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Short Research Article

Impact of Intervention Program on Production Technologies of Horticultural Crops among Rural Women Assam, India

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Abstract

Women play a vital role both in farm and household activities. There is some evidence that despite the contribution made by rural women in food security they are not being well served by the existing extension system. They are in urgent need of understanding and acquiring new knowledge and skills on cultivation of horticultural crops, so that they could contribute more effectively to the production process. The present study was conducted to identify the knowledge of rural women of Assam, India about scientifically validated existing production technologies and disseminate the same among themselves. A multi-stage purposive-cum-stratified random sampling design was followed covering 1,500 respondents for the present study. The study revealed that majority of the rural women had a very low level of knowledge in all the aspects of cultivation of horticultural crops namely nursery production, nutritional management, plant protection, followed by production practices of horticultural crops, seed production, land preparation and harvesting. Five trainings were organized for rural women on various aspects of production technologies of horticultural crops and this intervention helped in improving the knowledge which was observed through feedback received from post-training analysis after one month and participation in open forum discussion. The rural women were highly motivated to adopt improved production technologies in their field and interested to consider this area as one of the entrepreneurial activities of self-help group.

1. Introduction

Agricultural development in India has direct relationship to the quality of rural life as well as pace of rural development; this is so as high percentage of families depend on agriculture either directly or indirectly. Farming has been a family enterprise and small and continues to be so. Homestead gardening is very much common in rural areas in India from ancient time and is practiced throughout the year. Homestead production of fruits and vegetables provides the households with direct access to important nutrients that may not be readily available or within their economic rich. So, homestead gardening would be a good means to improve household food security (Talukder et al., 2002). Farmer, his wife and grown up children, all participate in production. Women contribution is not new in agriculture and they have been the partners of family agricultural enterprise from past. According to Baba et al. (2010) and Srivastava (2013) 60 to 70% horticultural operations are carried out by women in rural areas. Women have played major role for its productive activities for which they carryout substantial volume of work. They also perform activities for commercial production of vegetables. It is generally assumed that farm managers and decision makers are men who will pass on information to their wives, if they need it and inevitable barriers prevent women from gaining access to information and technology of horticultural production. There is some evidences that despite the contribution made by rural women in food security, they are not being well served by the existing extension system in developing countries. Data based on Rural Women under AICRP of Assam (Anonymous, 2001) and Jamali (2009) found that rural women had poor access to extension agency and scientific information which compel them to take help from their counterpart. Therefore there is a urgent need to know the knowledge of rural women on cultivation of horticultural crops and disseminate the same, so that rural women could contribute more effectively to the production process. The above background, therefore, provides the necessary basis and justification for this research study. The

investigation thus focuses to identify the existing knowledge of rural women about scientifically validated production technologies and to disseminate among them.

2. Materials and Methods

2.1. Sample and sampling procedure

A multistage purposive cum stratified random sampling design was carried out in the year 2011-13 in the state of Assam, India. From the six agro-climatic zones of Assam, three zones, namely lower, upper and central Brahmaputra valley zones were purposively selected. Two districts from each agro-climatic zone, i.e. total six (6) districts were selected purposively for carrying out the study. Again a list of blocks was prepared from each of the selected districts and two blocks from each district were randomly selected. Thus the total number of blocks were 12 (twelve) numbers. From each selected block a list of villages were collected with the help of extension functionaries of respective selected District Agricultural and block office where rural women are mostly engaged in different activities cultivation of horticultural crops along with their family members as well as having influence of agriculture extension services. Further from the list, five (5) villages from each block were selected by using Simple Random Sampling method. Thus all total sixty (60) villages were selected for the present study. From each selected village twenty five (25) farm women were randomly selected, thus all total one thousand five hundred (1500) rural women were selected for carrying out the first objective of the present study. For another objective, five trainings were organized for rural women regarding various aspects of production technologies of horticultural crops in collaboration with college of agriculture, Assam Agricultural University (AAU), Jorhat and local NGO (non-government organization). Thirty (30) rural women of Jorhat district of Assam (India), who were representative of self-help group (13) and actively involved in the various activities of cultivation of horticultural crops were selected for imparting the training.

2.2. Variable and its measurements

2.2.1. Knowledge of rural women about scientifically validated production technologies

A knowledge check was developed for measuring knowledge of rural women about scientifically validated production technologies of horticultural crops in seven different aspects namely; nursery production, land preparation and planting, production practices, nutritional management, plant protection, harvesting and seed production. The scale consisted of 10 (ten) statements in each aspects, thus total 70 (seventy) statements were there. The responses of rural women were recorded on a three point continuum as know thoroughly, know somewhat and not known and scored as 3,2,1. On the basis of score obtained by the farm women they were categorized into the 3 categories: Low with score range below (X- Sd), medium with X-Sd to X+Sd and high with above X+Sd.

2.3. Statistical analysis

A pre-tested interview schedule was used for getting the complete and desired information. The collected data were coded, tabulated and analyzed by using appropriate tests and techniques. The statistical techniques along with their uses were:

Percentage: It is a fraction expressed with 100 as its denominator. It is used to any set of data for comparison.

Mean: It is the arithmetic average and was used to measure the type of the observation as a whole. The mean for all the readings were worked out as mentioned below.

$$\text{Mean } \bar{X} = \frac{\sum X}{n}$$

Where, $\sum X$ = Summation of item values

N = Number of item

Standard deviation: It was used to find out the level of knowledge, i.e. low, medium and high. The formula is mentioned below:

$$S.D = \sqrt{\frac{\sum(xi-\bar{x})^2}{n-1}}$$

Where, d = Standard deviation

n = Total number of respondent

x_i = Variables of the study

$\bar{x}$ = Mean of the distribution

Co-efficient of correlation: To find out the relationship between knowledge and independent variables Pearson's product moment co-efficient of co-relation was used. The overall knowledge of farm women were calculated to study the relationship. The formula used for calculation of Correlation Co-efficient is:

$$r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sqrt{\sum x^2 - \frac{(\sum x)^2}{n} \quad \sum y^2 - \frac{(\sum y)^2}{n}}}$$

Where, r = Correlation co-efficient

x = Independent variable

y = Dependent variable

$\sum xy$ = Summation of total product of x and y

n = Total number of respondent

3. Results and Discussion

3.1. Existing knowledge of rural women about scientifically validated production technologies

The results of the knowledge of the rural women on seven

major aspects of production technologies of horticultural crops are presented in the Table 1.

The overall picture of the knowledge level of rural women revealed that majority of the respondents had low level of knowledge in nursery production (74.53%), nutritional management (60.33%) and plant protection (54.00%) followed by production practices of horticultural crops (48.06%), seed production (46.80%), land preparation (46.13%) and harvesting (30.93%). It indicates that these are the important areas in which the rural women felt lack of confidence and inadequacy of knowledge to perform these operations effectively.

It is interesting to note that <50% of rural women were well acquainted with improved methods of harvesting (35.13%) and production practices (26.73%). Thus rural women had less knowledge on production technology of horticultural crops and this might be due to less exposure of farm women to extension services (Devi, 2000 and Phukan, 2012)

3.2. Relationship between knowledge and selected independent variables

Table 2 shows the relationship between level of knowledge and selected independent variables. The findings revealed that correlation between knowledge level and age was found to be positively significant. This can be attributed to the reason that as age increases, there might be more exposure and more experience. Again from the table it was observed that knowledge level and education was significant at 0.01 level. It is known that the formal education widens the horizon of knowledge of an individual as educated women can gather information by referring to various information sources. According to Wasnik (2006) and Bharali (2003) knowledge increase with increase in age and education . It was also found that higher the technical knowledge of farm women, greater they participate in taking decisions about farm and family affairs.

3.3. Disseminate scientifically validated production technologies among the rural women

To fulfill the second objective, five training were organized for rural women regarding various aspects of production technologies of horticultural crops in collaboration with college of agriculture, Assam Agricultural University (AAU), Jorhat and local NGO (non-government organization). Initially a pre-knowledge test was conducted to see the existing knowledge of rural women about the production technologies of horticultural crops. Simultaneously a post knowledge test was introduced after completion of each training to see the effectiveness of the training programme. Further to see the retention of the information given to the rural women, a post knowledge test covering all aspects was carried out after one month of completion of training programme. The total knowledge score of each aspect of production technologies was 900 (30 respondents×30 maximum score on three point scale) total score obtain by the rural women were presented in Table 3.

A perusal of the table reveals that nursery raining of *rabi* vegetables crops, management practices of fruit crops, and production practices of vegetable crops were the first three areas where the knowledge of rural women increased after the training.

The outcome of the training programs which were organized for dissemination of production technologies to rural women under the present study showed a tremendous change in the overall

Table 1: Distribution of the respondents according to their level of knowledge regarding seven aspects of production technologies

Aspects	Level of knowledge	Frequency	Percentage
1. Nursery production	Low	1118	74.53
	Medium	318	21.20
	High	64	4.27
2. Land preparation	Low	692	46.13
	Medium	439	29.27
	High	369	24.60
3. Production practices	Low	721	48.06
	Medium	378	25.20
	High	401	26.70
4. Plant protection	Low	810	54.00
	Medium	418	27.87
	High	272	18.13
5. Nutritional management	Low	905	60.33
	Medium	466	31.07
	High	129	8.60
6. Harvesting	Low	464	30.93
	Medium	509	33.93
	High	527	35.13
7. Seed production	Low	702	46.80
	Medium	620	41.13
	High	178	11.87

Table 2: Relationship between knowledge and selected independent variables N=1500

Sl. No.	Independent Variables	Correlation co-efficient
1.	Age	0.31^{**}
2.	Education	0.25^{**}
3.	Farm size	0.10^{NS}
4.	Family size	0.17^{NS}
5.	Contact with extension agents	0.15^{NS}

$^{**}p$=0.01; NS: Non-significant

behavior of the rural women. The existing knowledge level of rural women in the five aspects of production technologies of horticultural crops namely nursery raising of Rabi vegetable crops, management practices of fruit crops, production practices of vegetable crops, nutritional management of vegetable and fruit crops and plant protection had been improved which were observed through feedback received from post training analysis after one month and participation in open forum discussion. The scientists of Agriculture and Home Science College, AAU, Jorhat were invited to get the feedback from the trainees as well as effectiveness of said training program. In this forum the trainers got the opportunities to clarify their doubts regarding consumption of fruits and vegetables in daily diet to get rid of different common ailments and problems faced in the field after applying the scientific information in their respective garden. The steps undertaken for dissemination of scientific information in the study really enhanced the existing knowledge of the rural women. The impact of training programme has been presented in Table 4.

The rural women were highly motivated to adopt improved production technologies in their field and interested to consider this area as one of the entrepreneurial activities of SHG.

Table 3: Differential knowledge score of rural women before and after training N=30

Areas	Knowledge score (before training)	Knowledge score (after training)	Knowledge score (after one month)	Differential knowledge score		Rank on retention of knowledge
				Knowledge gained	Knowledge retained (after one month of training)	
1. Nursery raining of rabi vegetables crops	409	860	820	451	411	I
2. Production practices of vegetable crops	427	712	611	285	184	III
3. Management practices of fruit crops	456	765	721	309	256	II
4. Nutritional management of vegetable and fruit crops	385	642	542	257	157	IV
5. Plant protection	315	525	325	210	37	V

Table 4: Impact of training programme on rural women.

Sl. No.	Kinds of impact	Categories
1.	Behavioral change	Taking active part in decision of adopting improved production technologies of horticultural crops by the trainees of the project in their field. Improvement of local women institution that means developing team spirit among the group members of self-help group (SHG) and are being functionally connected with sources of information and availability of inputs.
2.	Technological change	Practically the selected numbers of trainees of the SHG adopted the improved practices of production technologies of horticultural crops in their field and highly motivated to adopt this technique in future by looking at the increased productions of the crops in their respective garden. Very frequently they used to visit the department for further information of different crops growing in their area. A group of trainees (agriculture extension officer) from Extension Education Institute, AAU were taken to show the involvement of SHG in the vegetable garden. Most of the SHGs showed their keen interest to take up this area, i.e. cultivation of horticultural crops as one of the important economic activity for cash income. Two of them already have started seasonal vegetable nursery rising as one of their income source. They could raise their total income by selling the seedlings in the local market. Members of one of the SHGs are continuously engaged in cultivation of vegetable and have sold the excess amount in the market. Some trainees very frequently reported their success to the training organizer.

4. Conclusion

In spite of key roles performed by rural women in farm activities, they have low level of knowledge on scientific production technologies of horticultural crops. Thus there is an immediate need for providing formal and informal educational opportunity to rural women. Simultaneously extension training in updating the knowledge and skill of rural women in the areas of horticultural cultivation needs special attention. Further women need much greater access to technical information through Farmers Training Centers or Krishi Vigyan Kendras (KVKs) of State Agricultural Universities.

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