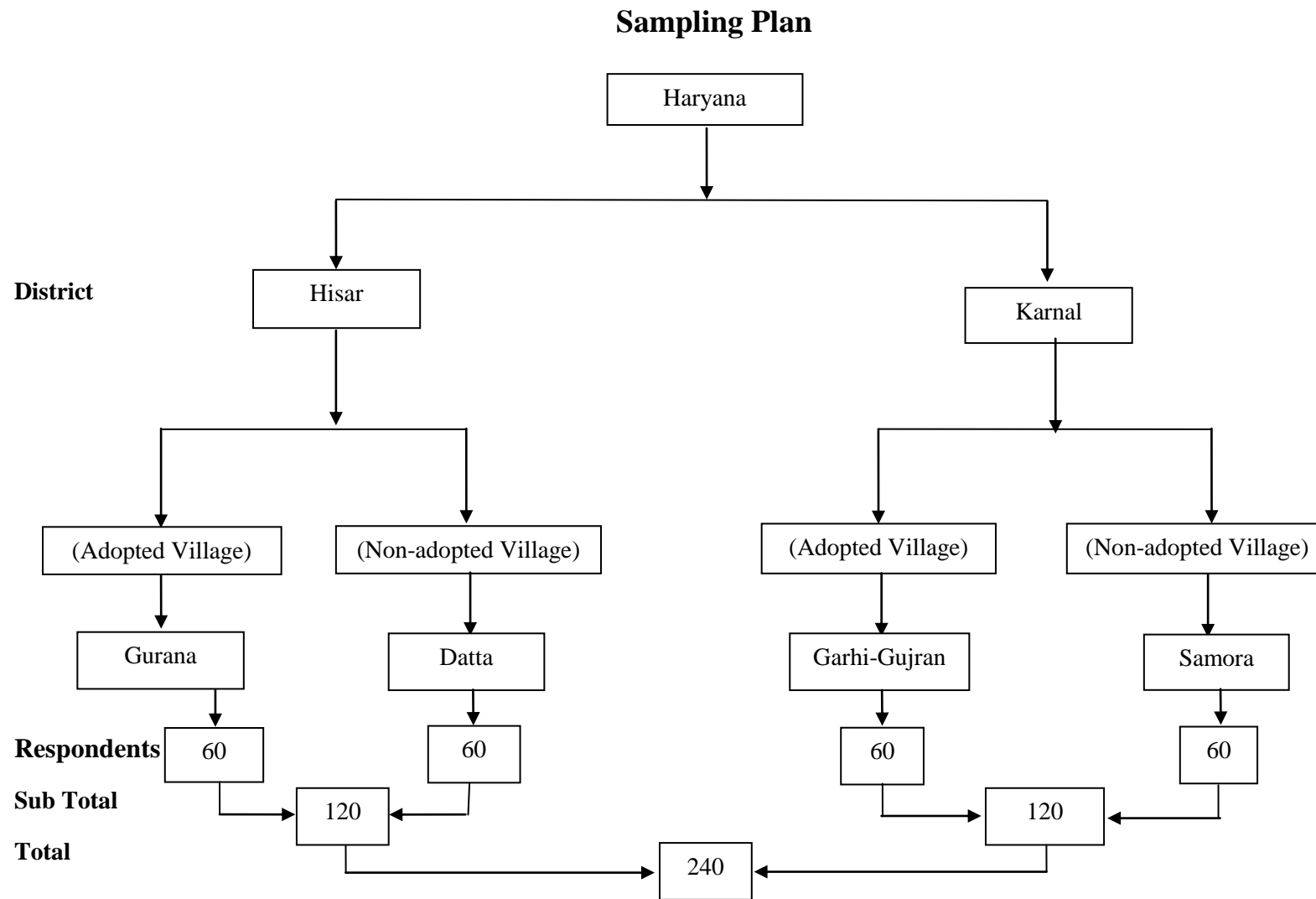
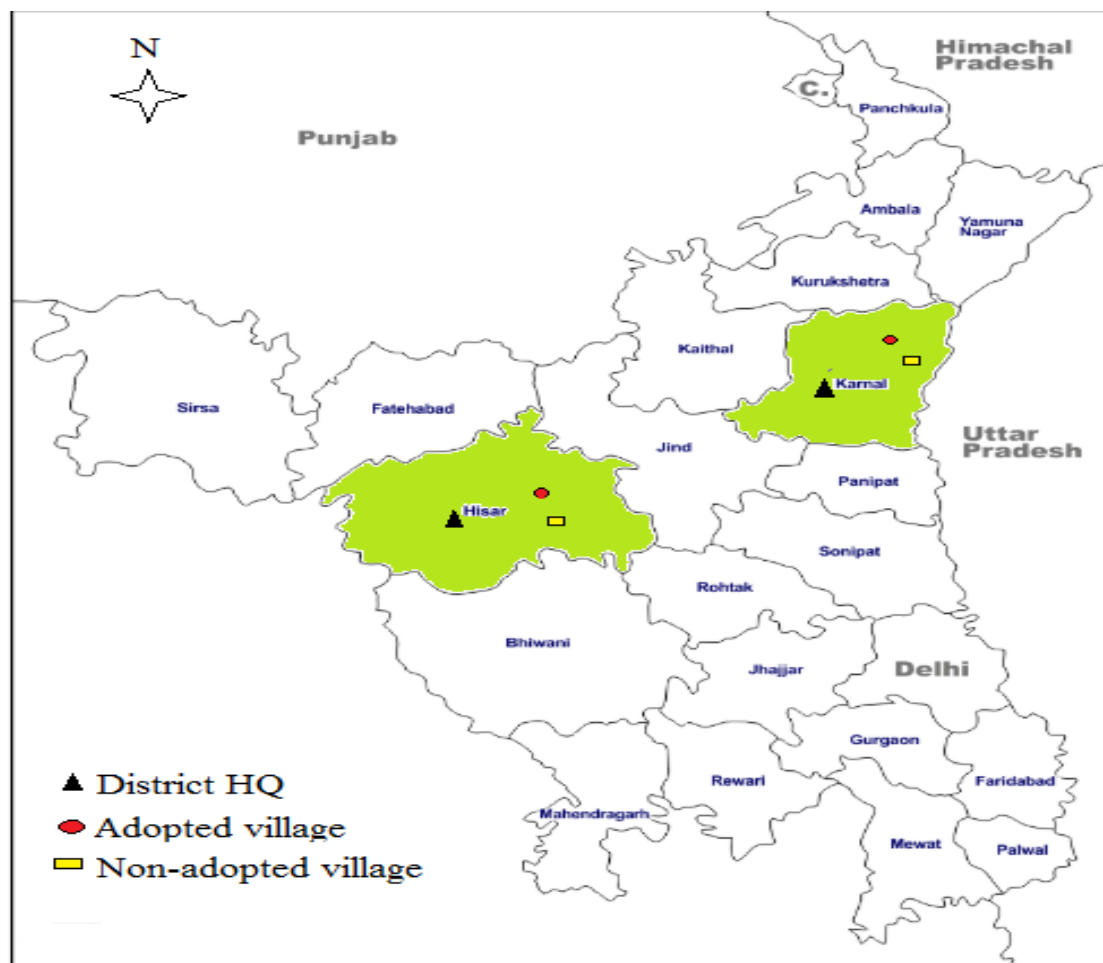


Fig. No. 3.1



Study area map

Fig. No. 3.2

3.3 Variables and their measurements

3.3.1 Dependent variables

To study the extent of Farmer's participation in Farmer FIRST programme

To study the impact of programme on agricultural practices and their economical condition

To assess the constraints faced by respondents during adoption of the programme

To analyze the association between independent and dependent variable

3.3.1.1 To study the extent of Farmer's participation in Farmer FIRST programme

Operational definition of dependent variables

Farmer's participation

The idea of participation is now a day's widely recognized as a basic operational principle of any development programmes and projects in rural areas. Anonymous (1996) defines participation as "a rich concept that means different things to different people in different settings. For some, it is a matter of principle; for others, practice and for still others, an end in itself." The Oxford English dictionary defines participation as "to have a share in"

or “to take part in,” thereby emphasizing the rights of individuals and the choices that they make in order to participate.

According to (Anonymous, 1993) participation means that people are closely involved in the economic, socio-cultural and political processes that affect their lives. Participation in development is usually said to mean the full involvement of the people in development which affect their lives regardless of gender, race, age, class, sexual orientation or disability. It was calculated by dividing all implementing stages into several items and participants were asked to give their response for each item as ‘yes’ or ‘No’. The score was assigned for yes, as 1 and 0, for No.

3.3.1.2 Impact of Farmer FIRST programme on agricultural practices and their economic condition

According to (Anonymous, 2016) the definition of impact is the changes in the lives of rural people, as perceived by them and their partners at the time of evaluation, plus the sustainability-enhancing change in their environment to which the project has contributed. Changes can be positive or negative, intended or unintended. In the log-frame terminology, these perceived changes in the lives of the people may correspond either to the purpose level or to the goal level of a project intervention.

The impact of farmer FIRST Programme was assessed by comparing the response of respondents of adopted and non-adopted villages towards common agricultural parameters viz., improved agronomic crop practices, and animal husbandry practices. It was measured with the help of interview schedule developed for this purpose as given in Annexure I.

3.3.1.3 Constraints faced by respondents during adoption of programme

Constraints mean the perceived impediments in the implementation of farmer FIRST programme. A constraint index was developed to measure the general, economic, organizational, and communicational as well as constraints that the respondents felt in the process of farmer FIRST Programme. The responses were obtained on the three-point scale as ‘very serious’ ‘serious’ and ‘not so serious’ and scores were given as 3, 2 and 1, respectively. On the basis of the mean score, they were ranked from high to low.

3.3.2 Independent variables

3.3.2.1 Age

It refers to the chronological age of the respondent at the time of the investigation. It was measured by direct questioning. The respondents were categorized into three age groups i.e. young, middle and old age groups.

3.3.2.2 Education

Education was operationalized as the number of years of formal education completed by the respondent (above six years of age). Educational status was measured by the scale developed by Nirwal (1982) with suitable modification according to study.

Variable	Categories	Score
Education	Illiterate	0
	Primary	1
	High school	2
	Sr. Secondary	3
	Diploma	4
	Graduate and above	5

3.3.2.3 Socio-economic status

It has been referred to as the position of the respondent in the society which was ascertained by various social and economic variables. It included variables such as caste, occupation, education, social participation, land holding, house, farm power, material possession, size and type of family. The socio-economic status of the respondent was categorized in low, medium and high socio-economic status groups. The socio-economic status scale developed by Trivedi and Parek (1963) was adopted to measure it.

Variable	Category	Score range
Socio-economic status	Low	Up-to 32
	Medium	33-39
	High	40 and above

3.3.2.4 Source of irrigation

Self generating questions were developed for measured farmers' response. The farmers were categorized into three groups on the basis of uses of different irrigation source canal, tube well and submersible pump for irrigation purpose. Score of 1 was given for yes and zero for no.

3.3.2.5 Extension Contact

This refers to the degree of individual respondent is contacted with extension workers to get information on agriculture. For the purpose of the present study, this was operationalized as the extent of contact made by the farmers with the scientists of Chaudhary Charan Singh Haryana Agricultural University (CCS HAU) Hisar, National Dairy Research Institute (NDRI), Karnal, extension personnel of State Department of Agriculture, viz. Deputy Director Agriculture (DDA), Sub Divisional Agricultural Officer (SDAO)/ Subject Matter Specialist (SMS), Agricultural Development Officer (ADO)/ Village Extension Worker (VEW), Block Development and Panchayat Officer (BDPO) and bank personnel participation in extension activities and attending trainings. This was measured by the schedule developed by Bhati (1985) with suitable modifications. The schedule and scoring pattern are given in Annexure I. The respondents were categorized into low, medium and high categories of extension contact.

Variable	Category	Score range
Extension Contact	Low	Up-to 7
	Medium	8-11
	High	12 and above

3.3.2.6 Mass media exposure

It referred to the frequency of exposure to different mass-media sources like radio, television, newspapers, farm magazines, agricultural film shows, farmers' fairs etc, for obtaining agricultural information. Respondents' responses were obtained through the schedule developed by Bhati (1985) with suitable modifications. The scores obtained by the respondents for all the questions in the schedule were summed up in order to arrive at their mass media exposure.

Variable	Category	Score range
Mass media exposure	Low	Up to 8
	Medium	9-11
	High	12 and above

3.3.2.7 Scientific orientation

It referred to a degree to which the respondents were oriented to the use of scientific methods in cultivation and decision making. It was measured by utilizing the scale of Supe (1969). The positive statements were scored as 5,4,3,2 and 1 for strongly agree, agree undecided, disagree and strongly disagree, respectively. Whereas scoring system was reversed in the case of negative items.

Variable	Category	Score range
Scientific Orientation	Low	Up to 15
	Medium	16-20
	High	21 and above

3.3.2.8 Economic Motivation

It refers to the occupational success in terms of profit maximization and relative values placed by the farmers on the economy ends. This was measured with the help of the rating scale developed by Moulik and Rao (1965). Scoring was done on a two-point continuum *i.e.* most desired, desired and less desired and the weights assigned were 2 and 1 respectively for positive statements and the scoring was reversed for negative statements.

Variable	Category	Score range
Economic motivation	Low	Up to15
	Medium	16-19
	High	20 and above

3.3.2.9 Risk Orientation

It refers to the degree to which a farmer has an orientation towards risk and uncertainties and is prepared to face the problems of usual uncertainties in the use of farm practices. It was measured with the help of farm practices. It was measured by utilizing the Risk Orientation scale developed by Supe (1969). The positive statements were scored as 5,4,3,2 and 1 for strongly agree, agree, undecided, disagree and strongly disagree, respectively. Whereas, the scoring system was reversed in case of negative items found. The scale contains 5 items. The responses were categorized into low, medium and high groups as given below.

Variable	Category	Score range
Risk Orientation	Low	Up to13
	Medium	14-16
	High	17 and above

3.3.2.10 Farming System

It represents an appropriate combination of farm enterprise viz., cropping system, livestock, poultry, fisheries, forestry and the means available to the farmers for increasing their profitability. The arguments of the farming system is important for research because it gives all the information of the farmer about his cropping pattern, along with other means of income related to agriculture and allied activities. A schedule was developed to study the Farming System which includes the list of possible enterprises farmer generally adopt. It was measured by using frequency and percentage.

3.4 Construction of Interview Schedule

A well-structured Interview schedule was developed for the collection of data as given in the Appendix. In formulating the questions and statement for the schedule, the Investigator sought the technical guidance from scientists, experts and available literature to make it more precise, clear and meaningful. For finalizing the Interview Schedule and to test the administer ability of each question, statement and to remove ambiguities in the measuring instrument, the Interview Schedule was pre-tested. On the basis of experience gained during pre-testing, necessary corrections and modifications were made.

3.5 Collection of Data, Tabulation and Analytical procedures

Each of the selected respondents was interviewed personally. Interview for data collection with the help of an interview schedule was generally conducted at the farmers' houses and occasionally also at their farms when they were free to talk to the researcher. The researcher had to make repeated visits to the study area with a view to develop sufficient rapport with the farmer

The responses to each question were marked in the interview schedule itself and then respondent-wise tabulation sheet was prepared. Tables were prepared according to the objectives. Following statistical tools were used to analyze the data.

Frequency: This procedure was used to find out the distribution pattern of respondents variable wise and to categorize the problems perceived by farmer of FFP adopted village.

Percentage: This measure applied for simple comparisons.

Mean score: It was obtained by adding the weight of all the respondents or statements then dividing by the total number of respondents.

$$\bar{X} = \frac{\sum x_i}{n}$$

Where,

\bar{X} = Arithmetic mean

Σ = Summation

x_i = each individual score

n = Total number of respondents

Paired t test: The Independent Samples t Test compares the means of two independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$s_p = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Where,

\bar{x}_1 = Mean of first sample

\bar{x}_2 = Mean of second sample

n_1 = Sample size (i.e., number of observations) of first sample

n_2 = Sample size (i.e., number of observations) of second sample

s_1 = Standard deviation of first sample

s_2 = Standard deviation of second sample

s_p = Pooled standard deviation

The calculated t value is then compared to the critical t value from the t distribution table with degrees of freedom $df = n_1 + n_2 - 2$ and chosen confidence level. If the calculated t value is greater than the critical t value, then we reject the null hypothesis.

Correlation coefficient: Karl Pearson's Correlation Coefficient (r) was used in order to know the nature of relationship between the dependent and independent variables. The values of the correlation coefficients were then tested for statistical significance. It was calculated by employing the following formula suggested by Snedecor and Cochran (1968).

$$r = \frac{\frac{\sum x_i y_i - \sum x_i \sum y_i}{n}}{\sqrt{\frac{(\sum x_i^2 - (\sum x_i)^2)}{n}} * \sqrt{\frac{(\sum y_i^2 - (\sum y_i)^2)}{n}}}$$

Where,

r = Correlation Coefficient between variables X and Y

n = number of respondents

$\sum xy$ = sum of product of X and Y

X and Y = dependent and independent variables correlated.

$\sum x$ = summation of overall dependent variables

$\sum y$ = summation of overall independent variables

$\sum x^2$ = Sum of all squared values of dependent variables.

$\sum y^2$ = Sum of all squared values of independent variables.

Significance of observed correlation coefficient was tested by using

$$t_{cal} = \frac{r}{\sqrt{1-r^2}} \sqrt{N-2}$$

If $|t_{cal}| > t_{table}$ then observed correlation coefficient is significant to 5 per cent value of t for N-2 d.f.

Rank order: It was used to arrange the statements based on score calculated from higher to lower and rank was allotted.

Keeping in view the nature of data, objectives of the study and applicability of the tests were used for analysis and interpretation of data. Computer facilities were availed to work out t- test, coefficient of correlation, etc. On the basis of statistical analysis, conclusions were drawn and report writing was done keeping in view the objectives of the study.



Glimpses of data collection

Plate No. 1



Glimpses of data collection

Plate No. 2

CHAPTER-IV

RESULTS

The findings emanated from the study have been presented in this Chapter. The results of the study are, accordingly, presented under the following major heads:

- 4.1 Profile of respondents
- 4.2 The extent of farmer's participation in farmer FIRST programme
- 4.3 The impact of the programme on agricultural practices and their economic condition
- 4.4 Constraints faced by the respondents during adoption of programme
- 4.5 Respondents' personal variables and their association with dependent variables (adoption of crops and animal husbandry practices and farmers' participation)

4.1 Profile of Respondents

The data pertaining to the frequency distribution of the respondents based on their personal variables have been furnished in Table 4.1.

Table 4.1 : Distribution of respondents according to personal variables **N=240**

S. No.	Variable	Category	AV (n=120)	NAV (n=120)
1.	Age	Young (up to 30 yrs.)	42 (35.00)	40 (33.33)
		Middle (31-50 yrs.)	52 (43.33)	56 (46.67)
		Old (above 50 yrs.)	26 (21.67)	24 (20.00)
2.	Education	Low (up to 3)8	37 (30.83)	42 (35.00)
		Medium (4-5)	47 (39.16)	45 (37.50)
		High (above 5)	21 (17.50)	17 (14.16)
		High (above 12)	15 (12.50)	16 (13.34)
3.	Socio-economic status (SES)	Low (up to 30)	46 (38.33)	44 (36.66)
		Medium (31-37)	59 (49.17)	59 (49.17)
		High (above 37)	15 (12.50)	17 (14.16)
4.	Source of irrigation	Canal	67 (55.83)	70 (58.33)
		Tube well	36 (30.00)	39 (32.50)
		Submersible pump	17 (14.17)	11 (09.17)
5.	Extension contact	Low (up to 6)	14 (11.66)	74 (61.66)
		Medium (7-10)	56 (46.67)	35 (29.16)
		High (above 10)	50 (41.67)	11 (09.17)
6.	Mass media Exposure (MME)	Low (up to 7)	21 (17.50)	32 (26.67)
		Medium (8-11)	69 (57.50)	63 (52.25)
		High (above 11)	30 (25.00)	25 (20.84)
7.	Scientific orientation	Low (up to 16)	13 (10.83)	38 (31.66)
		Medium (16-18)	20 (16.67)	31 (25.83)
		High (above 18)	87 (72.50)	51 (42.50)
8.	Economic motivation	Low (up to 23)	13 (10.83)	28 (23.33)
		Medium (24-28)	28 (23.33)	33 (27.50)
		High (above 28)	79 (65.84)	59 (49.17)
9.	Risk orientation	Low (up to 15)	12 (10.00)	38 (31.66)
		Medium (16-18)	77 (64.16)	63 (52.50)
		High (above 18)	31 (25.84)	19 (15.84)

Figures in parentheses indicate percentage.

AV[adopted village] and NAV [Non-adopted village].

4.1.1 Age

The data presented in Table 4.1 highlight that in adopted village, 43.33 per cent of the farmers were found to be in the middle-aged category followed by 35.00 per cent young aged category. Only a few (21.67%) of the farmers were found in the old age category. Whereas in non-adopted village, 46.67 per cent of the respondents were found in middle age category followed by 33.33 and 20.00 per cent in young and old age categories, respectively.

4.1.2 Education

The data presented in Table 4.1 indicates that in FFP adopted village, 39.16 per cent had medium level of education followed by 30.83 per cent respondents who belonged to low educational status. 17.50 per cent belong to high educational status category and the less 12.50 per cent belonged to above high category. Among the farmers of FFP non-adopted village, 37.50 per cent had medium level of educational status followed by 35.00, 28.75 and 13.34 per cent in low, high and above high educational status, respectively.

4.1.3 Socio-economic status

The results in Table 4.1 show that nearly half (49.17%) of the respondents in FFP adopted village belonged to medium socio-economic status, while 38.33 per cent of them belonged to low socio-economic status and only 12.50 per cent belonged to high level of socio-economic status. Whereas in non-adopted village, nearly half of respondents (49.17%) belonged to medium followed by low level of socio-economic status followed by 36.66 per cent and 14.16 per cent belong to low and high socio-economic status respectively.

4.1.4 Source of irrigation

The results in Table 4.1 show that majority (55.83%) of the respondents of FFP adopted village used canal water as source of irrigation followed by 30.00 and 14.17 per cent used tube well and submersible pump as source of irrigation respectively, Whereas in non-adopted village 58.33 per cent respondents used canal water followed by 32.50 and 9.17 per cent used tube well and submersible pump as source of irrigation respectively.

4.1.5 Extension contact

It is revealed from the data presented in Table 4.1 that in FFP adopted village, nearly half (46.67%) of the respondents possessed medium level of extension contact followed by high (41.67 %) cent and low (11.66 %) levels of extension contacts. Whereas, in non-adopted village, more than half (61.66%) of the respondents were found to have low extension contacts followed by medium (29.16 %) and high (9.17 %) levels of extension contact.

4.1.6 Mass Media Exposure

Data furnished in Table 4.1 show that in FFP adopted village, the mass media exposure of majority (57.50%) of the respondents was found to be of medium level followed by high 25.00 per cent and low 17.50 per cent. Regarding respondents in non-adopted village, it was found that 52.25 per cent had medium level of mass media exposure followed by low 26.67 per cent and high 20.84 per cent level of mass media exposure.

4.1.7 Scientific Orientation

It is seen from Table 4.1 that in FFP adopted village, 72.50 per cent respondents had high level of scientific orientation, followed by 16.67 per cent who possessed medium level of scientific orientation and the remaining were found to have low (10.83%) level of scientific orientation. Wherever, 42.50 per cent of the respondents in non-adopted village obtained a high level of scientific orientation followed by low (31.66%) and medium (25.83%) levels of scientific orientation.

4.1.8 Economic Motivation

It is obvious from the data in Table 4.1 that majority (65.84%) of the respondents who possessed high level of economic motivation followed by medium (23.33%) and low (10.83%) levels of economic motivation in FFP adopted village, Whereas 49.17, 27.50 and 23.33 per cent respondents in non-adopted village possessed high, medium and low levels of economic motivation, respectively.

4.1.9 Risk Orientation

In FFP adopted village, 64.16 per cent of the respondents had medium level of risk orientation, followed 25.84 per cent who possessed high level of risk orientation and the remaining were found to have low (10.00%) level of risk orientation. Wherever, 52.50 per cent of the respondents in non-adopted village had medium level of risk orientation followed by low (31.66%) and high (15.84%) level of risk orientation.

4.1.10 Farming System

It is evident from Table 4.1.1 and fig no 4.1 that in both adopted and non- adopted village combined majority 93.75 per cent of the farmers had crop cultivation in their farming system followed by dairy/sheep/goat (2.08%), vegetable cultivation (1.66%), bee keeping (1.25%), agro-forestry (0.833%) and mushroom cultivators (0.416%).

Table 4.1.1 : Farming System

N=240

S. No.	Particulars	Frequency (Percentage)
1.	Crop farming	225 (93.75)
2.	Dairy/sheep/goats	5 (2.08)
3.	Fisheries	0
4.	Forestry	0
5.	Agro-forestry	2 (0.833)
6.	Mushroom cultivation	1 (0.416)
7.	Bee keeping	3 (1.25)
8.	Vegetable cultivation	4 (1.66)
9.	Floriculture	0
10.	Any other	0

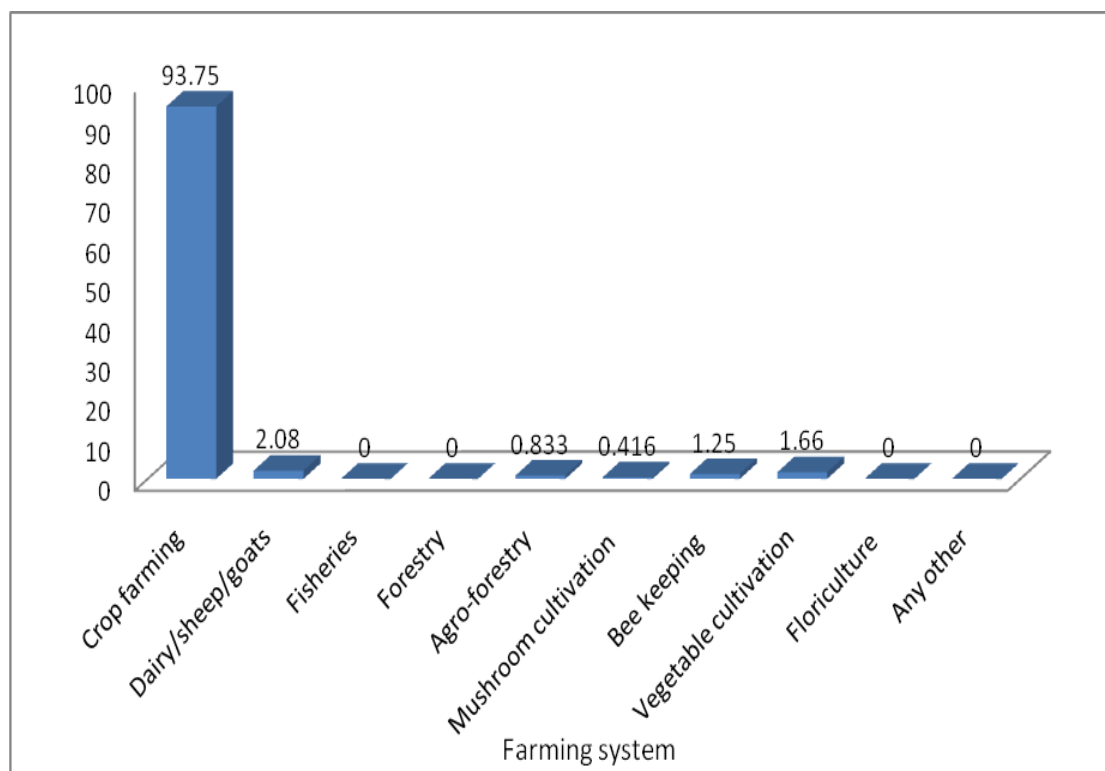


Fig. 4.1. Main farming system of respondents

4.2 Extent of Farmers' participation in farmer FIRST programme

This section deals with extent of farmer's participation in the various stages of farmer FIRST programme. The results so obtained have been presented in Table 4.2.

Analysis of the data pertaining to farmer's participation at the planning stage in Table 4.2 and fig no 4.2, it shows that majority (58.34%) of the respondents had medium level of participation. It was followed by high (30.84%) and low (15.83%) level of participation. At the resource analysis stage (50.00%) of the respondents had high-level of participation followed by 37.50 and 12.50 per cent medium and low level, respectively. It is revealed from Table 4.2 that at progress evaluation and reconsideration stage 46.66% of the respondents had medium level of participation, while 25.83 per cent had high and rest (22.50%) of the respondents' had low level of participation.

With reference to farmer participation in the execution stage, a majority (60%) of the respondents had the medium level of participation followed by low (26.67%) and high (13.33%) level of participation.

Analysis of overall participation reveals that majority number (52.50%) of respondents had medium level of participation followed by high (30.00%) and low (17.50%) level of farmer's participation in the farmer FIRST programme.

Table 4.2: Extent of people's participation at various stages of farmer FIRST programme in different categories **n = 120**

S. No.	Project stage	Category	Frequency	Per cent
1.	Planning stage	Low (up to 11)	19	15.83
		Medium (12 to14)	70	58.34
		High (above 14)	37	30.84
2.	Resource analysis	Low (up to 3)	15	12.50
		Medium (4 to 5)	45	37.50
		High (above 5)	60	50.00
3.	Execution stage	Low (up to 3)	32	26.67
		Medium (4-5)	72	60.00
		High (above 5)	16	13.33
4.	Progress evaluation and reconsideration stage	Low (up to 20)	27	22.50
		Medium (21-30)	56	46.66
		High (above 30)	31	25.83
5.	Overall	Low (up to 20)	21	17.50
		Medium (21-30)	63	52.50
		High (above 30)	36	30.00

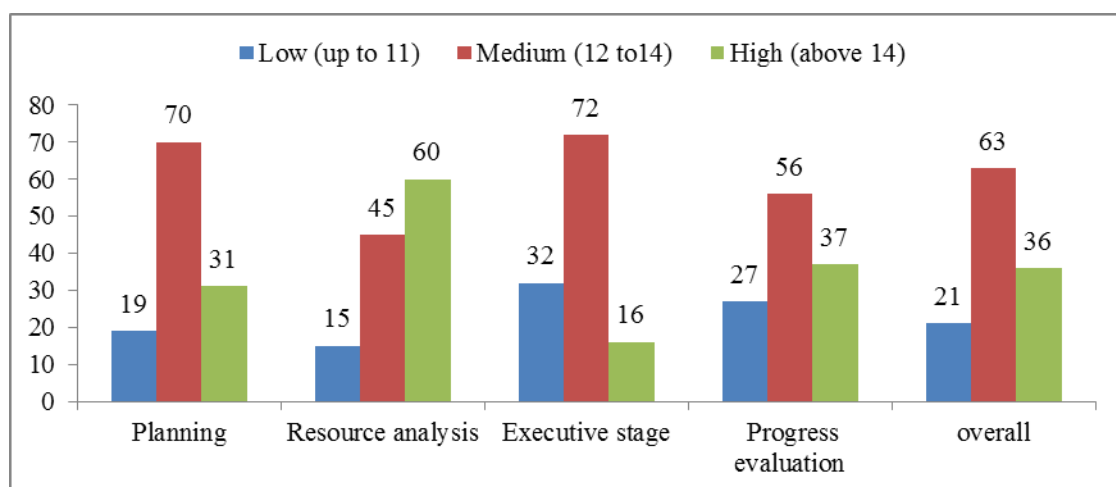


Fig. 4.2. Peoples Participation in FFP.

4.3 Impact of Farmer FIRST programme on agricultural practices and their economic condition

4.3.1 Impact of FFP on information on seed and variety

An examination of the data presented in Table 4.3 indicates 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), local availability of seeds (2.66), use of high yielding variety (2.49), characteristics of high yielding variety (2.08) and minimum was in adoption of seed-borne disease (2.08) practice. Whereas in non-adopted village maximum adoption was found with seed rate (2.75) followed by seed treatment (2.47), proper seed

selection (2.32), local availability of seeds (2.05), use of high yielding variety (2.31), characteristics of high yielding variety (1.92) and seed-borne disease (1.80).

Table 4.3 : Impact of FFP on the information on seed and variety

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Availability of seeds	320	2.66	247	2.05
2.	Use of high yielding variety for the area	299	2.49	278	2.31
3.	Characteristics of high yielding variety	250	2.08	231	1.92
4.	Proper seed selection	326	2.71	279	2.32
5.	Seed-borne diseases	250	2.08	217	1.80
6.	Seed treatment	343	2.85	331	2.75
7.	Recommended seed rate	352	2.93	297	2.47

WM- [Weighted mean.]

4.3.2 Impact of FFP on information on water supply

Table 4.4 indicates the impact of FFP on the information on water supply. In the adopted village, it was found highest with information about water to be supplied in channel before sowing time (2.54) followed by advance information about time and date of supply of water in canal for complete crop period (2.25), tube well water testing (2.04), water saving techniques (1.77) and minimum was with rainwater harvesting (1.74). In the non-adopted village, the maximum weighted water to be supplied in channel before sowing time (2.13) followed by advance information about time and date of supply of water in canal for complete crop period (2.02), tube well water testing (1.72), rainwater harvesting (1.69) and minimum with water saving techniques (1.50).

Table 4.4: Impact of FFP on information on water supply

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Information about water to be supplied in channel before sowing time	305	2.54	256	2.13
2.	Advance information about time and date of supply of water in canal for complete crop period	271	2.25	243	2.02
3.	Rain water harvesting	209	1.74	203	1.69
4.	Tube well water testing	245	2.04	207	1.72
5.	Water saving techniques	213	1.77	181	1.50

WM- [Weighted mean.]

4.3.3 Impact of FFP on information on seedling of crops

Data concerning farmer's adoption of recommended crop production practices regarding the preparation of seedlings of crops in the study area had been presented in Table

4.5 Perusal of the data indicates that farmers from the adopted village had significantly high adoption level with regard to practices. In the adopted village, maximum adoption was with plant protection in nursery management (2.78) followed by the selection of the site for raising seedlings (2.69), nutrient management in the nursery (2.55) and minimum with a method of preparing the bed for the nursery (1.90). In the non-adopted village, maximum adoption was with nutrient management in the nursery (2.54) followed by the selection of the site for raising seedlings (2.51), plant protection in nursery management (2.21) and minimum with the method of preparing the bed for the nursery (1.89).

Table 4.5 : Impact of FFP on information on seedling of crops

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted Village (WM)
1.	Selection of site for raising seedling	323	2.69	302	2.51
2.	Method of preparing bed for nursery	229	1.90	227	1.89
3.	Plant protection in nursery management	334	2.78	266	2.21
4.	Nutrient management in nursery	307	2.55	305	2.54

WM- [Weighted mean.]

Table 4.6 : Impact of FFP on information of land preparation and sowing

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Land preparation	318	2.65	307	2.55
2.	Pre-sowing soil treatment	290	2.41	219	2.24
3.	Place of availability of soil treatment inputs	229	1.90	214	1.78
4.	Price of soil treatment inputs	352	2.13	334	2.78
5.	Timely sowing	356	2.96	336	2.80
6.	Proper spacing	347	2.89	317	2.64
7.	Line sowing	353	2.94	319	2.65
8.	Depth of sowing	331	1.50	311	2.59
9.	Method of sowing	317	1.44	258	2.48

WM- [Weighted mean.]

4.3.4 Impact of FFP on information of land preparation and sowing

In the case of land preparation, it is found in Table 4.6 that in respect of land preparation and sowing maximum adoption in adopted village was found with timely sowing (2.96) followed by line sowing (2.94), proper spacing (2.89), land preparation (2.65) pre-sowing treatment (2.41), price of soil treatment input (2.13), place of availability of soil treatment inputs (1.90), depth of sowing (1.50) and lowest with method of sowing practice (1.44) whereas in the non- adopted village, maximum adoption was found with timely sowing

(2.80) which was closely followed by price of soil treatment inputs (2.78), line sowing (2.65), proper spacing (2.64), depth of sowing (2.59), land preparation (2.55), methods of sowing (2.48), pre-sowing treatment (2.24) and minimum adoption was with place of availability of soil treatment inputs (1.78).

4.3.5 Impact of FFP on information on fertilizer management

It is observed from Table 4.7 that with respect to impact of FFP on information of fertilizer management by farmers in the adopted village, 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), method and time of fertilizer application (2.23), identification of deficiency symptoms of major plant nutrients (1.95), crop residue management (1.80), knowledge in nutrients requirement of plants (1.55) and bio-fertiliser (1.54), while it was lowest with calculating the dose of chemical fertilizer (1.37). In the case of the non-adopted village, 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), deficiency symptoms of nutrient (1.70), bio-fertilizer (1.65), nutrients requirement of plants (1.40) and crop residue management while it was lowest with calculating the dose of chemical fertilizer (1.25).

Table 4.7 : Impact of FFP on information on fertilizer management

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted Score n=120	Non-adopted village (WM)
1.	Place of availability of fertilizers	357	2.75	298	2.48
2.	Method and time of fertilizer application	268	2.23	239	1.99
3.	Calculating the dose of chemical fertilizer	165	1.37	151	1.25
4.	Nutrient requirements of plants	186	1.55	169	1.40
5.	Deficiency symptoms of major plant nutrients	234	1.95	204	1.70
6.	Bio-fertilizer	185	1.54	199	1.65
7.	Making organic manure from farm waste	278	2.31	233	1.99
8.	Organic manure application	269	2.24	261	2.17
9.	Crop residue management practices	216	1.80	199	1.65

WM- [Weighted mean.]

4.3.6 Impact of FFP on Information of weed management

In relation to weed management practices, data presented in Table 4.8 indicated that in the adopted village, maximum adoption was found with chemical weed management (3.00) followed by mechanical cultivation (2.70), price of weedicide (2.01), hand weeding (1.75), use of hand tools (1.67), soil sterilisation (1.38) practice, while it was minimum with crop rotation practices (1.30). In non-adopted village, weighted mean score was found maximum with chemical weed management (2.94) followed by mechanical cultivation (2.68), place of

availability of weedicide (1.91), price of weedicide (1.91), hand weeding (1.73), use of hand tools (1.63), soil sterilization (1.32) and lowest with crop rotation practices (1.25).

Table 4.8 : Impact of FFP on Information of weed management

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Chemical weed management	360	3	353	2.94
2.	Price of weedicides/herbicides	242	2.01	230	1.91
3.	Place of availability of weedicides/herbicides	250	2.08	236	1.96
4.	Hand weeding	211	1.75	208	1.73
5.	Mechanical cultivation	326	2.70	322	2.68
6.	Use of hand tools	201	1.67	196	1.63
7.	Crop rotation practices	157	1.30	150	1.25
8.	Soil sterilization	166	1.38	159	1.32

WM- [Weighted mean.]

4.3.7 Impact of FFP on information of irrigation management

Data regarding irrigation management presented in Table 4.9 show that in adopted village, maximum score of the weighted mean was found with the critical stage of irrigation (2.65) followed by fertilizer management during irrigation (2.58), methods of irrigation (2.54) and minimum with the schedule for irrigation (2.51). In the non-adopted village, maximum score of weighted mean was found with fertilizer management during irrigation (2.56) followed by methods of irrigation (2.47), critical stage of irrigation (2.42) and schedule of irrigation (2.30).

Table 4.9 : Impact of FFP on information of irrigation management

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Schedule for irrigation	302	2.51	277	2.30
2.	Critical stages of irrigation	318	2.65	291	2.42
3.	Fertilizer management during irrigation	310	2.58	308	2.56
4.	Method of irrigation	305	2.54	297	2.47

WM- [Weighted mean.]

4.3.8 Impact of FFP on information of plant protection

The data pertaining to plant protection in crops in Table 4.10, it is observed that in the adopted village highest adoption was found with method of preparing solution of insecticides/pesticides (2.29), followed by Identification, nature of damage and control measures for insects/pests/crops diseases (2.09), while it was lowest with integrated pest management (IPM) of crops (1.90). In the non-adopted village, method of preparing 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 lower level of adoption.

Table 4.10: Impact of FFP on information of plant protection

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Identification, nature of damage and control measures for insects/pests/crops diseases	251	2.09	226	1.88
2.	Integrated pest management (IPM) of crops	229	1.90	202	1.68
3.	Method of preparing solution of insecticides/pesticides	275	2.29	253	2.10

WM- [Weighted mean.]

4.3.9 Impact of FFP on information of harvesting, post-harvesting and storage technology

From perusal of data pertaining to harvesting, post-harvesting and storage technology in Table 4.11 it was observed that, in the adopted village, maximum adoption was noticed with the ideal thresher for threshing of crops (2.85), followed by management after harvesting at farming level (2.82), proper timing of harvesting of crops (2.81) and minimum with store management (2.35). Whereas in the case of the non-adopted village, farmers scored highest with the adoption of ideal thresher for threshing of crops (2.83), proper timing of harvesting and management after harvesting (2.79), while lowest was with store management (2.24) practice.

Table 4.11: Impact of FFP on information of harvesting, post-harvesting and storage technology

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Proper timing of harvesting	338	2.81	335	2.79
2.	Ideal thresher for threshing of crops	343	2.85	340	2.83
3.	Management after harvesting at farming level	339	2.82	335	2.79
4.	Store management practices	282	2.35	269	2.24

WM- [Weighted mean.]

4.4.0 Impact of FFP on Information of marketing

From perusal of data pertaining to information on marketing in Table 4.12 it is observed that in the adopted village, maximum adoption was noticed with marketing price (2.81), followed by place of marketing (2.80), marketing procedure (2.75), quality parameters that affect price (2.70), source of market information (2.44) and time of market inflow (2.40),

while minimum was with facilities available at market (2.21). In the non-adopted village, maximum adoption was found with place of marketing (2.80), market price (2.77), marketing procedure (2.63), quality parameter that affect the price (2.60), time of market inflow (2.32), source of market information (2.25) and minimum adoption with facilities available at market (2.05).

Table 4.12: Impact of FFP on the Information of marketing

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Marketing price	338	2.81	333	2.77
2.	Source of market price information	293	2.44	270	2.25
3.	Quality parameters that affect price	333	2.70	312	2.60
4.	Time of market inflow	288	2.40	279	2.32
5.	Place of marketing	337	2.80	336	2.80
6.	Marketing procedure	330	2.75	316	2.63
7.	Facilities available at market	266	2.21	274	2.05

WM- [Weighted mean.]

4.4.1 Impact of FFP on information of supporting factors

Table 4.13 indicates the impact of FFP on information of supporting factors. In the adopted village, highest adoption was found with crop insurance (2.93) followed by subsidies for the crop (2.76), credit/loan facilities for crop cultivation (2.74) and weather forecasting (2.37) while it was lowest with crops related government policies (2.00). In non-adopted village, the highest weighted mean was observed with insurance of crop (2.82) and lowest was with crop related government policies (1.75). Data showed that there was a clear difference regarding information about supporting factors and had a positive impact.

Table 4.13: Impact of FFP on information of supporting factors

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Weather forecast	285	2.37	237	1.97
2.	Crop related government policies	241	2.00	211	1.75
3.	Credit /loan facilities for crop cultivation	335	2.74	330	2.75
4.	Crop insurance	352	2.93	339	2.82
5.	Subsidies for crop cultivation	332	2.76	302	2.51

WM- [Weighted mean.]

4.4.2 Overall impact of FFP on agricultural practices

Data presented in Table 4.14 show that from these findings FFP intervention on agricultural practices in the study area had made a significant impact in the adoption of

agricultural practices namely, seed and variety, water supply, weed management, fertilizer management, weed management, plant protection and supporting factor found highly significant in the adopted village. Data highlighted in Table 4.14 also showed positive impact in adoption of agricultural practices i.e. seed and variety (13.1024) followed by water supply (11.259), fertiliser management (-8.6840), weed management (7.989), plant protection (18.197), supporting factor (12.816) and overall agricultural practices (12.686) with respective their 't value'.

There was an increasing trend in overall agricultural practices adoption. The overall impact of FFP showed 13.63 per cent increase. It is revealed that FFP made a desirable impact in the study area which was mainly attributed to adoption of better and improved seed variety, water supply management, and balanced use of fertilizer along with better weed, plant protection practices and supporting factor.

Table 4.14: Overall impact of FFP on agricultural practices

S. No.	Parameters	Mean		Mean difference	Percentage of Difference	t- value
		Adopted Village	Non-Adopted Village			
1.	Seed and variety	20.591	18.125	2.466	11.976	13.1024**
2.	Water supply	13.116	10.650	2.466	5.318	11.289**
3.	Preparation of seedling of crops	13.025	12.558	0.467	3.585	0.862
4.	Preparation land and sowing	23.366	20.362	3.004	12.856	1.873
5.	Fertilizer management	20.350	23.391	-3.041	-6.691	-8.6840**
6.	Weed management	18.391	15.675	2.716	6.771	7.989**
7.	Irrigation management	09.800	08.558	1.242	7.890	0.896
8.	Plant protection	23.766	18.866	4.900	4.850	18.197**
9.	Harvesting, post harvesting and storage technology	17.456	16.343	1.113	15.683	0.835
10.	Market information	20.650	19.341	1.309	6.240	0.876
11.	Supporting factor	15.341	12.883	2.458	6.241	12.816**
12.	Overall agricultural practices	172.425	159.775	12.650	13.630	12.686**

** Significant at P<0.01.

4.4.3 Impact of FFP on information of animal breeding and reproduction practices

Table 4.15 indicates the impact of FFP on information of animal breeding and reproduction practices. In the adopted village, maximum adoption was recorded with A. I. practices (2.97) which was followed by the practice of taking the animal for A. I. within 12 hours after detection of heat (2.96), keeping watch on oestrous cycle heat symptoms (2.75), improved breed adoption (2.67), allowing the animal to mate within three months after parturition (2.64), taking animal for regular check-up during pregnancy (2.58) and minimum was found with getting animal diagnosed for pregnancy (2.58) practice. In the non-adopted village, maximum adoption was with natural service/A. I. practices (2.88) followed by taking the animal for A. I. within 12 hours after detection of heat (2.78), improved breed (2.60), allow the animal to mate within three months after parturition (2.50), take animal for regular

check-up during pregnancy (2.35), keeping watch on oestrous cycle heat symptoms (2.30), while it was minimum with getting animal diagnosed for pregnancy (2.00) practice. It could be seen that there is a clear difference regarding breeding practice with higher adoption in the adopted village when compare to the non-adopted village which show the positive impact of FFP in the study area.

Table 4.15: Impact of FFP on information of animal breeding and reproduction practices

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Improved breeds	321	2.67	312	2.60
2.	Natural service/A. I.	357	2.97	346	2.88
3.	Keeping watch on oestrous cycle heat symptoms	330	2.75	276	2.30
4.	Allow the animal to mate within 3 months after parturition	317	2.64	301	2.50
5.	Taking the animal for A. I. within 12 hours after detection of heat	356	2.96	334	2.78
6.	Getting animal diagnosed for pregnancy	310	2.58	240	2.00
7.	Taking animal for regular check-up during pregnancy.	320	2.66	282	2.35

WM- [Weighted mean.]

4.4.4 Impact of FFP on information of animal feeding practices

Data presented in Table 4.16 indicate impact of FFP on the information regarding the adoption of animal feeding practices. In adopted village, maximum adoption was found with feeding colostrum continuously to newborn calves up to five days of its birth (2.98) and

Table 4.16 : Impact of FFP on the information of animal feeding practices

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Feeding colostrum continuously to new born calves up to 5 days of its birth	358	2.98	349	2.90
2.	Feeding concentrate mixture to animal on the basis of milk production	332	2.76	204	1.70
3.	Feeding advance pregnant animal with extra 1-2 kg concentrate over & above maintenance ration	337	2.80	199	1.65
4.	Feeding animals with urea treated wheat straw	342	2.85	337	2.80
5.	Providing recommended dose of green fodder to the animal regularly	358	2.98	346	2.88
6.	Adopting animals to the practices of stall feeding	342	2.85	340	2.83
7.	Prefer chaffing of the green fodder	184	1.53	150	1.25

WM- [Weighted mean.]

providing recommended dose of green fodder to animals (2.98) followed by adopting animal to stall feeding (2.85), feeding animal with urea treated wheat straw (2.85), feeding advance

pregnant animal with extra 1-2 kg concentrate over and above maintenance (2.80), feeding of concentrate mixture based on milk production (2.76), while it was minimum with feeding without chaffing of the green fodder to animals (1.53). In case of non-adopted village, maximum adoption was with feeding colostrums continuously to newborn calves up to five days of its birth (2.90) followed by providing recommended dose of green fodder to animals (2.88), adopting animal to stall feeding (2.83), feeding animal with urea treated wheat straw (2.80), while minimum adoption with feeding concentrate mixture to animal on milk production (1.70), feeding advance pregnant animal with extra 1-2 kg concentrate over and above maintenance (1.65) and feeding without chaffing of green fodder to animal (1.25).

Table 4.16 shows higher adoption of all the feeding practices in the adopted village, which indicates the positive impact of FFP.

4.4.5 Impact of FFP on information of animal management practices

Data regarding the impact of FFP on animal management practices presented in Table 4.17 showed that, in the adopted village, maximum adoption with protecting your animal from severe cold and hot wave (3.00) and clean milking practices (3.00) followed by proper disposal of dung (2.97), providing timely supply water and feed to the animal and practicing de-worming in cattle calves with (2.93), practice of weaning in cattle calves (2.90), proper sanitation in animal shed (2.85), providing adequate open space to the animal (2.84), keeping animal in ventilated shed/house (2.81), keeping your advanced pregnant animal separate from the herd (2.80) while, the minimum adoption was found with taking buffalos to pond for wallowing (2.73) and practice animal castration (2.70). In non-adopted village, the highest adoption was found with protecting your animal from severe cold and hot wave (3.00) followed by clean milking practices (2.94), provide timely supply of water and feed to animal (2.91), proper disposal of dung (2.88), practicing of de-worming in cattle calves (2.85), practices of animal castration (2.83), practice of weaning in cattle calves (2.82), providing adequate open space to the animal (2.82), proper sanitation in animal shed (2.77), keeping animal in ventilated shed/house (2.72), taking buffalos to pond for wallowing (2.70) while minimum adoption was found with keeping advanced pregnant animal separate from herd.

Table 4.17: Impact of FFP on information of animal management practices

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Providing adequate open space to the animal	341	2.84	339	2.82
2.	Keeping your animal in ventilated shed / house	338	2.81	327	2.72
3.	Protecting animal from severe cold and hot wave	360	3.00	360	3.00
4.	Providing timely supply of water & feed to the animal	352	2.93	350	2.91
5.	Practice of animal castration	325	2.70	340	2.83
6.	Practice of weaning in cattle calves	349	2.90	339	2.82
7.	Practicing de-worming in cattle calves	352	2.93	342	2.85
8.	Clean milking practices	360	3.00	353	2.94
9.	Proper disposal of dung	357	2.97	346	2.88
10.	Keeping your advanced pregnant animal separate from herd	337	2.80	323	2.69
11.	Proper sanitation in animal shed	343	2.85	333	2.77
12.	Taking buffalos to pond for wallowing	328	2.73	324	2.70

WM- [Weighted mean.]

4.4.6 Impact of FFP on Information of animal health care practices

The impact of FFP on information of animal health care practices presented in Table 4.18 revealed that in the adopted village, maximum impact was observed with treatment for infertility, repeat breeding and anoestrus cases by veterinarian (2.91) followed by practicing timely vaccination against contagious disease like, Foot & Mouth Disease (F. M. D.) (2.86), identification of mastitis and udder infection symptoms and timely treatment (2.82), segregation of diseased animals suffering from contagious diseases (2.81) while minimum was with timely treatment of sick and weak animals by Vet. Doctors (2.80). In the non-adopted village, maximum adoption was with practicing timely vaccination against contagious diseases like Foot & Mouth Disease (F. M. D.) (2.84) followed by treatment for infertility, repeat breeding and anoestrus cases by veterinarian (2.76), identification of mastitis and udder infection symptoms and timely treatment (2.74), timely treatment of sick and weak animals by Vet. Doctors (2.53), while it was minimum adoption was found with segregation of diseased animals suffering from contagious diseases (2.46).

Table 4.18: Impact of FFP on Information of animal health care practices

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Timely treatment of sick and weak animals by Vet. Doctors	337	2.80	304	2.53
2.	Segregation of diseased animals suffering from contagious diseases	338	2.81	296	2.46
3.	Practicing timely vaccination against contagious diseases like Foot & Mouth Disease (F. M. D.) etc.	344	2.86	341	2.84
4.	Treatment for infertility, repeat breeding, anestrus cases by veterinarian	350	2.91	332	2.76
5.	Identification of mastitis and udder infection symptoms and timely treatment	339	2.82	329	2.74

WM- [Weighted mean.]

4.4.8 Impact of FFP on the information of marketing of dairy product

Table 4.19 depicts the impact of FFP on information in marketing of the dairy product. In the adopted village, highest impact was found with marketing of milk (2.70) followed by purchasing of freshly calved animals (2.40), getting market information (2.34), preparing of value-added products of milk (2.32), selling products to the wholesale market (2.30) and lowest was with selling dung cake and manure (2.05). In non-adopted village, the highest impact was found with the marketing of milk (2.67) followed by purchasing of freshly calved animals (2.32), getting market information (2.30), preparing of value-added products of milk (2.29), selling products to the wholesale market (2.25) and lowest was with selling dung cake and manure (2.05) and the minimum was with sell dung cake and manure (2.04).

Table 4.19: Impact of FFP on the information of marketing of dairy product

S. No.	Area of information	Weighted score n=120	Adopted village (WM)	Weighted score n=120	Non-adopted village (WM)
1.	Marketing of milk	324	2.70	321	2.67
2.	Preparing value-added products of milk	279	2.32	275	2.29
3.	Getting market information	281	2.34	276	2.30
4.	Selling products to wholesale market	277	2.30	270	2.25
5.	Selling dung cake and manure	247	2.05	245	2.04
6.	Purchase freshly calved animals	289	2.40	279	2.32

WM- [Weighted mean.]

4.4.9 Overall impact of FFP on information of animal husbandry practices

Table 4.20 indicates the overall impact of animal husbandry practices in the adopted and non-adopted village. Data indicate that intervention on animal husbandry in the study area had made a significant impact regarding animal breeding and reproduction practices with 't-value' (12.627) followed by animal feeding (11.806), animal health care (15.381) and overall animal husbandry practices (20.038). The overall impact of FFP in the study area showed a positive impact.

Table 4.20: Overall impact of FFP on information in animal husbandry practices

S. No.	Parameters	Mean		Mean difference	Percentage of difference	t- value
		Adopted village	Non-adopted village			
1.	Animal breeding and reproduction practices	19.235	17.418	1.817	9.446	12.627**
2.	Animal feeding	18.753	16.016	2.737	14.594	11.806**
3.	Animal management	34.675	34.141	0.534	1.540	0.389
4.	Animal health care	19.316	16.850	2.466	7.832	15.381**
5.	Marketing of dairy products	14.111	13.890	0.240	1.700	0.194
6.	Over all Animal practices	112.114	103.955	08.159	07.275	20.038**

** Significant at $P < 0.01$.

4.5.0 Perceived economic impact of farmer FIRST programme

According to Table 4.21 and fig no.4.3, 4.4 and 4.5 highest economic impact was on reduction of insecticide and fertilizer use (2.88) followed by control on harmful insects (2.77), net income of farmer (2.75), miscellaneous expenditure (2.70), expenditure on farm renovation (2.69), crop profitability (2.69), cash in hand (2.66), yield enhancement (2.62), expenditure on education (2.60), quality of produce (2.59), marketing of produce (2.59), expenditure on social ceremony (2.59), dairy profit (2.58), farmer's purchasing power (2.49), expenditure on health (2.42), farm power equipment (2.38), expenditure on house renovation (2.33) and labour requirement (1.68). The average of the weighted mean score was calculated to be 2.55 which showed that the farmers' perceived farmer FIRST programme had a positive impact on their economic condition.

Table 4.21: Perceived economic impact of farmer FIRST programme**N=120**

S. No.	Economic impact	Category	Frequency	Percentage	Weighted mean score	Mean Score
1.	Reduction of insecticide and fertilizer use	Increased (3) No change (2) Decreased (1)	109 08 03	90.83 06.67 02.50	327 16 03	2.88
2.	Control of harmful insects	Increased (3) No change (2) Decreased (1)	100 13 07	83.33 10.83 05.84	300 26 07	2.77
3.	Net income of Farmer	Increased (3) No change (2) Decreased (1)	97 16 07	80.83 13.33 05.84	291 32 07	2.75
4.	Miscellaneous Expenditure	Increased (3) No change (2) Decreased (1)	98 12 10	81.67 10.00 08.33	294 20 10	2.70
5.	Crop profitability	Increased (3) No change (2) Decreased (1)	92 19 09	76.66 15.84 07.50	276 38 09	2.69
6.	Expenditure on farm renovation	Increased (3) No change (2) Decreased (1)	89 25 06	74.16 20.83 05.00	267 50 06	2.69
7.	Cash in hand	Increased (3) No change (2) Decreased (1)	91 18 11	75.83 15.00 09.17	273 36 11	2.66
8.	Yield enhancement	Increased (3) No change (2) Decreased (1)	87 21 12	72.50 17.50 10.00	261 42 12	2.62
9.	Expenditure on education	Increased (3) No change (2) Decreased (1)	77 39 04	64.20 32.50 03.30	231 78 04	2.60
10.	Quality of produce	Increased (3) No change (2) Decreased (1)	82 27 11	68.33 22.50 09.17	246 54 11	2.59
11.	Marketing of produce	Increased (3) No change (2) Decreased (1)	78 35 07	65.00 29.16 05.84	234 70 07	2.59
12.	Expenditure on social ceremony	Increased (3) No change (2) Decreased (1)	83 25 12	69.16 20.83 10.00	249 50 12	2.59
13.	Dairy profit	Increased (3) No change (2) Decreased (1)	79 32 09	65.83 26.67 07.50	237 64 09	2.58
14.	Farmer purchasing Power	Increased (3) No change (2) Decreased (1)	72 35 13	60.00 29.16 10.84	216 70 13	2.49
15.	Expenditure on Health	Increased (3) No change (2) Decreased (1)	67 37 16	55.83 30.83 13.34	201 74 16	2.42
16.	Farm power Equipment	Increased (3) No change (2) Decreased (1)	56 54 10	46.66 45.00 08.34	168 108 10	2.38
17.	Expenditure on house renovation	Increased (3) No change (2) Decreased (1)	55 50 15	45.83 41.66 12.50	165 100 15	2.33
18.	Labour requirement	Increased (3) No change (2) Decreased (1)	25 32 63	20.83 26.67 52.50	75 64 63	1.68
Average of weighted mean score						2.55

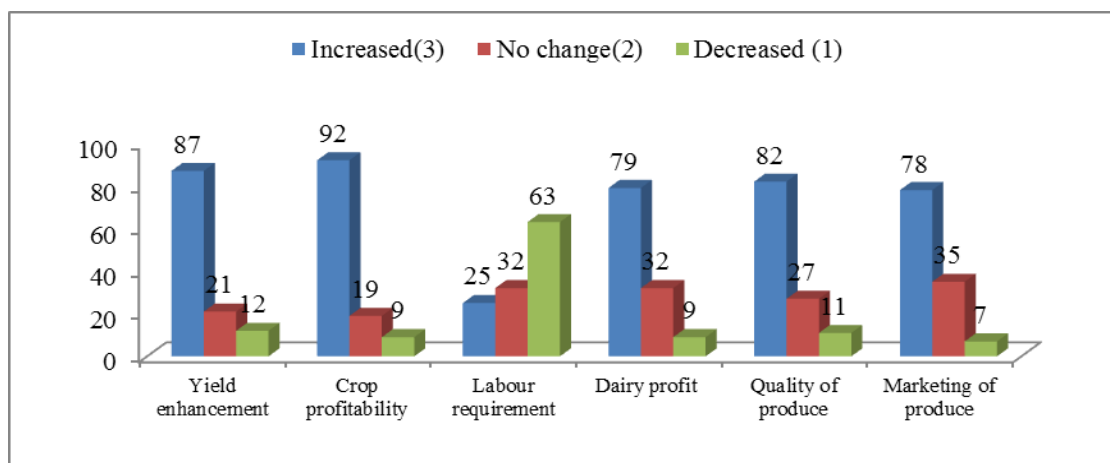


Fig. 4.3 Perceived economic impact of farmer FIRST programme

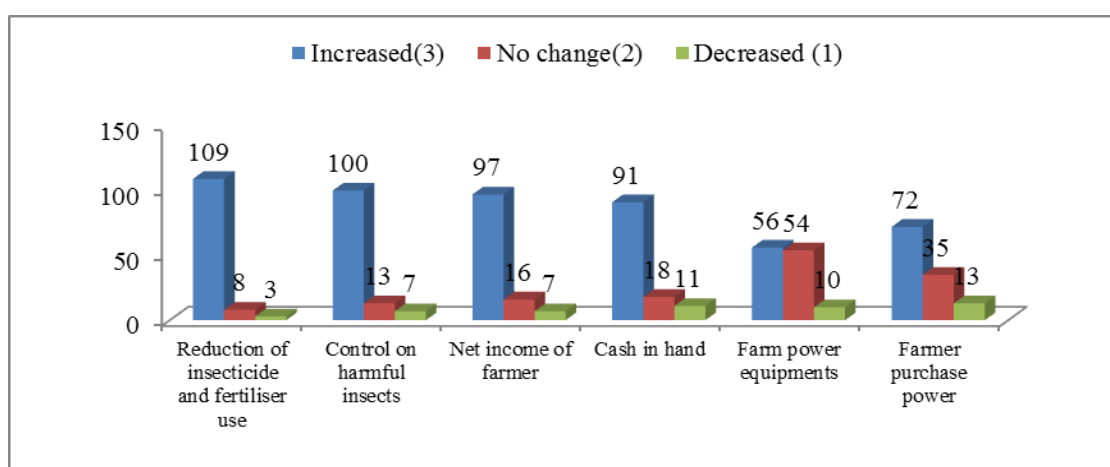


Fig. 4.4. Perceived economic impact of farmer FIRST programme

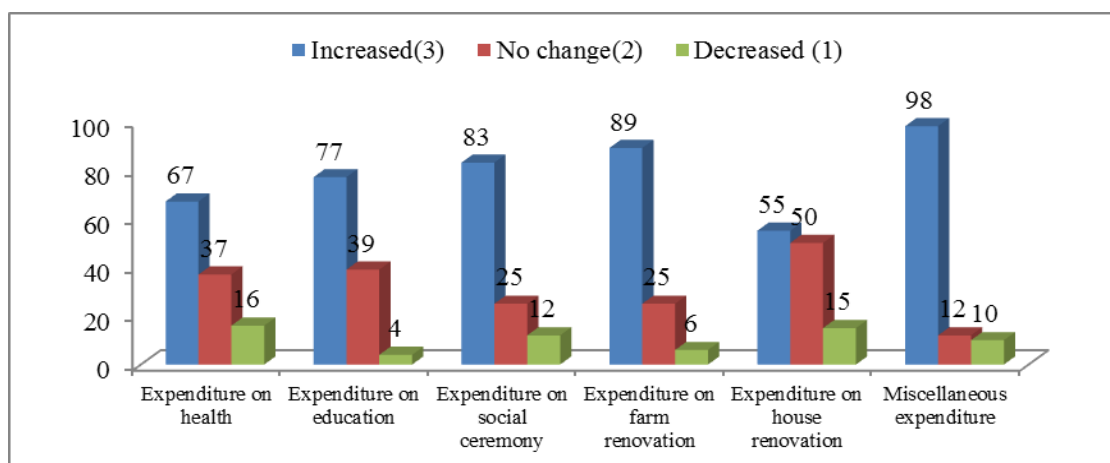


Fig. 4.5. Perceived economic impact of farmer FIRST programme

4.5.1 Benefits derived from farmer FIRST programme

The benefits obtained as perceived by farmers due to adoption of FFP programme are presented in Table 4.22 and fig no 4.6 and 4.7. Weighted mean score shows that maximum benefits obtained was improved family living conditions (2.59), number of outside contacts (2.59), material possession (2.34), consulted by other farmer for agriculture purpose (2.25),

availed Govt. subsidy/loan (2.25), organizational participation (2.22), Infiltration rate of water increased (2.19), better utilization of leisure time (2.15), Soil erosion control (2.09), helped in conserving groundwater recharge (2.09) and cropping intensity (2.02) and helped in rising agro-forestry tree species (1.73). The average of the weighted mean score was calculated as to be 2.20 which showed that the farmers perceived benefits from farmer FIRST programme had a positive impact on their economic condition.

Table 4.22 : Benefits derived by farmer from farmer FIRST programme N=120

S. No.	Benefits	Category	Frequency	Percentage	Weighted mean score	Average mean score
1.	Improved family living conditions	High (1) Moderate (2) Low (3)	11 27 82	09.16 22.50 68.33	11 54 246	2.59
2.	Number of outside Contacts	High (1) Moderate (2) Low (3)	13 43 73	10.83 28.33 60.83	13 68 219	2.50
3.	Material possession	High (1) Moderate (2) Low (3)	17 45 58	14.16 37.50 48.33	17 90 174	2.34
4.	Consulted by other farmer for agriculture purpose	High (1) Moderate (2) Low (3)	18 53 49	64.20 32.50 03.30	18 106 147	2.25
5.	Availed Govt. subsidy/loan	High (1) Moderate (2) Low (3)	18 53 49	15.00 44.16 40.83	18 106 147	2.25
6.	Organizational Participation	High (1) Moderate (2) Low (3)	23 47 50	19.16 39.16 41.66	246 54 11	2.22
7.	Infiltration rate of water increased	High (1) Moderate (2) Low (3)	13 27 80	10.83 22.50 66.66	13 54 240	2.19
8.	Better utilization of leisure time	High (1) Moderate (2) Low (3)	27 48 45	22.50 40.03 37.50	27 96 135	2.15
9.	Soil erosion control	High (1) Moderate (2) Low (3)	27 55 38	22.50 45.83 31.66	27 114 110	2.09
10.	Helped in conserving ground water recharge	High (1) Moderate (2) Low (3)	30 49 41	25.00 40.83 34.16	30 98 123	2.09
11.	Cropping intensity	High (1) Moderate (2) Low (3)	32 53 35	60.00 29.16 10.84	32 106 105	2.02
12.	Helped in rising agro-forestry tree species	High (1) Moderate (2) Low (3)	40 72 08	33.33 60.00 06.66	40 144 24	1.73
Average weighted mean						2.20

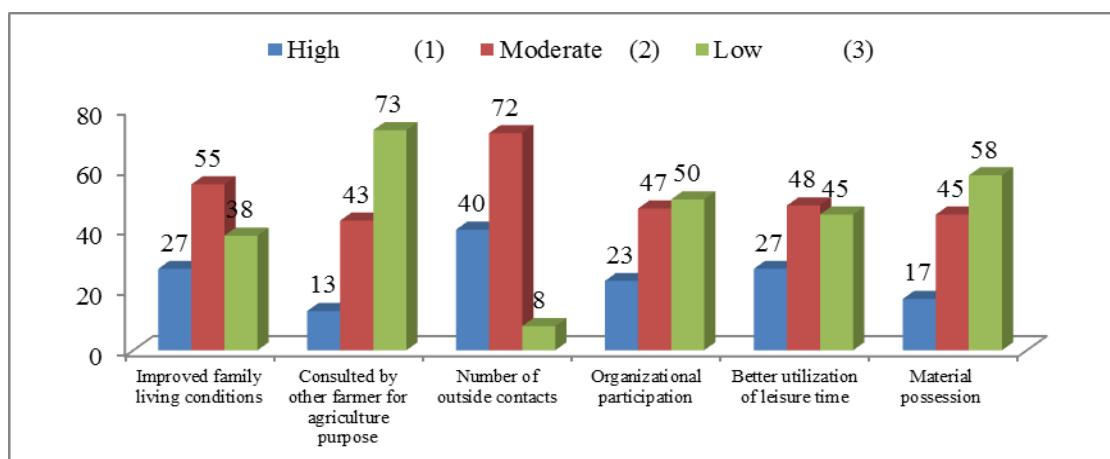


Fig. 4.6. Benefits derived from FFP

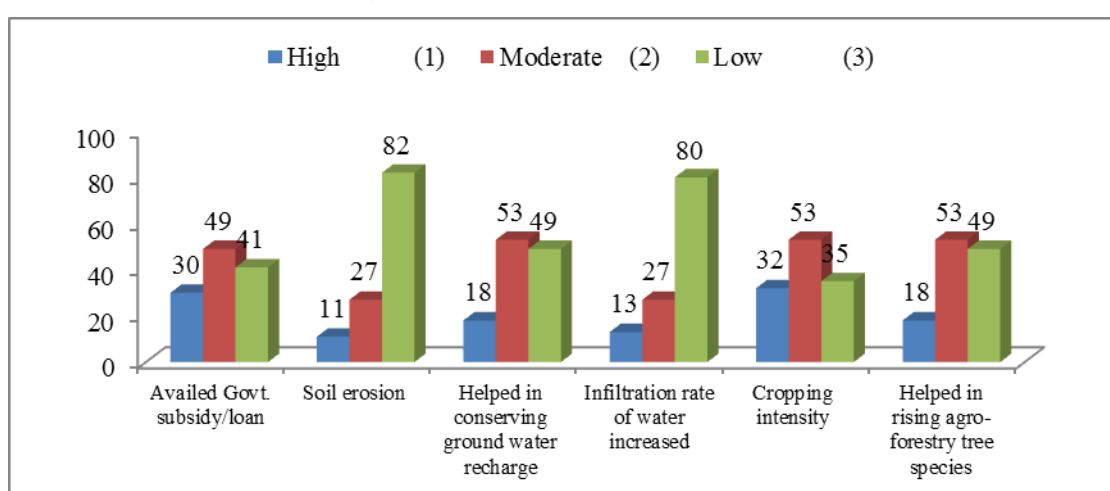


Fig. 4.7. Benefits derived from FFP

4.4 Constraints faced by Respondents in Implementation of Farmer FIRST Programme

Constraints or impediments perceived by the respondents from FFP adopted village in smooth functioning of programme were grouped into four broad areas viz., general constraints, economic constraints, organizational constraints and communication constraints.

An analysis of the data presented in Table 4.23 highlights that among general constraints, lack of co-operation among farmers was ranked first with mean scoring 1.79, followed by local political interference, lack of clear understanding of project objectives, low level of awareness regarding benefits of projects, lack of trust in project officials, conflicts B/W farmer FIRST committee and gram panchayat and Lack of dedication of project officials were ranked as II, III, IV, V, VI and VII with mean scores of 1.72, 1.54, 1.49, 1.42, 1.29 and 1.01, respectively. The average weighted mean of the general constraints faced by farmers during the adoption of the programme was 1.46.

Table 4.23 : General constraints faced by Respondents in implementation of farmer FIRST Programme

S. No	Particulars	Very Serious (3)	Serious (2)	Not so Serious (1)	Weighted frequency score	Weighted mean	Rank order	Average weighted mean
1.	Lack of co-operation among farmers	23 (69)	49 (98)	48 (48)	215	1.79	I	1.46
2.	Local political interference	22 (66)	43 (86)	55 (55)	207	1.72	II	
3.	Lack of clear understanding of project objectives	17 (51)	31 (62)	72 (72)	185	1.54	III	
4.	Low level of awareness regarding benefits of projects	15 (45)	29 (58)	76 (76)	179	1.49	IV	
5.	Lack of trust in project officials	12 (36)	27 (54)	81 (81)	171	1.42	V	
6.	Conflicts B/W Farmer FIRST committee and gram panchayat	09 (27)	23 (46)	88 (88)	155	1.29	VI	
7.	Lack of dedication of project officials	11 (33)	18 (36)	71 (71)	122	1.01	VII	

Figures in parentheses indicate weighted score.

Table 4.24: Economic constraints faced by Respondent's in implementation of farmer FIRST programme

S. No	Particulars	Very serious (3)	Serious (2)	Not so serious (1)	Weighted frequency score	Weighted mean	Rank order	Average weighted mean
1.	Non-availability of funds in proper time	17 (51)	41 (82)	62 (62)	195	1.62	I	1.47
2.	Conflicts between project staff and people over wages	16 (48)	40 (80)	64 (64)	192	1.60	II.	
3.	Irregularity in payment of labour/wages	19 (57)	26 (52)	75 (75)	184	1.53	III	
4.	Non-availability of funds to make emergency purchases	19 (57)	34 (68)	63 (63)	188	1.56	IV	
5.	Lack of proper utilization of funds	10 (30)	23 (46)	87 (87)	163	1.35	V	
6.	Lack of economic motivation	10 (30)	20 (40)	90 (90)	140	1.16	VI	

Figures in parentheses indicate weighted score.

An examination of the data presented in Table 4.24 indicates that among economic constraints, non-availability of funds in proper time was ranked first with mean score 1.62 followed by conflicts between project staff and people over wages, non-availability of funds to make emergency purchases, irregularity in payment of labour/wages, lack of proper utilization of funds and lack of economic motivation were ranked II,III, IV, V and VI with mean scores of 1.60, 1.56, 1.53, 1.35, 1.16 respectively. The average weighted mean of the communication constraints faced by farmers during the adoption of the programme was 1.47.

An perusal of the data presented in Table 4.25 indicates that among organizational constraints, insufficient staff to carry out the project successfully was ranked first with mean score of 1.48 followed by interruption in the routine functioning of the project due to transfer of concerned staff, lack of proper monitoring and follow up of the project, decision were made at higher level without consulting people, lack of co-operation from higher official and lack of encouragement for good work, were ranked as II, III, IV, V and VI, with mean scores of 1.45, 1.40, 1.34, 1.30 and 1.29 respectively. The average weighted mean of the organizational constraints faced by farmers during the adoption of the programme was 1.37.

An examination of the data presented in Table 4.26 indicates that among communication constraints, lack of co-operation from village panchayat in implementing the project was ranked first with mean score of 1.55 followed by lack of interest in learning new skill by farmers, lack of demonstration/training in the project, no regular meetings, lack of collective action for promoting agriculture and lack of effective communication between field functionaries and farmers, were ranked as II, III, IV, V and VI, with mean scores of 1.50, 1.44, 1.43, 1.38 and 1.32 respectively. The average weighted mean of the communication constraints faced by farmers during the adoption of the programme was 1.43.

Table 4.25: Organisational constraints faced by Respondents in implementation of farmer FIRST Programme

Sr. No	Particulars	Very serious (3)	Serious (2)	Not so serious (1)	Weighted frequency score	Weighted mean	Rank order	Average weighted mean
1.	Insufficient staff to carry out the project successfully	13 (39)	32 (64)	75 (75)	178	1.48	I	1.37
2.	Some decisions were made at higher level without consulting farmers	13 (39)	29 (58)	78 (78)	175	1.45	II	
3.	Lack of proper monitoring and follow up of the project	13 (39)	23 (46)	84 (84)	169	1.40	III	
4.	Interruption in the routine functioning of project due to transfer of concerned staff	7 (21)	27 (54)	86 (86)	161	1.34	IV	
5..	Lack of co-operation from higher officials	9 (27)	19 (38)	92 (92)	157	1.30	V	
6.	Lack of encouragement for good work	8 (24)	19 (38)	93 (93)	155	1.29	VI	

Figures in parentheses indicate weighted score.

Table 4.26: Communicational constraints faced by respondents in implementation of farmer FIRST programme

S. No	Particulars	Very serious (3)	Serious (2)	Not so serious (1)	Weighted frequency score	Weighted Mean	Rank order	Average weighted mean
1.	Lack of co-operation from village panchayat in implementing the project	27 (81)	42 (42)	51 (51)	186	1.55	I	1.43
2.	Lack of interest in learning new skills by farmers	16 (48)	28 (56)	76 (76)	180	1.50	II	
3.	Lack of demonstration/training in the project	13 (39)	27 (54)	80 (80)	173	1.44	III	
4.	No regular meetings	15 (45)	22 (44)	83 (83)	172	1.43	IV	
5.	Lack of collective action for promoting agriculture	13 (39)	20 (40)	87 (87)	166	1.38	V	
6.	Lack of effective communication between field functionaries and farmers	10 (30)	19 (38)	91 (91)	159	1.32	VI	

Figures in parentheses indicate weighted score.

4.5 Respondents personal variables and dependent variables (adoption of crops and animal husbandry practices and people's participation)

In order to find out the influence of personal variables on the farmer's participation in the implementation of farmer FIRST programme, correlation and regression coefficients were computed. The correlation coefficient of personal variables of farmers with their adoption score are presented in Table 4.27.

Table 4.27 shows that irrigation, mass media exposure, scientific orientation and risk orientation of farmers were not significantly correlated but showed positive relation with participation. Table further shows that education played a significant role to increase participation as it was found significant and positively correlated with a value of 0.208. Further, it was found that socio-economic status (SES), extension contact, economic motivation and farming system had a positive and significant correlation with the participation with their respective 'r' values of 0.189, 0.212, 0.186 and 0.183 respectively. But only age showed a negative and significant correlation. Similarly, the regression coefficient of variables education, extension contact, mass media exposure, economic motivation and risk orientation was found positively significant, whereas age, socio-economic status, extension contact, irrigation source, scientific orientation and farming system were found negatively significant with participation in the programme. This means that farmer having a higher level of education, socio economic-status; extension contact, economic motivation and farming system had a higher level of participation in farmer FIRST programme implementation.

Table 4.27 : Relationship between respondents personal variables and their extent of participation in implementation of farmer FIRST programme

S. No.	Variables	farmers participation correlation coefficient (r) n=120	Regression Coefficients	't' Values
1.	Age	-0.192	-0.126	-1.021
2.	Education	0.208*	0.702	2.237
3.	Socio-economic status (SES)	0.189*	-0.089	-0.262
4.	Irrigation source	-0.046 ^{NS}	-0.288	-1.525
5.	Extension contact	0.212*	0.588	2.403
6.	Mass media exposure	0.086 ^{NS}	0.120	0.569
7.	Scientific orientation	0.103 ^{NS}	-0.051	-0.351
8.	Economic motivation	0.186*	0.051	0.085
9.	Risk orientation	0.038 ^{NS}	0.017	0.444
10.	Farming system	0.183*	-0.126	0.228

* Significant at 5% level of significance.

NS- non significant.

R²= 0.1425

The data presented in Table 4.28 reveals that in the adopted village education (0.252), socioeconomic status (0.301), irrigation source (0.241), extension contact (0.282), mass media exposure (0.240) and economic motivation (0.294) showed positive and significant association with their adoption level of agricultural practices.

Whereas in case of non-adopted village, out of ten the independent variables, only variables viz., education (0.223), socio-economic status (0.279), irrigation source (0.235), mass media exposure (0.236) and economic motivation (0.267) exhibited positive and significant correlation with their adoption level about crops production practices.

From the above results, it could be concluded that higher level of independent variables education, socio-economic, irrigation source, extension contact and mass media exposure would lead to a higher level of adoption of recommended practices of agricultural production among farmers in the study area.

Table 4.28 : Relationship between respondents personal variables and adoption of agricultural practices

S. No.	Variables	Adopted village correlation coefficient (r) n=120	Non-adopted village correlation coefficient (r) n=120
1.	Age	-0.247	-0.221
2.	Education	0.252*	0.223*
3.	Socio-economic status (SES)	0.301*	0.279*
4.	Irrigation source	0.241*	0.235*
5.	Extension contact	0.282*	0.256 ^{NS}
6.	Mass media exposure	0.240*	0.236*
7.	Scientific orientation	0.001 ^{NS}	0.005 ^{NS}
8.	Economic motivation	0.294*	0.267*
9.	Risk orientation	0.093 ^{NS}	0.079 ^{NS}
10.	Farming system	0.264 ^{NS}	0.232 ^{NS}

**significant at 5% level of significance.

NS- non significant.

Relationship of respondents antecedent variables with their adoption level of recommended animal husbandry practices has been presented in Table 4.29 Education (0.233), socioeconomic status (0.232), extension contacts (0.222), scientific orientation (0.231), economic motivation (2.24) and risk orientation (0.209) of farmers from FFP adopted village showed positive and significant correlation with adoption of recommended animal husbandry practices.

Looking at the relationship values of background variables of respondents from non-adopted village, it was found that education (0.267), socioeconomic status (0.213), extension

contacts (0.246), and economic motivation (0.211) exhibited a positive and significant relationship with adoption of recommended animal husbandry practices.

Table 4.29 : Relationship between respondents personal variables and adoption of animal husbandry practices

S. No.	Variables	Adopted village correlation coefficient (r) n=120	Non-adopted village correlation coefficient (r) n=120
1.	Age	-0.345	-0.297
2.	Education	0.233*	0.267*
3.	Socio-economic status (SES)	0.232*	0.213*
4.	Irrigation source	0.215 ^{NS}	0.207 ^{NS}
5.	Extension contact	0.222*	0.246*
6.	Mass media exposure	0.154 ^{NS}	0.121 ^{NS}
7.	Scientific orientation	0.231*	0.197 ^{NS}
8.	Economic motivation	0.224*	0.211*
9.	Risk orientation	0.209*	0.171 ^{NS}
10.	Farming system	0.009 ^{NS}	0.008 ^{NS}

* Significant at 5% level of significance

NS- Non significant

CHAPTER-V

DISCUSSION

The logical discussion finds place in this chapter so as to provide strength to the findings and also to authenticate the results achieved.

The dimensions of the results of study are discussed in this chapter under the following heads:

- 5.1 Profile of respondents
- 5.2 The extent of farmer's participation in farmer FIRST programme
- 5.3 The impact of the programme on agricultural practices and their economical condition
- 5.4 Constraints faced by respondents during adoption of the programme
- 5.5 Association between independent variables and the dependent variables

5.1 Profile of respondents

The frequency distributions of the farmers based on their personal variables have been furnished in Table 4.1.

Age

It is noticed that 43.33 per cent of the farmers from the adopted village while in non-46.67 per cent of respondents in non adopted village were found in the middle age category. This is the general trend found everywhere as youth are leaving agriculture. The results are in agreement with that of Kharatmol (2006), Rajanna *et al.* (2012), Sathish *et al.* (2012) and Kale *et al.* (2014).

Education

Majority of the respondents in both in the adopted village (69.99 %) and non-adopted village (72.50%) had low to medium level of education. Education empowers farmers and it also helps in understanding the problems, also find solutions to get rid of undesirable situation. Similar findings were reported by Dhaka and Sharma (2002), Kharatmol (2006) and Ananthnag *et al.* (2014).

Socio-economic status

In both adopted and non-adopted village, majority of the farmers had medium to low level of socio-economic status. This was mainly due to the reason beneficiaries were selected by project staff from medium and low economic status as well as resource poor. Results are in line with the findings of Dhaka and Sharma (2002), Kumar (2013) and Prasad *et al.* (2017).

Irrigation source

Majority of both the categories of farmers were found to have canal and tube well as sources of irrigation. Tube well consisting of an iron pipe with a solid steel point and lateral perforations near the end, which is driven into the earth until a water-bearing stratum is

reached, when a suction pump is applied to the upper end. Whereas submersible pump is a pump that is completely submerged in water and is sealed in an air-tight manner. A submersible pump lifts water to the ground level by conversion of rotary energy of the impeller into kinetic energy of water. This was probably due to well irrigation resources as well as good quality of underground water in the study area. The results are in conformity with the findings of Dhaka and Sharma (2002), Kumar (2013) and Sani (2017).

Extension contacts

Whole 88.34 per cent of farmers of adopted village had medium to high level extension contact, majority of farmers in non-adopted village (61.66%) had low level of extension contact. The probable reason of above finding is due to frequent visits of project staff to the adopted village and interest of farmers in extension activities. This directly helped them to obtain information about latest innovations and technologies which helped them to keep in touch with extension experts, subject matter specialists, etc. Similar results were obtained by Ogunsumi (2007) and Mali (2013).

Mass media exposure

Majority of farmers in adopted village 82.50 per cent had medium to high level of mass media exposure and in non- adopted village 78.92 per cent had medium to low level of mass media exposure. The probable reason for the majority of the farmers of adopted and non- adopted village 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. The mass media provides information on experiences of successful farmers through various channels like television, radio and newspaper, etc. which creates the confidence in other farmers to take up similar activities or try out new innovations. The results are in conformity with the findings of Kharatmol (2006).

Scientific orientation

Large majority (72.50%) of the respondents were found to have a high level of scientific orientation in the adopted village as compared to the non-adopted village (42.50%). This gap is due to the reason that frequent training of farmers on scientific cultivation and exposure visits of farmers as well as a technology demonstration in adopted village by project staff. Similar results were reported by Kumar (2013).

Economic motivation

Large majority (89.17%) of the respondents in adopted village and non adopted village (76.67%) had high to medium level of economic motivation. The reason for the above results in adopted village' farmers 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. The above findings are in conformity with those of Binkadakatti (2008), Mohan and Reddy (2012) and Kumar (2013).

Risk orientation

Majority of the respondents were found to have 64.16 and 52.50 per cent medium level of risk orientation in adopted and non- adopted village, respectively. Risk orientation is based on personal, psychological and socio-economic characteristics of an individual farmer. There were more occurrences of diseases like whitefly in cotton, Sclerotinia rot in mustard and Foot rot and Bakanae diseases in paddy in Hisar and infertility and seasonal diseases in dairy animal in Karnal district. Farmers tend to take risk only when they are assured and certain results of expected outcomes. These might have contributed to the above findings. The results are in consonance with the findings of Kharatmol (2006), Gotyal (2007) and Binkadakatti (2008).

Farming system

Majority of the farmers (93.75%) in both village had crop cultivation as main farming system followed by dairy, vegetable, bee keeping, agro-forestry and mushroom cultivation.

5.2 Extent of farmer's participation in farmer FIRST programme

The results in Table 4.2 show that farmer's participation was found maximum in resource analysis and planning stage followed by other stages of the programme. This might be due to the reason that close collaboration existed between extension agents and farmers. Beside farmers' skills in communication and input supply by project staff enhanced the participation in the programme. The results of the study get support from the findings of Samah and Fariborz (2009), Bagdi and Kurothe, (2014).

5.3 Impact of the programme on agricultural practices and their economic condition

5.3.1 Impact of the programme on agricultural practices

It is evident from Table 4.3 that respondents in FFP adopted village and non-adopted village differed in their adoption level of recommended seed and variety practices. The higher adoption in the adopted village might be due to the distribution of HYV seed by project staff to beneficiary farmers for demonstration. Secondly, in adopted village farmers had more extension contact, mass media exposure, scientific orientation, economic motivation and training conducted by project staff. Similar findings were reported by Bala *et al.* (2006), Uday *et al.* (2017), Kumara *et al.* (2018) and Mehriya and Ramesh (2018).

With reference to information of water supply adoption was higher in the adopted village for information like water to be supplied in channel before sowing time, advance information about time and date of supply of water in canal for complete crop period, tube well water testing, water saving techniques than the non-adopted village. The probable reason behind this result might be due to the fact that programme awareness and method demonstrations regarding water saving were done by the project staff in adopted village. The

above results are in accordance with those of Pendke *et al.* (1999), Boyd *et al.* (2000), Dhaka and Sharma (2002), Deshmukh *et al.* (2013) and Barman *et al.* (2017).

Regarding information on seeding of crops in table 4.5 that farmers from the adopted village found higher adoption level and positive impact than non-adopted village with regard to practices viz the selection of site for raising seedling, method of preparing bed for nursery, plant protection in nursery management and nutrient management in nursery. The reasons for the above results may be due to the high level of scientific orientation and close contact with project staff in the adopted village. Similar findings were supported by Owombo *et al.* (2012), Nirmala (2015) and Shah *et al.* (2016).

With response to land preparation and sowing practices farmers from the adopted village had more adaptation with positive impact regarding than farmers of non-adopted village. The probable reason of this might be due to close contact with extension personnel and more consultancies from project staff. The above results are in accordance with those of Deshmukh *et al.* (2013), Nirmala (2015) and Uday *et al.* (2017).

With reference to information on fertilizer management adoption found high in the adopted village than the non-adopted village. The results of higher adoption in the adopted village 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 Lakhera and Sharma (2002) Anonymous (2012) and Nirmala (2015).

The higher adoption of weed management practices was found in the adopted village than farmers of non-adopted village. The reason for these results might be due to for given the technical knowledge of chemical weedicides and their proper application in the field. Secondly, due to the good quality of weedicides were provided as an input to the beneficiary farmers. Above findings were supported by the study of Lakhera and Sharma (2003), Bala *et al.* (2006), Kumawat (2008), Uday *et al.* (2017) and Oyebanji and Oluyemisi (2018).

Approvals of results in Table 4.9 indicate the fact that in adopted village, farmers had slightly higher adoption of irrigation practices than the non-adopted village. This may be due to the reason that in adopted village had a high extension contacts. Secondly, it may be due to the farmer to farmer transfer of information. The results are supported by the findings of and Lakhera and Sharma (2003), Nirmala (2015) and Barman *et al.* (2017).

With reference to plant protection information presented in Table 4.10 higher adoption was found in the adopted village than non-adopted village. The reason for this might be due to a demonstration conducted in farmers fields by project staff regarding plant protection technique and input provided in the adopted village. The above results are supported by Anonymous (2012), Nirmala (2015) and Uday *et al.* (2017).

The results pertaining to harvesting, post- harvesting and storage technology indicate that in the adopted village farmers had slightly higher adoption than the non-adopted village. The probable reason of the finding may be due to more extension contact and scientific orientation in the adopted village. Above statements were supported by the study of Nirmala (2015) and Shah *et al.* (2016).

Analysis of impact on information of marketing of agricultural produce revealed that the adoption was higher in Adopted village than the non-adopted village. This may be due the more exposure to the various sources of information regarding marketing of agricultural produce any form of the adopted village. Above finding are supported by Pallabi *et al.* (2017).

With reference to the information of supporting factors in adopted village found higher adoption on the supporting information related to agricultural production. The possible reasons may be due to the close contact with extension staff and greater exposure to mass media.

Respondents in FFP adopted village and non-adopted village differed in their adoption level of recommended crop production practices viz information of seed and variety, on water supply, seedling of crops, land preparation and sowing, fertilizer management, weed management, irrigation management, plant protection, harvesting, post-harvesting and storage technology, information of marketing and the information of supporting factors. The conclusion can be drawn that respondents of adopted village had an edge in adoption over respondents of non-adopted village. The higher adoption level of farmers of adopted village may possible because of the reasons that farmers were equipped with latest technical know-how about these crops during the implementation of FFP programme. Secondly, they had a higher level of education, socio-economic status, mass-media exposure and extension contact.

Overall it is observed that there exists a considerable difference between adopted and non-adopted village farmers adoption of recommended agricultural practices related to seed and variety, water supply, seedling of crops, land preparation and sowing, fertilizer management, weed management, irrigation management, plant protection, harvesting, post-harvesting and storage technology, marketing and supporting factors. This showed the positive impact of FFP on agricultural practices and made a desirable outcome in the study area.

5.3.2 Impact of the programme on animal husbandry practices

The results in Table 4.15 reveal that impact on information on animal breeding and reproduction practices was higher among farmers of the adopted village than that of the non adopted village. The reason behind this result might be due to the fact that in FFP adopted village farmers got a good quality of germplasm provided by the project as an input along with practical exposure in updating their knowledge and putting the same in actual use. Secondly, regular visit of project staff created awareness among farmers by farmers meetings

and animal health camps. Similar findings were reported by Ghosh *et al.* (2005) and Shah *et al.* (2016).

In relation to feeding practices, Table 4.16 indicates the impact of FFP on the information regarding the adoption of animal feeding practices was found higher in adopted village than that of the non-adopted village. The reason behind the finding is due to more exposure of farmers about improved feeding practices. Secondly, in adopted village, farmers had more contact with project dairy expert. Along with this project staff also conducted short training about making of the mineral mixture at home; this also improved the knowledge and adoption of feeding practices of farmers. Training on mineral mixture built the confidence of farmers as well as saved their money and time. The above findings are in conformity with the findings of Gupta *et al.* (2003) and Bardhan *et al.* (2005).

Result in Table 4.17 shows that almost similar adoption is found in adopted and non-adopted village regarding the animal management practices e.g. protect your animal from severe cold and hot wave, clean milking practices and proper sanitation in animal shed, etc. reason of this might be due to the good awareness about these practices in both adopted and non-adopted village.

The results in Table 4.18 reveal impact of FFP on the information of animal health care practices was higher in adopted village than that of the non-adopted village. Finding might be due to regular animal health camps organized by project in the adopted village. Moreover more extension contact and scientific orientation of farmers in the adopted village might be another appropriate reason. Above study is supported by the findings of Gupta *et al.* (2003), Sathiadas *et al.* (2003), Singh *et al.* (2004), Bardhan *et al.* (2005), and Nirmala (2015).

Regarding marketing of dairy products analysis of data shows that the impact of information on the marketing of dairy product was found almost similar in both adopted and non-adopted village. The reason being in both adopted and non-adopted village knowledge on marketing was equal. Secondly, it might be due to less awareness by milkmen, marketing places and facilities. Results were supported by Wynn *et al.* (2017).

Overall it can be concluded that the FFP had a positive impact on animal husbandry practices in the study area. The respondents in FFP adopted village and non-adopted village differed in their adoption level of recommended animal husbandry practices. The higher adoption level of farmers of adopted village may be because of the reasons that farmers were in close contact with project extension staff along with high scientific orientation and economic motivation. Secondly, this may be due to the good quality of inputs provided by the project for demonstration, which helped farmers to adopt the latest animal husbandry practices than the non-adopted village.

5.3.3 Impact of programme on economic condition farmers

Table 4.21 indicates the impact of FFP on economic condition of the farmers in the adopted village. Majority of the respondents perceived that FFP helped in increasing the yield. The adoption of FFP recommendation reduces the insecticide use which helped in saving money and time of farmers. Moreover, respondents perceived that the net income of the farmers increased due to the adoption of agricultural production technology. Owombo *et al.* (2012) found that agricultural mechanization adoption increased the net income of the farmer similarly; he reported reduction in the use of pesticides. It was perceived that the agricultural and dairy practices under FFP increased the purchasing power of the farmers. Its adoption led to availing of health services for the family, spending on childrens education and improves the economic condition of the farmers. Deshpande and Rajasekaran (1997), Palanisami and Suresh (2005), Godara *et al.* (2012) and Uday *et al.* (2017) also reported similar findings.

5.3.4 Benefits derived by farmers

Table 4.22 indicates the benefits derived by the farmers in FFP study area. The adoption of FFP programme result in improved family living conditions, the number of outside contacts increased, material possession, consulted by other farmers for agricultural purpose, availed Govt. subsidy/loan and organizational participation had increased. The reason of this finding may be due to the active participation in the programme which improved the knowledge level of farmers regarding various benefits. Another important factor may be due to the high personal variables like high extension contact, scientific orientation and economic motivation of the farmers in the adopted village which led to availing the benefits of the programme. Similar findings were reported by Akinagbe and Ajayi (2010), Gbolagade *et al.* (2015) and Tihamiyu *et al.* (2015).

5.4 Constraints faced by respondents during adoption of programme

Constraints perceived by the farmers from FFP adopted village in the functioning of the programme were grouped into four broad areas viz., general constraints, economic constraints, organizational constraints and communicational constraints. The results so obtained have been presented as follow.

5.4.1 General constraints

Regarding general constraints presented in Table 4.23, the constraints, namely, lack of co-operation among farmers, lack of local political interference and clear understanding of project objectives which valued as first, second and third respectively, by the respondents. Hardikar (1998) reported that similar kinds of constraints were experienced by beneficiaries in the implementation of Integrated Rural Development Programmes. Gupta (2014) and Samitha and Kumar (2017) also observed similar constraints.

5.4.2 Economic constraints

Data shown in Table 4.24 regarding economic constraints, the constraints namely, non-availability of funds in proper time, irregularity in payment labour/wages, conflicts between project staff and people over wages and non-availability of funds to make emergency purchases were ranked first, second and third respectively, by the respondents. These findings are in conformity with the results of Solanki (2001), Khatun and Roy (2012), Yuguda *et al.* (2013), Makuvaro *et al.* (2017) and Samitha and Kumar (2017) who also reported similar economic constraints in their studies.

5.4.3 Organizational constraints

Data presented in Table 4.25 show that constraints such as insufficient staff to carry out the project successfully, interruption in the routine functioning of the project due to the transfer of concerned staff, lack of proper monitoring and follow up of the project were ranked first, second and third respectively, by the respondents. These findings are in line with those of Goel (1993), Solanki (2001) and Behera (2015).

5.4.4 Communication constraints

Data in Table 4.26 regarding communication constraints, the constraints namely, lack of co-operation from village panchayat in implementing the project, lack of interest in learning new skills by farmers, lack of demonstration/training in the project were ranked first, second and third respectively, by the respondents. Similar findings were reported by Swarnkar and Chauhan (1993), Galadima (2014), Behera (2015) and Pandey *et al.* (2017).

Therefore, it is suggested that farmer FIRST programme implementing agencies and department should take efforts to overcome these constraints. The achievements may increase manifolds in future farmers FIRST programme if these constraints are minimized.

5.5 Association between independent variables and the dependent variables

The data furnished in Table 4.27 show that out of the 10 independent variables, six variables, namely, education, socio-economic status, extension contacts, scientific orientation, economic motivation and risk orientation were found to have a positive and significant correlation with the participation in the farmer FIRST programme. Generally, people having higher education, high socio-economic status, extension contacts, scientific orientation, economic motivation and risk orientation participate more in development programme. It is, therefore, concluded that increase or improvement in the influential independent variables would lead to an improvement in the participation in farmer FIRST programme. These findings are in conformity with the findings of Badal *et al.* (2006), Rajput *et al.* (2012), Nxumalo *et al.* (2013) and Mozzato *et al.* (2018) who found that education, extension contact and economic motivation had positive and significant correlation with participation.

Moreover, the independent variables education, socio-economic status, irrigation source, extension contact, mass media exposure and economic motivation showed a positive and significant association with the adoption of recommended agricultural practices. Whereas in case of respondents from non-adopted village, out of the 10 independent variables, five

variables viz., education, socio-economic status, irrigation source, mass media exposure and economic motivation exhibited positive and significant correlation with the adoption level about agricultural practices. From the above findings, it could be concluded that except age improvement in the independent variables would lead to higher adoption of recommended crop production practices. The above findings are in line with those of Singh (1995), Singh (1999) and Kumar (2002), Barman *et al.* (2017) and Sani (2017).

Relationship of respondents antecedent variables and their adoption level of recommended animal husbandry practices have been presented in Table 4.29 which indicate that education, socio-economic status, extension contacts, scientific orientation, economic motivation and risk orientation of farmers from FFP adopted village established a positive and significant correlation with the adoption of recommended animal husbandry practices.

Furthermore, all independent variables except age found a positive relationship with their adoption level of recommended animal husbandry practices. These results got support from the findings of Intodia (2000) and Solanki (2001).

Looking at the respondents from non-adopted village, it was found that education, socio-economic status, extension contacts and economic motivation exhibited a positive and significant relationship with adoption of recommended animal husbandry practices.

CHAPTER-VI

SUMMARY AND CONCLUSION

The farmer FIRST programme as a concept of ICAR is developed as 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). Two terms 'enriching knowledge' and 'integrating technology' qualify the meaning of Farmer FIRST in the Indian context. Enriching knowledge signifies the need of the research system as well as farmer to learn from each other in context to the existing farm environment, perception of each other and interactions with the sub-system established around. Technology integration is looked from the perspective that the scientific output coming out from the research institutions, many times does not fit as such in the farmer's situations and thus, certain alterations and adaptations are required at field level for their acceptance, adoption and success. 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. With this view, the present study was undertaken with the following specific objectives :

- To study the extent of farmer's participation in Farmer FIRST programme
- To find out the impact of the programme on agricultural practices and their economical condition
- To assess the constraints faced by respondents during adoption of the programme
- To analyze the association of independent variable with the dependent variable

The study was conducted in two Districts namely; Hisar and Karnal of Haryana State which selected purposively because the project was implemented in these districts. From Hisar, Gurana was taken as the adopted village and Datta as non-adopted village whereas from Karnal, Garhi Gujran was taken as adopted and Samora as a non-adopted village.

From each selected village, 60 respondents were selected by simple random sampling. In all 240 respondents i.e., 120 respondents from adopted village and 120 respondents from non-adopted village were selected.

Thus, a total of 240 respondents were interviewed. Age, education, source of irrigation, socio-economic status, extension contact, mass media exposure, scientific orientation, risk orientation, economic motivation and farming system were studied as independent variables. Farmer's participation, impact assessment, association of various antecedents of agricultural practices and constraints perceived by the respondents in farmer FIRST programme were studied as dependent variables.

The study revealed that among the respondents in the adopted village, majority of the respondents were middle-aged, having a medium level of education, socio-economic status, source of irrigation, mass media exposure along with high extension contacts, scientific orientation, risk orientation and economic motivation. Whereas in respondents from non-adopted village, the majority of the respondents were middle-aged and possessed the medium level of education, socio-economic status, source of irrigation, mass media exposure. Majority of the respondents from non-adopted village belonged to low extension contacts, economic motivation, scientific orientation and risk orientation. Both adopted and the non-adopted village had main farming system adopted was crop production.

The data pertaining to the farmer's participation revealed that majority of the respondents had a medium level of participation at the planning stage, execution stages and progress evaluation and reconsideration stages of farmer FIRST programme. However, people's participation was assessed maximum at resource analysis and progress evaluation and reconsideration stage followed by planning stages of farmer FIRST programme.

The impact was assessed by comparing the response of FFP adopted and non-adopted farmers towards common agricultural parameters. The structural interview schedule was prepared in accordance with the methodological procedure described earlier. The data, thus, collected were statistically analyzed.

Regarding the impact of FFP programme on agricultural practices, the results showed that farmers from adopted village possessed higher adoption of recommended crop production practices i.e. seed and variety, information on water supply, seedlings of crops, land preparation and sowing, fertilizer management, weed management, irrigation management, plant protection practices, harvesting, post-harvesting and storage technology, marketing information and supporting information. Whereas farmers in the non-adopted village was a lower level of adoption.

Regarding animal husbandry practices the overall adoption level of respondents regarding recommended animal husbandry practices from FFP adopted village was found high than the non-adopted village. Component-wise extent of adoption about recommended animal husbandry practices revealed that extent of adoption of respondents from adopted village with regard to breeding, feeding, management, health care practices and marketing of dairy product was found higher than that of respondents from the non-adopted village.

The economic impact of FFP, as perceived by the farmers, had been in terms of enhanced yield, increased income, dairy profit, education and standard of living, farmer purchase power, reduction of insecticide and fertilizer use and control on harmful insects.

This clearly indicated that farmer FIRST programme had a positive and significant impact on the agricultural practices and their economic level.

The results of the study pertaining to constraints in implementation of farmer FIRST programme, lack of co-operation among farmers, local political interference, lack of clear understanding of project objectives, non-availability of funds at proper time, irregularity in payment of wages, insufficient staff to carry out the project successfully, lack of co-operation from village panchayat in implementing the project, lack of interest in learning new skills by farmers, decisions made at higher level without consulting people, lack of proper monitoring and follow up of the project and lack of demonstration were the main constraints perceived by the respondents as serious to very serious constraints in implication of farmer FIRST programme.

Suggestions

The recommendations based on the findings of the study should be highlighted to make good use of findings from the study. Therefore, it was considered proper to provide useful recommendations in future as under:

In the study, farmer's participation in farmer FIRST programme was found at medium level. People's participation is the key for successful implementation of any development programme. So, efforts should be taken to increase farmer's participation in farmer FIRST programme. This could be achieved by creating awareness and interest about farmer FIRST programme. Frequent interaction and open discussion with people should also be arranged to get people's participation. Action plan of farmer FIRST programme should be developed by involving people to inculcate attachment of people to the development programme. So, it is recommended that the whole village should be covered and all people should be benefited from these types of programmes.

The study brought out to the base that farmer FIRST programme had a significant positive impact on the farmer's adoption level of crop practices and adoption level of animal husbandry practices. In the present study, the impact of FFP on respondent's adoption level with regard to recommended crop and animal husbandry practices in the respondents from adopted village under farmer FIRST programme was found at a moderate level. So, to enhance their adoption the training should be given by project staff to farmers about these aspects at the village level. There is also a need to make farmers aware about the objectives of the programme to enable farmers to get more benefits. These trainings should be conducted by the specialists and should be need-based.

The results of the finding related to constraints in implementation of farmer FIRST programme revealed that lack of co-operation among farmers, non-availability of funds to make emergency purchase, insufficient staff to carry out the project successfully, lack of co-operation from village panchayat in implementing the project, irregularity in payment of wages and lack of interest in learning new skills by farmers were the main constraints perceived by the respondents as serious to very serious constraints in implication of farmer

FIRST programme. To overcome these constraints there is need to provide the timely fund and engagement of enough technical staff for smooth functioning of project. There is also a need to make effective coordination between staff and village farmers this will improve the performance of project in desired way.

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Annexure-I
DEPARTMENT OF EXTENSION EDUCATION
COLLEGE OF AGRICULTURE
CCS HARYANA AGRICULTURAL UNIVERSITY
HISAR, HARYANA-125004

INTERVIEW SCHEDULE

Title of research: A Comparative Study of Farmer FIRST Programme on adoption of Agricultural Practices in Haryana

S. No.: _____

Date of interview: _____

Name: _____

Father's Name: _____

Village: _____

Block: _____

District: _____

Contact No. : _____

PART-I (INDEPENDENT VARIABLE)

1. **Age:** _____ (years)
2. **Education:** Illiterate (0) / Primary (1) / High school (2) /Sr. Secondary (3) /Diploma (4) Graduate and above (5)
3. **Socio-Economic Status (SES)**
 - A. **Caste:** SC (1) / ST (2) / OBC (3) /General (4)
 - B. **Occupation:** Land less (1) / Farming (2) /Service (3) / Business (4)
 - C. **Social participation:** Nil (0) /Member (2) /Office bearer (3)
 - D. **House type:** Kacha (0) Paaca (1)
 - E. **Family size:** Up to 6 members (1) / Above 6 members (2)
 - F. **Family Type:** Nuclear (1) / Joint (2)
 - G. **Farm power/mechanization:** No draft animal/draft animal /tractor/ tiller/paddler/zero tillage machine/laser leveler/sprayer
 - H. **Material possession:** Cycle (1) / Bullock cart (2)/ Radio and TV (3) motorcycle (4)

4. Source of Irrigation:

S.No	Particulars	Yes (1)	No (0)
1.	Submersible Pump		
2.	Tube well		
3.	Canal		
4.	Drip/Sprinkler		
5.	Any others		

5. Extension Contacts: (a)

S. No.	Extension official	Know		Name of the official	Frequency of contact			
		Yes	No		fortnightly	month	3 month	Not at all
		(1)	(0)	(1)	(4)	(3)	(2)	(1)
1.	Scientists							
2.	DDA							
3.	SDAO/SMS							
4.	ADO/VEW							
5.	BDPO							
6.	Bank personnel							
7.	Any other (specify)							

(b)	Was any method/result demonstration ever organized on your field?	Yes (1)	No (0)
If yes, then when it was organized			
	In last 3-6 months (3)	Between 6 month to 1 year (2)	Between 1 year to 2 years (1)
			More than 2 years (0)
(c)	Did you ever see any method/result demonstration centre on your field or any other farmer's field?	Yes (1)	No (0)
If yes, then, when it was organized			
	Within last 3-6 months (3)	Between 6 month to 1 year (2)	Between 1 year to 2 years (1)
			More than 2 years (0)
(d)	Are you aware of location of CCS HAU / NDRI/KVK in your district?	Yes (1)	No (0)
If yes, where it is _____			
(e)	Have you or your family member participated in any training during the last three years?	Ye (1)	No (0)
If yes, mention the following:			

Sr. No.	When	Duration	Subject	Where
1.				
2.				
3.				

(One mark for each)

- (f) Have you visited CCS HAU, Hisar / NDRI , Karnal last year? Yes (1) No (0)
If yes, mention the following

Sr. No.	When	Purpose of your visit	Utility of Work
1.			
2.			
3.			

(One mark for each)

6. Mass Media Exposure

- (i) How frequently do you listen programmes related to agriculture broadcasted on radio?
a. Daily (3) / occasionally (2) / rarely (1) / Never (0)
- (ii) How frequently do you read the news magazine and newspaper related to agriculture?
a. Daily (3) / occasionally (2) / rarely (1) / Never (0)
- (iii) Do you subscribe any agriculture related magazine? If yes, mention number?
a. Daily (3) / occasionally (2) / rarely (1) / Never (0)
- (iv) How frequently do you watch the programme related to agriculture telecasted on T.V?
a. Daily (3) / occasionally (2) / rarely (1) / Never (0)
- (v) Have you ever seen any film show or slide show related to agriculture?
a. With the last 6 months(3) / Between 6 months to one year(2) / Between 1 to 2 year (1) / Never(0)
- (vi) How frequently you call on toll free number of SAUs/ICAR Kisan call center (1800-180-1551) ?
a. Daily(3) / occasionally (2) / rarely (1) /never (0)
- (vii) How frequently you visit the website of SAUs/ICAR?
a. Daily (3) / occasionally (2) / rarely (1) /Never (0)

7. Scientific Orientation:

Strongly agree (SA), Agree (A) Undecided (UD) Disagree (DA) Strongly Disagree (SDA)

S. No.	Statements	Response				
		SA	A	UD	DA	SDA
	For positive statement	5	4	3	2	1
	For negative statement	1	2	3	4	5
1.	New methods of farming give better results than old.					
2.	Higher yield can be obtained by adopting scientific methods of farming.					
3.	New methods of farming are costly and time consuming.					
4.	A farmer can progress better when scientific methods are practiced					
5.	Traditional methods of farming have to be changed in order to raise the level of agriculture production and living standard of farmer.					
6.	Even farmers with lot of experience should use scientific technology in farming.					

8. Economic Motivation

S. No	Statements	Most Desired (3)	Desired (2)	Least Desired (1)
1.	All I want from my farm is to make just a reasonable living for the family.			
2.	In addition to making reasonable amount of profit, the enjoyment in farming life is important for me.			
3.	I would invest in farming to the maximum to gain large profit.			
4.	I don't hesitate to borrow any amount of money in order to run the farm properly.			
5.	Instead of growing new cash crops, which cost more money, I follow the routine farming practices.			
6.	It is not only monetary profit but the enjoyment of work done which gives me satisfaction for my hard work on the farming.			
7.	I hate to borrow money on principle, even when it is necessary for running the farm.			
8.	I avoid excessive borrowing of money for farm investment.			
9.	My main aim is maximizing by growing cash crops in comparison to growing of crops, which are simply consumed by my family.			

9. Risk Orientation:

Strongly agree (SA), Agree (A) Undecided (UD) Disagree (DA) Strongly Disagree (SDA)

Sr. No	Statements	SA	A	UD	DA	SDA
	For positive statement	5	4	3	2	1
	For negative statement	1	2	3	4	5
1.	A farmer should adopt the inter cropping to avoid greater risks.					
2.	It is better for a farmer not to try new farming methods unless most of others have used them with success.					
3.	It is good for a farmer to take risk when he knows his chance of success is fairly high.					
4.	A farmer who is willing to take greater risk than the average, usually do better financially.					
5.	A farmer should rather take more of a chance in making a big profit than to be content with a smaller, but less risking profit.					

10. Farming system component adopted by farmers

S. No.	Particulars	✓ Please tick
1.	Crop farming	
2.	Dairy/sheep/goats	
3.	Fisheries	
4.	Forestry	
5.	Agro-forestry	
6.	Mushroom cultivation	
7.	Bee keeping	
8.	Vegetable cultivation	
9.	Floriculture	
10.	Any other	

PART-II (DEPENDENT VARIABLE)**1. Extent of Farmer's participation in Farmer FIRST programme****1.A. Planning stage**

S. No	Statements	Yes (1)	No(0)
1	Do you understand the concept of programme?		
2	Were you consulted; about starting of this programme in your village by officials?		
3	Whether you had discussed with officials about agricultural problems of your village?		
4	Whether you had attended all farmer interaction meeting regarding this programme?		
5	Whether you encouraged fellow farmers to participate in meetings and other activities of programme?		
6	Whether you participated in planning the activities in your village? If so, i) By giving consent to the programme (1,0) ii) Advisory role (1,0)		

	iii) Member of SHG (Self Help Group) (1,0) iv) Member of UG (User Group) (1,0) v) Member of Farmer FIRST Committee (1,0)		
7	Whether participated? i) In analysis of problem ii) In determining needs iii) In group meeting with officials iv) Identification of training needs v) In deciding the objective and contents of the programme vi) In deciding community land utilization		
8	Whether participated in determining the locations for construction of various soil and moisture conservation structures (zero tillage, DSR etc.?)		

1.B. Resource analysis of Farmer FIRST village

Sr. No	Particulars	Yes(1)	No (0)
1.	Village map		
2.	Transect map		
3.	Resource map		
4.	Trend analysis		
5.	Timeline		

1.C. Execution Stage

Sr. No	Statement	Yes (1)	No (0)
1	Did you participate in construction of various structures? Name(each one score)		
2	Did you motivated fellow farmers in introduction of new crop varieties?		
3	Did you participate in plantation?		
4	Did you participate in training organized under Farmer FIRST programme, if yes how many times, (each time one score)?		
5	Did you participate in demonstrations organized under this programme, if yes how many time (each time one score)?		
6	Whether you participated in field days?		
7	Did you participate in maintenance, restoration and developments of assets in community lands?		

1.D. Progress evaluation and reconsideration stage

Sr. No	Statements	Yes (1)	No (0)
1	Did you participate in evaluating the effectiveness and impact of different components of programme?		
2	Did you participate in assessing the cause of failure or success of programme?		
3	Whether you played role in dissemination of success/benefits of programme to the other farmers?		
4	Whether you participated in identification of deficiencies in planning and implementation of overall programme?		
5	Whether you provided opinion and suggestion about the programme?		
6	Whether you discussed with officials and analysis for further success?		

PART-III (A)

Impact of Farmer First programme on adoption of agricultural practices

2. A. Impact of FFP on the information of varieties/seed

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Availability of Seeds;			
2.	Use of high yielding variety for the area			
3.	Characteristics of high yielding variety			
4.	Proper seed selection			
5.	Seed borne diseases			
6.	Seed treatment			
7.	Recommended seed rate			

2. B. Impact of FFP on the information of water supply

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Information about water to be supplied in channel before sowing time			
2.	Advance information about time and date of supply of water in canal for complete crop period			
3.	Rain water harvesting			
4.	Tube well Water testing			
5.	Water saving techniques			

2. C. Impact of FFP on the information of preparation of seedling of crops

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Selection of site for raising seedling.			
2.	Method of preparing bed for nursery			
3.	Plant protection in nursery management			
4.	Nutrient management in nursery			

2. D. Impact of FFP on the information of land preparation and sowing

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Land preparation			
2.	Pre sowing soil treatment			
3.	Place of availability of soil treatment inputs			
4.	Price of Soil treatment inputs			
5.	Timely sowing			
6.	Proper Spacing			
7.	Line sowing			
8.	Depth of sowing			
9.	Method of sowing			
10.	Any other			

2. E. Impact of FFP on information on fertilizer management

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Place of availability of fertilizers			
2.	Method and time of fertilizer application			
3.	Calculating the dose of chemical fertilizer			
4.	Nutrient requirements of plants			
5.	Deficiency symptoms of major plant nutrients			
6.	Bio-fertilizer			
7.	Making organic manure from farm waste			
8.	Organic manure application			
9.	Crop residue management practices			

2. F. Impact of FFP on Information of weed management

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Chemical weed management			
2.	Price of weedicides/herbicides			
3.	Place of availability of weedicides/ herbicides			
4.	Hand weeding			
5.	Mechanical cultivation			
6.	Use of hand tools			
7.	Crop rotation practices			
8.	Soil sterilization			

2. G. Impact of FFP on the Information of irrigation management

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Schedule for irrigation			
2.	Critical stages of irrigation			
3.	Fertilizer management during irrigation			
4.	Method of irrigation			

2. H. Impact of FFP on the information of plant protection

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Identification , nature of damage and control measures for insects/pests / crops disease			
2.	Integrated pest management of crops			
3.	Method of preparation solution of insecticides/pesticides			

2. I. Impact of FFP on the information of harvesting, post harvesting and storage technology

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Proper timing of harvesting			
2.	Ideal thresher for threshing of crops			
3.	Management after harvesting at framing level			
4.	Store management practices			

2. J. Impact of FFP on the Information of marketing

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Marketing price			
2.	Source of market price information			
3.	Quality parameters that affects price			
4.	Time of market inflow			
5.	Place of marketing			
6.	Marketing procedure			
7.	Facilities available at market			

2. K. Impact of FFP on the Information of supporting factors

S. No	Area of Information	Responses		
		Fully	Partially	Nil
1.	Weather forecasting			
2.	Crops related government policies			
3.	Credit /loan facilities for crops cultivation			
4.	Insurance of crop			
5.	Subsidies for crop cultivation			

Part III (B)**Impact of Farmer FIRST programme for Animal Husbandry practices****3. A. Impact of FFP on the information of animal breeding and reproduction practices**

S. No	Area of Information	Fully	Partially	Nil
1.	Improved breeds			
2.	Natural service/A.I			
3.	Keeping watch on oestrous cycle heat symptoms			
4.	Allow the animal to mate within 3 months after parturition			
5.	Take the animal for A.I. within 12 hours after detection of heat			
6.	Get animal diagnosed for pregnancy.			
7.	Take animal for regular check-up during pregnancy.			

3. B. Impact of FFP on the information of animal feeding practices

S. No	Area of Information	Fully	Partially	Nil
1	Feeding colostrums continuously to new born calves up-to 5 days of its birth.			
2	Feeding concentrate mixture to animal on the basis of milk production.			
3	Feeding to advance pregnant animal with extra 1-2kg concentrate over & above of maintenance ration.			
4	Feed your animals urea treated wheat straw.			
5	Provide recommended dose of green fodder to the animal regularly.			
6	Feed your animal prepared hay and silage.			
7	Adopt to animals the practices of stall feeding.			
8	Prefer chaffing of the green fodder.			
9	Take animal for regular grazing.			

3. C. Impact of FFP on the Information of animal management practices

S. No	Area of Information	Fully	Partially	Nil
1.	Provide adequate open space to the animal.			
2.	Keep your animal in ventilated shed / house.			
3.	Protect your animal from severe cold and hot wave.			
4.	Provide timely supply of water & feed to the animal.			
5.	Practice animal castration.			
6.	Practice of weaning in cattle calves.			
7.	Practicing de-worming in cattle calves.			
8.	Clean milking practices			
9.	Proper disposal of dung.			
10.	Keep your advanced pregnant animal separate from herd.			
11.	Proper sanitation in animal shed.			
12.	Take buffalos at pond for wallowing.			

3. D. Impact of FFP on the Information of animal health care practices

S. No	Area of Information	Fully	Partially	Nil
1.	Timely treatment of sick and weak animals by Vet. Doctors.			
2.	Segregation of diseased animals suffering from contagious diseases.			
3.	Practicing timely vaccination against contagious diseases Foot & Mouth disease (F.M.D) etc.			
5.	Treatment for infertility, repeat breeding, anestrus cases by veterinarian.			
6.	Identification of mastitis and udder infection symptoms and timely treatment.			

3. E. Impact of FFP on the information of marketing of dairy product

S. No	Area of Information	Fully	Partially	Nil
1.	Marketing of milk.			
2.	Prepare value added products of milk			
3.	Getting marketing information			
4.	Sell products to wholesale market			
5.	Sell dung cake and manure			
6.	Purchase freshly calved animals			

3.F Impact of FFP on Economical condition

Sr. no.	Economic Impact	Increased	No Change	Decrease
1.	Yield enhancement			
2.	Crop profitability			
3.	Labour requirement			
4.	Dairy profit			

5.	Quality of produce			
6.	Marketing of produce			
7.	Reduction of insecticide and fertiliser			
8.	Control on harmful insects			
9.	Net income of farmer			
10.	Cash in hand			
11.	Farm power equipments			
12.	Farmer purchase power			
13.	Expenditure on health			
14.	Expenditure on education			
15.	Expenditure on social ceremony			
16.	Expenditure on farm renovation			
17.	Expenditure on house renovation			
18.	Miscellaneous expenditure			

PART-IV

Benefits derived by farmers from farmer FIRST programme

S. No	Items	Level of benefits		
		Highly	Moderate	Least
1.	Improved family living conditions			
2.	Consulted by other farmer for agriculture purpose			
3.	Increased net- income for previous year			
4.	Increased number of outside contacts			
5.	Increased organizational participation			
6.	Better utilization of leisure time			
7.	Material possession increased			
8.	Availed Govt. subsidy/loan			
9.	Soil erosion controlled			
10.	Helped in conserving ground water recharge			
11.	Infiltration rate of water increased			
12.	Cropping intensity increased			
13.	Yield level increased			
14.	Helped in rising agro-forestry tree species			

Part V

5. Overall Constraints faced by farmer in Farmer FIRST Programme

Statement	Very serious	serious	Not so serious
A. General constraints			
1. Lack of trust in project officials			
2. Lack of clear understanding of project objectives			
3. Low level of awareness regarding benefits of projects			
4. Local political interference			
5. Lack of dedication of project officials			
6. Lack of co-operation among farmers			
7. Conflicts B/W Farmer FIRST committee and gram panchayat			
B. Economic constraints			
1. Lack of economic motivation			
2. Non-availability of funds in proper time			
3. Lack of proper utilization of funds			
4. Irregularity in payment of labour/wages			
5. Conflicts between project staff and people over wages			
6. Non-availability of funds to make emergency purchases			
C. Organizational constraints			
1. Insufficient staff to carry out the project successfully			
2. Lack of co-operation from higher officials			
3. Some decisions were made at higher level without consulting farmers			
4. Interruption in the routine functioning of project due to transfer of concerned staff			
5. Lack of proper monitoring and follow up of the project			
6. Lack of encouragement for good work			
D. Communicational constraints			
1. Lack of effective communication between field functionaries and farmers			
2. Lack of interest in learning new skills by farmers			
3. Lack of co-operation from village panchayat in implementing the project			
4. Lack of demonstration/training in the project			
5. No regular meetings			
6. Lack of collective action for promoting agriculture			

ABSTRACT

Title of Thesis : A Comparative Study of Farmer FIRST on adoption of Agricultural Practices in Haryana

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Admission No. : 2015A19D

Title of degree : Doctor of Philosophy in Extension Education

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Degree awarding University/Institute : CCS Haryana Agricultural University, Hisar

Year of award of degree 2019

Major subject : Extension Education

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Key words: Farmer FIRST, Participation, Agriculture, Animal husbandry, Impact, Constraints

The present study was conducted in Hisar and Karnal district of Haryana state. Selection of districts was, purposively because the project is implemented in these districts. From Hisar Gurana was taken as adopted village and Datta as non adopted village whereas from Karnal Garhi Gujran was as adopted and Samora as a non adopted village. 120 respondents were selected from two adopted village and 120 from two non adopted village. Thus a total of 240 respondents were interviewed. The specific objectives of present study were (1) To study the extent of people's participation in Farmer FIRST programme (2) To study the impact of programme on agricultural practices and their economical condition (3) Constraints faced by respondent during adoption of programme (4) To analyze the association of various antecedents of agricultural practices .

The data were collected through pre-tested structured interview schedule ten important independent variables namely, age, education, socio-economic status, source of irrigation, extension contact, mass-media exposure, scientific orientation, risk orientation, economic motivation and farming system and namely, people's participation, impact of FFP on agricultural practices and constraints perceived by the respondents in farmer FIRST Programme were the dependent variables.

Majority of the respondents had medium level of participation at all the stages of farmer FIRST Programme. People's participation was assessed maximum in resource analysis and planning stage followed by other stages of Farmer FIRST Programme.

The impact of farmer FIRST Programme was assessed by comparing the response of respondents from adopted and non-adopted village towards some common agricultural and animal husbandry practices. The adoption level of agricultural practices, adoption level of animal husbandry practices of respondents from FFP adopted village was found higher as compare to respondents from non-adopted village. It was also concluded that farmers had perceived a positive impact of FF programme on their economical aspects.

The study revealed that selected independent variables i.e. education, socio-economic status, extension contact, mass-media exposure, , risk orientation, economic motivation and farming with the respondents from FFP adopted village, the results showed the positive relationship with adoption of crops and animal husbandry practices as compare to the respondents from non-adopted village.

The constraint analysis revealed that lack of co-operation among farmers, local political interference, lack of clear understanding of project objectives, non-availability of funds at proper time, irregularity in payment of wages, insufficient staff to carry out the project successfully, lack of co-operation from village panchayat in implementing the project, lack of interest in learning new skills by farmers, decisions made at higher level without consulting people, lack of proper monitoring and follow up of the project and lack of demonstration were the main constraints perceived by the respondents as serious to very serious constraints in implication of farmer FIRTs programme.

MAJOR ADVISOR

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I, hereby, declare that all the information given in the resume is true to the best of my knowledge.

Manjeet

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I, **Manjeet, Admission. No. 2015A19D**, undertaken that I give copyright to the CCS Haryana Agricultural University, Hisar of my thesis entitled "**A Comparative Study of Farmer FIRST Programme on adoption of Agricultural Practices in Haryana**". I also undertake that, patent, if any, arising out of the research work conducted during the programme shall be filed by me only with due permission of the competent authority of CCS Haryana Agricultural University, Hisar.

(Manjeet)