www.ThePharmaJournal.com

The Pharma Innovation

Vishakha Bansal
Professor, College of Community and Applied Sciences, MPUAT, Udaipur, Rajasthan, India

Priyanka Kunwar Rathore
Research Scholar, College of Community and Applied Sciences, MPUAT, Udaipur, Rajasthan, India

Adoption of integrated farming system by the rural women

Vishakha Bansal and Priyanka Kunwar Rathore

Abstract
The present study was planned to study to assess adoption of recommended technologies promoted under IFS models among rural women. The study was conducted in *Gudli* village of Udaipur district of Rajasthan. The AICRP on Home Science has promoted two IFS model *viz.* crop+horticulture and crop+poultry in the adopted village of MPUAT, Udaipur. From the selected village, 50 respondents for crop+horticulture model and 60 respondents for crop+poultry model were selected for the study. For accomplishing the present investigation, interview technique was used to collect information from the rural women beneficiaries. After data collection, data were analyzed using frequency, percentage, mean per cent score and paired t-test. The results regarding adoption of crop+horticulture IFS model, majority of the respondents (52%) were in category of average level of adoption whereas, 40 per cent of the respondents belonged to good adoption category. Only eight per cent respondents were found in poor adoption category. Regarding adoption of crop+poultry IFS model majority of the respondents (70%) were in category of average level adoption whereas, 16.66 per cent respondents belonged to good adoption category. Only 13.33 per cent respondents were found in poor adoption category.

Keywords: Farming system, rural women, crop+horticulture, crop+poultry

Introduction
Integrated Farming System (IFS) practice is now a day's gaining importance among the farmers to get the higher net returns in limited land. During last few decades agricultural research has focused on development of high yielding crop varieties/hybrids, better farm machinery, crop production and plant production technologies that enable the farmers to grow more food. But at the same time, there has been over exploitation of the natural resources leading to decrease in the productivity and profitability. IFS aims at combining farm enterprises like field crops, vegetables, dairy, poultry and goatry for realizing profitable and sustainable agriculture. Unabated land degradation due to nutrient mining combined by topsoil loss due to water erosion and climatic change towards adverse condition and getting good price for farm produce are the serious problems affecting the agriculture.

Integrated farming system practices inter act appropriately with the environment without dislocating the ecological, social and economic balance for enhancing the lively hood of farmers. IFS is one of the important solutions to face this peculiar situation as in this approach the different enterprises can be carefully undertaken and the location specific systems are developed based on available resources which will result into sustainable development (Dashora and Singh, 2014) [1].

Channabasavanna and Biradar (2009) [2] stated that IFS approach recorded 26.3 and 32.3 per cent higher productivity and profitability respectively over conventional system in rice ecosystem. Integration of different enterprise with crop activity will provide ways to recycle products and waste materials of one component as input through another linked component and reduce cost of production of the products which will finally raise the total income of the farm.

The "All India Coordinated Research Project on Home Science" carried the project on "Scoping IFS Models from Gender Perspective with Focus on Enhancing Farm Income" in year 2017-20 with the objectives to document region specific tested IFS models for enhancing farm income, to screen the selected models from gender perspective and to diffuse the learnings/lessons from identified models in the adopted village. Under the project the information was collected about suitable IFS models for Rajasthan state from AICRP on IFS, Rajasthan College of Agriculture, MPUAT. According to their study four models are suitable for Rajasthan.

Corresponding Author:
Vishakha Bansal
Professor, College of Community and Applied Sciences, MPUAT, Udaipur, Rajasthan, India

Out of four models, two models were established at farmer's field in the adopted villages of AICRP on Home Science before establishing the models, technological interventions were given to the farm women related to Crop + Horticulture model and Crop + Poultry models. Since the project has completed three years of its implementation therefore, it is apt time to frame a systematic study on adoption of recommended technologies promoted under IFS models by the rural women.

Methodology
The present study was conducted purposively in *Gudli* village of *Mavli* panchayat samiti of Udaipur district in Rajasthan state as the researcher was well acquainted with the socio-economic conditions of the place which facilitated and smoothened the data collection process. Another reason was that AICRP – Home Science has adopted the village and promoted various IFS models in the village. The AICRP on Home Science has promoted two IFS model *viz.* crop+horticulture and crop+poultry in the adopted villages of MPUAT, Udaipur. For selection of sample, IFS model wise list of women was procured from AICRP on Home Science. From the list, it was observed that crop+horticulture and crop+poultry IFS models were promoted among 50 and 60 respondents, respectively. Thus there were total 110 rural women and all were included in the study. For accomplishing the present investigation, interview technique was used to collect information from the rural women beneficiaries. For this purpose, interview schedule was developed by the investigator by consulting review of literature. The schedule included information related to adoption of recommended technologies of IFS models like improved varieties of maize and wheat, seed selection, application of fertilizer and manure, types of irrigation, variety of fruits and vegetables seeds, plant selection criteria, site selection, nursery, transplanting, plant to plant distance, general cultural practices, construction of poultry house, feeding material and quantity, different health checkup, major poultry diseases, vaccination, collection of eggs, feeding of birds, bird breeds, heating during winters, marketing etc. along with reasons of adoption and income generation from the IFS models. The respondents were contacted individually and interviewed at their homes and farms. The questions were asked in local dialect (*Mewari*), which helped them to understand the questions more clearly.

Analysis of data
In the present study, adoption is referred to the acceptance and practice of different IFS modules by the farm women. To know the extent of adoption of IFS modules an attempt was made as detailed below. The information pertaining to adoption of different technologies were recorded on a three point continuum namely always, sometimes, never with scores 2, 1 and 0 respectively. Further adoption index developed by Singh and Singh (1981) was used to quantify the adoption behaviour of the respondents. It is given below:

$$A.I. = E/P \rrbracket X\ 100$$

Where,
A.I. = Adoption index
E = Extent of adoption of a given practice
P = Potentiality of adoption of a practice

Categories of adoption with score range

S. No.	Adoption categories	Score range (%)
1.	Low	Below 33.33
2.	Medium	33.33-66.66
3.	High	Above 66.66

Results and Discussion
1. Adoption of recommended technologies among the respondents under crop+ horticulture IFS model
Perusal of the table 1 reveals the adoption of crop+horticulture IFS model by the respondents.

Table 1: Adoption of crop+horticulture IFS model by the respondents n=50

S. No.	Practices	Adoption index (%)
1	Selection of site	70
2	Selection of crop	86
3	Use of HYVs/hybrid verities	50
4	Application of fertilizer and manure	66
5	Seed treatment	50
6	Weed management	70
7	Irrigation application	70
8	Appropriate distance between two crops	20
9	Postharvest management practices	30
10	Insect-pest management	22
11	Soil testing	60
12	Organic farming	68
13	Multiple farming	62

It is apparent from the data presented in Table 1 that majority of the respondents adopted the practices of crop+horticulture IFS model i.e. selection of appropriate crop (86%), selection of appropriate site (70%), weed management techniques (70%), irrigation application (70%) and organic farming practices (68%). More than half of the respondents (66%) used appropriate fertilizer and manure, multiple farming (62%) and soil testing (60%). Half of the respondents (50%) used hybrid verities of maize, wheat and vegetables and also did seed treatment. About 22 to 30 per cent of the respondents maintained appropriate distance between two crops, followed insect pest management practices and post-harvest management practices. Rathod *et al*. (2013) [5] studied Integrated Farming Systems in Maharashtra state and found that the sample farmers had adopted agriculture and dairy farming systems followed by vegetable cultivation (83.33%), horticulture/fruit crops (65%), forage crops (45%), goat rearing (22.50%), poultry (29.17%), vermicomposting (30.83%), sericulture and apiculture farming systems (18.33% each).

Table 2: Distribution of the respondents according to overall adoption of recommended technologies n=50

Categories	Frequency	Percentage
Good (Above 66.66-100)	20	40
Average (33.33 - 66.66)	26	52
Poor (Less than 33.33)	4	8

Distribution of the respondents in different adoption categories reveal that majority of them (52%) were in category of average level of adoption of horticultural activities whereas, 40 per cent respondents belonged to good adoption category. Only eight per cent respondents were found in poor adoption category (Table 2).

Table 3: Distribution of the respondents based on the reasons behind adoption of crop+horticulture IFS model n=50

S. No.	Reasons	f	%	Rank
1	To earn money	46	92	1
2	Utilization of money from savings	27	54	3
3	To utilize time	18	36	7
4	Availability of raw material	21	42	6
5	Persuasion from the family members	0	0	12
6	IFS model can be managed at household level	10	20	9
7	Easy to manage	14	28	8
8	High demand of product	30	50	5
9	Desire to do something	32	64	2
10	Manage family crisis	22	44	5
11	Motivation from another successful farmer	14	28	10
12	Due to own interest	26	52	4
13	Training from AICRP	9	18	11

Visualization of Table 3 depicts that there were many reasons to adopt the horticulture model with main crop. Majority of the respondents (92%) reported that, to earn money for the family living was the main reason to adopt the crop+horticulture model.

During an informal discussion respondents expressed that they had no other option as husband's income was not satisfactory for survival and meeting out daily family expenses. Further 64 per cent respondents had inner desire and self-motivation for doing something by which they could make their own identity in the society while 54 per cent respondents would like to utilize their savings in horticultural practices which would be profitable for them. Rajeshwari (2013) [4] reported that four types of farming systems were found to be practised by farmers in the study area, namely, crops (17%), crops + livestock (43%), crops + livestock + sericulture (18%) and crops + livestock + horticulture (17%).

It is further evident from Table 3 that 52 per cent of the respondents reported that they had their own interest in horticulture model as they had knowledge to grow fruits and vegetables and utilized money from their savings. About half of the respondents (50%) reported that the reason was high demand of vegetables and fruits in nearby market, 44 per cent reported family crises at their home, such as husband not working and some were widow and others explained that there was easy availability of raw material in their local premises such as seeds, fertilizers and other facilities. Apart from this, there were other reasons for adoption of horticulture IFS model like, nearly one third of the respondents (36%) wanted to utilize their leisure time, few of them (20%) reported that horticulture model could be managed at household level as there was no requirement of extra labour and at the same time 18 per cent respondents received training from Agricultural University. According to Kumara *et al.* (2015) [3] almost all the farmers had adopted agriculture (100%) in Davanagere district of Karnataka state. Majority of the farmers had adopted dairy farming (83.33%) followed by fodder crops (45%), vermicomposting (30.83%), poultry (29.17%), sheep rearing (18.33%), goat rearing (22.50%), banana (15.96) and vegetables (12.50%).

2. Adoption of Crop + Poultry IFS Model by the respondents
Perusal of the table 4 reveals the adoption of crop+poultry IFS model by the respondents.

Table 4: Adoption of crop+poultry IFS model by the respondents n=60

S. No.	Practices	Adoption index (%)
1	Use of HYVs/hybrid verities of maize and wheat	50
2	Application of fertilizer and manure	63.33
3	Irrigation application	58.33
4	Improved variety of chicks	66.66
5	Maintenance of female and male ratio 10:1	75
6	Flock size should be >20	58.33
7	Ideal fodder	66.66
8	Cleanliness of house	75
9	Provision of night shelter	75
10	Selling of male birds after 16 weeks	71.66
11	Vaccination	16.66
12	Isolation of the sick birds from the flock	75
13	Treatment by veterinary doctor	16.66

Table 4 shows that three fourth of the respondents (75%) cleaned the house, provided night shelter, maintained female and male ratio and isolate the sick birds from flock. Majority of the respondents (71.66%) sell their bird after 16 weeks, 66.66 per cent provided ideal fodder to hen, and use improved verity of chicks and used appropriate fertilizer and manure (63.33%). More than half of the respondents (58.33) followed appropriate irrigation and adopted flock size more than 20. Only 16.66 per cent of the respondents followed vaccination and got treatment for their birds by veterinarian. A study on impact of NAIP in adoption of livestock based IFS interventions in tribal area of Rajasthan by Ramesh *et al.* (2013) [6] found that majority of tribes (75%) had high adoption level of livestock based IFS interventions, followed by 21 per cent of them had adopt moderately IFS interventions.

Table 5: Distribution of the respondents according to overall adoption of recommended technologies n=60

Categories	Frequency	Percentage
Good (Above 66.66-100)	10	16.66
Average (33.33 - 66.66)	42	70
Poor (Less than 33.33)	8	13.33

Distribution of the respondents in different adoption categories reveals that majority of them (70%) were in category of average level adoption of poultry activities whereas, 16.66 per cent respondents belonged to good adoption category. Only 13.33 per cent respondents were found in poor adoption category (Table 5).

Data in Table 6 show various reasons for adopting crop+poultry IFS. It was found that cent per cent respondents wanted to earn money to fulfill their family requirements whereas 60 per cent of the respondents reported that poultry product had high demand in the market such as eggs and meat. Utilization of leisure time and desire to do something for the goodness of family were reported by half of the respondents (50%). Equal number of the respondents (41.66%) reported that poultry activity could be managed at household level with the help of family members, relatives and others (41.66%) suggested that to overcome the family crises they adopted the model.

Table 6: Distribution of the respondents based on the reason behind adoption of crop+poultry model n=60

S. No.	Reasons	f	%	Rank
1	To earn money	60	100	1
2	Utilization of money from savings	12	20	8
3	To utilize time	30	50	3
4	Availability of raw material	14	23.33	7
5	Persuasion from the family members	14	23.33	7
6	IFS model can be managed at household level	25	41.66	4
7	Easy to manage	23	38.33	5
8	High demand of product	36	60	2
9	Desire to do something	30	50	3
10	Manage family crisis	25	41.66	4
11	Motivation from another successful farmer	12	20	8
12	Due to own interest	21	35	6
13	Training from AICRP	0	0	9

It is further evident from Table 6 that more than one third of the respondents (38.33%) reported that it is easy to manage as they had knowledge in this work whereas equal number of the respondents (35%) had their own interest to adopt poultry activity as they thought it is profitable activity. Some other reasons given by respondents were motivation by other progressive farmers in the village, easy availability of raw material and utilization of saved income in a profitable avenue.

Conclusion
It can be concluded from the findings that, 52 per cent pf the respondents were found in average adoption category whereas, 40 per cent were in good adoption category in crop+horticulture IFS model. Regarding crop+poultry IFS model 70 per cent pf the respondents were found in average adoption category whereas, 16.66 per cent were in good adoption category in crop+horticulture IFS model. Only 8-13.33 per cent of the respondents were found in poor adoption category. Hence, there is a need to pay more emphasis on Integrated Farming System aspects during the trainings. For exposure to new technologies, regular visits of women should be organized at KVK and ATIC center, etc.

References
1. Dashora LN, Singh H. Integrated Farming System-Need of Today. International Journal of Applied Life Sciences and Engineering. 2014;1(1):28-37.
2. Channabasavanna AS, Biradar DP. Relative performance of different rice-fish-poultry integrated farming system models with respect to system productivity and economics. Karnataka Journal of Agricultural Sciences. 2009;20(4):706-709.
3. Kumara O, Basavarajappa DN, Sannathimmappa HG, Danaraddi V, Patil R. Integrated Farming System Model for Bhadra Command. IOSR Journal of Agriculture and Veterinary Science. 2015;8(4):58-60.
4. Rajeswari SM. Economics of Different Integrated Farming Systems and their Impacts on Employment and Livelihood in Eastem Dry Zone of Karnataka state. M. Sc. (Agri.) thesis submitted to University of Agricultural Sciences, Bengaluru; c2013.
5. Rathod MK, Deshmukh K, Raut S. Integrated farming system model for the farmers of Wardha district in Vidarbha. Indian Journal of Applied Research. 2013;3(8):1-2.
6. Ramesh KD, Dangi KL, Ranawat Y. Impact of NAIP in adoption of livestock based IFS interventions in tribal arca of Rajasthan, India. In proceedings of international conference on extension educational strategies for sustainable agricultural development-a global perspective. Univ. Agric. Sci., Bangalore, India; c2013. p. 116.