

RESEARCH ARTICLE

Participation of Tribal Farm Women in Fruit Crops Production Practices in Arunachal Pradesh

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ABSTRACT

A study was conducted in 7 districts of Arunachal Pradesh, namely, Papumpare, Lower Subansiri, East Siang, West Siang, West Kameng, Namsai and Lohit. A total of 420 respondents were selected to determine the extent of participation of tribal farm women in different fruit crop production activities along with the problems faced by them in different fruit crops production activities. It was found that among all the activities of fruit crop production, maximum (56.67%) number of respondents had 'independent participation' in cleaning of fruit plant, 87.62 per cent of the respondents had 'joint participation' in selection of plot and 79.52 per cent of the respondents had 'no participation' in smudging. The study highlights the correlates of the extent of participation in fruit crop production with selected personal variables of the tribal farm women. The results revealed that the variable viz. family size ($r=0.110^$) exhibited a positive and significant relationship with the extent of participation whereas the variables viz. age, educational qualification, family type, organizational membership and landholding did not exhibit any significant relationship with extent of participation. Findings revealed that in the case of infrastructural problems, improper transport facilities were ranked one (1.35), nutritional deficiency among plants (0.95) stood first for production problems, lack of Govt. subsidy (1.86) becomes first barrier for economic problems, non-availability of scientific technology (1.12) ranks first for technological problems, similarly, overloaded household work (1.68) in case of socioeconomic problems and health problems (0.66) came first for others problems faced by women in fruit production.*

Key words: Participation; Tribal farm women; Fruit crops production; Problems.

The largest state of North Eastern India, Arunachal Pradesh, is bestowed with an abundance of plant genetics and sole physiographic conditions with large climatic variations that enables the state to produce different types of fruits and other horticultural crops. Fruits such as kiwi, mandarin, jackfruit, banana, apple, peach, plum, pear and grapes are cultivated on a semi-commercial scale as these fruit crops have a good scope of vegetation in the state.

Women play a major role in agriculture and allied activities. The extent of women's involvement and the type of activities performed by them in agriculture and allied fields varies greatly from state to state, even within a state. Women perform backbreaking activities both in the field and in their households, thus leading a hard life. (Biradar, 2021). Women play a

crucial and significant role in various field operations in horticulture, prominently in production and post-production activities like seed sowing, weeding of horticultural crops, field preparation, harvesting, cleaning and collection of produce, sorting and grading. In India, 60 per cent women are engaged in agricultural operations in rural areas and they are performing domestic chores as well as farming activities with men folk as equal partners (Goudappa et al. 2012)

Tribal farm women in Arunachal Pradesh participate in fruit crop production activities not only for food security but also for employment and income enhancement. Along with dual responsibility in field and home, women face various problems in the cultivation of fruit crops, which may be infrastructural, production, economical, technological in nature.

Domestic responsibilities, not willing to take risk, lack of awareness of the programmes running for the development and illiteracy; small size of land holding, high price of market inputs like seed and fertilizer, lack of infrastructure, and non-availability of loans and inputs in time; unavailability of extension functionaries, lack of technical guidance, lack of required field staff and inadequate supporting facilities etc were main constraints (Sunetha and Papnai, 2018). It is the need of the hour that tribal farm women should get adequate training so that they contribute effectively to the process of production and feel empowerment in the concerned field. Moreover, research findings on the participation and problems faced by tribal farm women in different fruit crop production activities are limited. Keeping the above facts in mind, an attempt was made to analyse the extent of participation of tribal farm women in different fruit crop production activities along with the problems faced by them in such activities.

METHODOLOGY

The research study was carried out in 7 districts of Arunachal Pradesh viz, Papumpare, Lower Subansiri, East Siang, West Siang District, West Kameng district, Namsai and Lohit. A combination of a purposive and simple random sampling method was used for the present study. One (1) block from each district was selected by a simple random sampling method. From each block, 3(three) villages were selected having higher fruit production. Hence, a total of twenty-one (21) villages were selected to carry out the present study. The number of respondents was 420, selected based on the last 3 to 4 years’ experience of respondents in fruit crop production activities. A structured interview schedule was used to collect data during January to June 2022. A total of 14 major fruit crops activities were considered for the study and the extent of participation of women were measured in a three-point continuum as ‘independent participation’, ‘joint participation’ and ‘no participation’ with a score of 2, 1 and 0 respectively. A total of six (6) independent variables were taken to find their relationship with extent of participation in fruit crops production activities. As many as 29 major problems in different areas were finally identified, which were considered as the most important problems for tribal farm women in fruit production activities. These identified problems were further categorized into six different categories such as infrastructural

problems, physiological and production problems, economic problems, educational / technological problems, socio-psychological problems and, lastly, any other problems. Respondents were asked to give their responses against each problem and, accordingly, mean score and ranking were assigned. Appropriate statistical techniques such as frequency, percentage, mean, ranking and correlation were used for analysis and interpretation of results.

RESULTS AND DISCUSSION

Participation of respondents in different activities in fruit production : Table 1 revealed the distribution of respondents according to participation of respondents in different activities of fruit production. It was found that majority of the respondents had ‘independent participation’ in cleaning of plant (56.67%) followed by harvesting (43.10%), selection of crop variety and mulching (37.14% each), earthing up (36.90%),

Table 1. Distribution of respondents according their extent of participation in different activities of fruit crops production (N=420)

Activities	IP	JP	NP
	No. (%)	No. (%)	No. (%)
Selection of plot	52 (12.38%)	368 (87.62%)	-
Land preparation	105 (25.00%)	315 (75.00%)	-
Selection of variety	156 (37.14%)	223(53.10%)	41(9.76%)
Buying of seeds	63(15.00%)	189(45.00%)	168(40.00%)
Seeds sowing	154 (36.67%)	93(22.14%)	173(41.19%)
Planting	77(18.33%)	297(70.71%)	46(10.95%)
<i>Intercultural operations</i>			
DE suckering	21(5.00%)	77(18.33%)	322(76.67%)
Weeding	121(28.81%)	270(64.29%)	29(6.90%)
Training	98(23.33%)	219(52.14%)	103(24.52%)
Pruning	152(36.19%)	180(42.85%)	88(20.95%)
Thinning	51(12.14%)	63(15.00%)	306(72.86%)
Mulching	156(37.14%)	180(42.85%)	84(20.00%)
Earthing up	155(36.90%)	182(43.33%)	83(19.76%)
Propping	53(12.62%)	58(13.81%)	309(73.57%)
Wrapping of fruit	60(14.29%)	67 (15.95%)	293(69.76%)
Smudging	33(7.86%)	53(12.62%)	334(79.52%)
Cleaning of plant	238(56.67%)	84(20.00%)	98(23.33%)
White washing of fruit tree base	83(19.76%)	162(38.57%)	175(41.67%)
Irrigation/watering	109(25.95%)	171(40.71%)	140(33.33%)
Nutrient management	97(23.10%)	86(20.48%)	237(56.43%)
Pest management	31(7.38%)	181(43.10%)	208(49.52%)
Harvesting	181(43.10%)	239(56.90%)	-
Grading and sorting	134(31.90%)	158 (37.62%)	128(30.48%)
Storage	149 (35.48%)	257 (61.19%)	14(3.33%)
Marketing of produce	90 (21.43%)	75(17.86%)	255(60.71%)

IP=Independent participation; JP=Joint participation (with husband); NP=No participation.

showing of seeds (36.67), pruning (36.19%), storage (35.48%), grading and sorting (31.90%), weeding (28.81%), irrigation/watering (25.95%), land preparation (25.00%), training (23.33%), nutrient management(23.10%), marketing of produce (21.43%), white washing of fruit tree base (19.76%), planting (18.33%), buying of seeds (15.00%), wrapping/covering of fruit (14.29%), propping (12.62%), selection of plot(12.38%), thinning (12.14%), smudging (7.86%), pest management (7.38%) and de-suckering (5.00%).

Further, the table showed that respondents had 'joint participation' with their husbands or other member of family in selection of plot(87.62%) followed by land preparation (75.00%), planting (70.71%), weeding (64.29%), storage of fruit crops (61.19 %), harvesting (56.90%), selection of variety (53.10%), training (52.14%), buying of seeds (45.00%), earthing up (43.33%), pest management (43.10%), pruning & mulching (42.85% each), irrigation/watering (40.71%), whitewashing of fruit tree (38.57%), grading and sorting (37.62%), seed sowing (22.14%), cleaning of plant (20.00%), de-suckering(18.33%), marketing of produce (17.87%), wrapping/covering of fruit(15.95%), thinning(15.00%), propping(13.81%) and smudging (12.62%).

It was also found that respondents had 'no participation' in smudging (79.52%) followed by de-suckering (76.67%), propping (73.57%), thinning (72.86%), wrapping/ covering of fruit (69.76%), marketing of produce (60.71%), nutrient management (56.43%) etc.

It can be concluded from the above findings that women had a significant participation and role in various fruit crop production activities, straight from selection of fruit crops to marketing activities. Majority (56.67%) of the respondents had independent participation in cleaning of fruit plants, 87.62 per cent of respondents had joint participation with their husbands in the selection of plots, more than half (56.90%) of the respondents had joint participation in harvesting. This finding is in conformity with (Nath et al.,2022) where it was found that more than half of the respondents (59.00%) participated jointly with family members in harvesting. The significant finding was, smudging and DE suckering were practiced the least. It can be concluded that joint participation of respondents shows that the participation of womenfolk in horticulture is as important as men folks.

Relationship between selected personal variables with participation of respondents : The relationship between selected personal variables of the tribal farm women and their extent of participation in fruit crop production activities was calculated with the help of correlation coefficient (Table 2). It is observed from Table 2 that the variable viz, family size ($r=.110^*$) exhibited a positive and significant relationship with the extent of participation, thereby indicating that any positive increase in size of respondents' families will lead to more participation in different fruit crop production activities by tribal women growers. Similar finding was also reported by *Moktan and Mukhopadhey (2012)* where they found that family size had significant relationship with participation of women in farm activities. However, the findings showed that age, educational qualification, family type, organisational membership and landholding were not significant with the extent of participation in fruit crop production activities by tribal women growers. *Sharma and Badodaya (2016)* also found that age was not correlated with extent of participation of rural farm women. The findings are also supported by *Tripathi et al. (2015)* where they found that the type of family and education level were not affected by the women participation in cultivation of horticultural crops.

Problems faced by tribal farm women in different activities of fruit crops production: The problems faced by respondents in performing different activities of fruit crops production is depicted in Table 3. Below are the findings of problems under different categories: *Infrastructural problems* : Among the infrastructural problems, improper transport facilities, soil preparation and marketing problems were ranked as I, II and III with mean scores of 1.35, 1.01 and 0.98 respectively. Located at the hilly region, the road communication in the state is poor, where many villages are not properly connected with good roads. People are still

Table 2. Relationship between selected personal variables with participation of respondents

Personal variables	"r"
Age	-0.078
Education Qualification	0.017
Family type	0.072
Family size	0.110*
Organisational membership	-0.059
Land holding	-0.050

*.Correlation is significant at 0.05 level (two-tailed)

Table 3. Distribution of respondents according to problems faced by them in different activities of fruit crops production (N=420)

Problem Faced	MS	Rank
<i>Infrastructural problems</i>		
Area of cultivable land	0.12	IV
Lack of irrigation facility	0.11	V
Manuring problem	0.05	VI
Soil preparation	1.01	II
Improper transport facility	1.35	I
Marketing problem	0.98	III
<i>Physiological/ production problem</i>		
Disease and pest infestation on crops.	0.61	III
Incidence of nutritional deficiency	0.95	I
Poor crop production	0.75	II
Physiological disorder	0.03	V
Unavailability of HYV/ improved seeds	0.21	IV
<i>Economic problems</i>		
High cost of labour	1.77	II
Monetary constraints for cultivation	1.65	III
Lack of government subsidy	1.86	I
High price of inputs such as seeds, ferti.,etc.	0.13	V
Lack of Kishan credit card.	0.72	IV
<i>Educational / technological problems</i>		
Lack of technological know how	0.85	III
Lack of training on crop cultivation	0.69	V
Unavailability of scientific technology	1.12	I
Lack of knowledge on post- harvest technology	0.80	IV
Lack of group discussion on improved scientific methods of cultivation	0.93	II
<i>Socio-psychological problems</i>		
Lack of involvement in decision making	0.78	III
Overloaded household work	1.68	I
No contact with extension personnel	0.93	II
Lack of self confidence	0.50	IV
Lack of support from family members	0.07	V
<i>Other problems</i>		
Natural calamities, (flood, drought, rainfall etc.)	0.26	II
Health problem	0.66	I
Confined to domestication	0.10	III

practicing the traditional methods of cultivation; hence soil preparation is mostly ignored here. Also, due to poor road connectivity, marketing is a major problem here that forces people to sell their products in the local market at low prices. The other major problems under infrastructural facilities were lack of irrigation facilities, manuring problems and the remote location of the farms. Similar findings were reported by Selvarani (2000) in his study, which indicated that among all the various physical constraints of tribal farmers studied, remoteness of their farms and poor road connectivity was expressed as the major physical constraint.

Physiological/production problems : It was found that among physiological/ production problems, incidence of nutritional deficiency, poor crop production and disease and pest infestation on crops were ranked I, II and III with mean scores of 0.95, 0.75 and 0.61 respectively. As a result of the use of outmoded methods of cultivation, very little attention was given to fertilizer management. Hence, the incidence of nutritional deficiencies occurred and lead to poor crop production. Further, the lack of proper nutrient management resulted in an increase in disease and pest infestation. Non-availability of improved planting varieties was also a major problem in the production of fruit crops. Selvarani (2000) also stated that the incidence of pests and diseases, and lack of plant protection methods were the major technological constraints for tribal women farmers.

Economical problems : It was found that the majority of the farmers belonged to marginal and small class farmers. Due to lack of government subsidies, they were unable to afford the cost of modern farming techniques by themselves. At the same time, the cost of labour and other inputs was very high and they did not have the benefits of Kisan Credit Cards. Hence, under economic constraints; monetary constraints (1.65) along with the high price of seeds, fertilizers and chemicals (0.13) were the major problems faced by the farmers here. These findings were similar to Arunkumar (2002) and Bhuvaneshwari (2005) who found that major economic constraints encountered were high cost of inputs, high wages to laborers and high rate of interest, complexity of practice, lack of training, unfavorable climatic factors, requirement of physical strength, lack of credit and lack of marketing experience as the major constraints faced by the tribal women. Also, due to lack of awareness, even if the government is undertaking various development programmes, it fails to achieve its goal. Economic constraints identified were considered as the barrier in increasing production and productivity (Samantaray et al., 2009).

Educational and technological problems : Regarding educational or technological problems; unavailability of scientific technology, lack of group discussion on improved scientific methods of cultivation and lack of technological knowhow are ranked I, II and III with mean scores of 1.12, 0.93 and 0.85 respectively. This might be due to the lack of proper training, technical guidance and non-availability of extension services. This finding is similar to Fabiyi et al. (2007) where

they stated that the lack of separate land for women and inadequate contact with extension agents are serious constraints faced by women farmers. At the same time, the majority of the rural women are uneducated, unskilled and tradition-bound. Therefore, their productive capacities are also low, which ultimately results in low returns from the field (Das, 2012).

Socio-psychological problems : Under socio-psychological problems, overloading with household work, no contact with extension personnel and lack of involvement in decision making were ranked as I, II and III with mean scores of 1.68, 0.93 and 0.78 respectively. When it comes to socio-psychological problems, rural women are subjected to some hindrances, which impose limitations on their potential to play their role effectively (Nagalakshmi, 2005). It was also observed that women do not enter the labor market on equal terms when compared to men. Their occupational choices are also limited due to social and cultural constraints, gender bias in the labor market and lack of supportive facilities such as child care, transport and accommodation (Nwogu, 2008). The present study also revealed that women's labor power is considered inferior because of employers' predetermined notion of women's primary role as homemakers (Okwum, 2008). Similar findings reported by (Awais, 2009) and (Khan et al., 2012) were constraints related to women, including cultural values, normative patterns and customs, most of which are without religious and ethical sanction.

Other problems : Health problems, natural calamities, (flood, drought, heavy rainfall etc.) and confined to domestication were ranked I, II and III with mean scores of 0.66, 0.26 and 0.10 in the category under other problems. It was observed that complexity of practice, lack of training, unfavourable climatic factors, requirements of physical strength and lack of marketing experience were the major constraints faced by the tribal women. Further, lack of communication facilities, unfavourable weather conditions, labour problems, inadequate rainfall, and technological backwardness, traditional beliefs, price fluctuation, remoteness of the farm were the major constraints of the tribal women (Bhuvaneshwari, 2005). In a study conducted by Yadav et. al (2021) it was found that lack of adequate information at right time was the most severe problem faced by majority of the beneficiary farmers was ranked first.

CONCLUSION

It can be concluded from the study that women play a significant role in production of fruit crops. The study revealed that more than fifty-six per cent of the respondents (56.67%) had independent participation in cleaning of fruit plant. Further, it was found that 87.62 per cent of the respondents participated jointly in selection of plot. The significant finding was that 79.52 per cent of the respondents had no participation in smudging. Tribal farm women faced a huge number of problems during participation in different fruit crops production activities. The study revealed that among all the problems, lack of government subsidies was the most prominent problem followed by overloaded household work, high cost of labour, money constraints for labour, improper transport facility, unavailability of scientific technology and soil preparation were some major constraints faced by the tribal farm women. Thus, there is a need to organize awareness and training programmes on these areas, timely visits of extension functionaries to encourage these tribal farm women for scientific methods of fruit production so that they are well-informed about recent technological advancements in that particular field. Being informed will help them to minimize certain problems related to fruit production activities. Moreover, it will also improve nutritional status of farm families thus indirectly better their socioeconomic status. Need-based assessment of women farmers in terms of the horticulture support such as input, financial and organizational support should be provided to the women fruit crops growers. The state department of Horticulture should conduct frequent awareness programmes for these tribal farm women in order to educate them about various state horticultural schemes especially targeted for farm women like Atmanirbhar Bagwani Yojna and Atmanirbhar Krishi Yojna. The data revealed from the study may be used to formulate detailed course of action by the state department of horticulture for its development. It is recommended for the concerned authorities to encourage and motivate the tribal farm women for attending training with their male counterparts so that they get scope for technological empowerment on fruit production.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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