

Original Research Article

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Roles of Gender in Agriculture and Livestock Production among Tribal Farm Families in Lunglei District of Mizoram in North East Region, India

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ABSTRACT

Keywords

Tribal, Gender, Men, Women, Farm families, Role

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The study was conducted on agriculture and livestock production among tribal farm families in two villages of Lunglei district of Mizoram in the year 2017. 80 nos. of tribal farm families were selected randomly as respondent for the study. The collected data were tabulated and analyzed in terms of frequency and percentage. The average participation index for male and female were 0.53 and 0.47 respectively and Wilcoxon Signed Rank Test (Z)-value is 0.71 and p is 0.480. The average participation index in male is 0.59 and in female is 0.41. The Wilcoxon Signed Rank Test (Z)-value is 1.54 and p is 0.124 of men and women farmers participating different agricultural activities. The average participation index in male is 0.42 and in female is 0.58. The Wilcoxon Signed Rank Test (Z)-value is 0.65 and p is 0.518 of men and women farmers participating different post-harvest and marketing activities. The study also reveals that tribal farm women plays recessive role in farming as well as post-harvest and marketing activities whereas the livestock activities was dominated by male.

Introduction

In India, most of the farm families are primarily engaged in farming (Singh and Chauhan, 2011); and agriculture is the most primitive occupation of Indian tribal people (Ghosh *et al.*, 2010). The state of Mizoram is one of the eight sisters of North-East India and mostly dominated by the *Mizo* tribe. The area is characterized by the hilly rugged terrain. The parallel structural hill ranges run North to South direction tapering at both ends with alternating narrow valleys. The ridges show

serrated tops which are highly dissected and separated by intervening 'V' shaped valleys. Besides these hill ranges, there are small and limited hill ranges and numerous dissected low hills in the western part of the area.

Hill side slopes are steep and escarpments are common. The agricultural land is mostly rainfed (having only 15% of total cultivated land under irrigation). Due to suitable climatic condition almost, all types of crops can be cultivated here. Among the tribal families, men and women of all ages and ethnic groups

have a vested interest in agriculture (Nidhees, 2010). *Mizos* are not the exception of this scenario.

Livestock production is directly or indirectly connects with agriculture in rural economy. Animal husbandry is a potential employment income generating option for the rural poor particularly small and marginal farmers (Singh and Chauhan, 2012). Generally small tribal farm families rear milch animals, pigs, poultry birds for nutrient supplement through production of milk, meat and eggs; and as alternative source of income; and dogs for night watching of his house or farm.

In a farm family, women play an important role in family maintenance, farm production, post-harvest management, livestock production, and allied activities. Role and contribution of women is very crucial not only in enhancing the crop production but also in overall agricultural diversification (Bihari *et al.*, 2012). In this backdrop, the study was conducted to assess the contribution and role of tribal men and women in agriculture and livestock production in a farm family.

Materials and Methods

The study site

The study was conducted in two villages namely Hnahthial (Latitude 22°58.453'N and Longitude 92°55.722'E) and Thiltlang village (Latitude 23°00'196''N and Longitude 92°55'374''E) in Lunglei district of Mizoram in January to March, 2017. The villages received annual rainfall of 1698.66 - 2098mm with an altitude range from 35-1758m above MSL. The main livelihoods of both the villages were based on the agriculture and animal husbandry-based occupations. Alike other states of North-Eastern parts of India, the women folklore also had a dominating role in livelihood activities in Mizoram (Fig. 1).

Selection of villages and respondents

The villages were selected purposively taking the consideration that those would be tribal villages with agriculture and animal husbandry-based livelihood systems. 80 numbers of tribal farm families involved in agriculture and livestock rearing were selected randomly taking 40 families from each village.

Collection of information

An interview schedule was designed to collect the needful information for the study. The data were collected through personal interview of the respondents.

The collected data was tabulated and analyzed in terms of frequency and percentage.

Measurement scale and processing of data

The socio-economic scale developed by previous authors (Parikh and Trivedi, 1964; Kuppaswamy, 1981; Agarwal, 2008) with allowable modification befitted for the study were used. The participation in different agricultural and animal husbandry practices were measured against a 3-point ordinal scale having "Predominantly participated", "Jointly participated" and "No participation" as scale points with 2, 1 and 0 respectively.

For assessing the extent of participation, a Participation Index developed by Gupta and Pal (2006) were used as follows:

$$\text{Participation Index} = \frac{2a_1 + a_2}{2n}$$

Where,

a_1 = No. of activities undertaken independently

a_2 = No. of activities undertaken jointly

n =Total no. of activities

For comparison between villages and genders χ^2 statistics and Wilcoxon Signed Rank test were employed.

Results and Discussion

Socio-economic and personal characteristics of farm families under study

The above Table 1 shows that in both the villages majority (95.0 % and 87.50 %) of the respondents had nuclear family and mainly depend on farming (65.00% and 67.00%). Livestock rearing were also taken as primary occupation by 27.50 % and 25.00% families. The Chi-square values for all these cases are significant ($p < .001$) which signifies that the two villages are not at par in distribution of families in respect of family type and primary occupation.

It is also found that 60.00% and 77.50% of the respondent families had land holding between 1.5 and 2.5 ha, whereas only 10.00% and 7.50% of the respondents had above 2.5 hectare of land in the selected villages. Majority of the respondents (92.50% and 72.50%) were having membership of any social organization like Self-Help Groups or Farmers' Club. Here also in both the cases Chi-square is significant at $p < .001$ level, viz. the two villages are different in distribution of families in respect of land holding and social participation.

The data in Table 2 shows that majority (52.50% and 72.50%) of the respondents belonged to middle age group having education level upto middle school (52.50% and 40.00%). It is also revealed that 47.50 % and 52.50% of the respondents received the information through State extension system whereas 42.50% and 40.00% of the respondents were through KVK functionaries. The χ^2 (Chi-square)-values indicates that in

both the cases the two study villages were heterogeneous according to age distribution, land holding and usage of information sources.

Gender participation in different activities of agriculture and livestock rearing

The result in the Table 3 shows that regarding different activities in agriculture female participation is more in case of uprooting of seedlings for planting (Participation Index=0.84 against 0.16 of male); transplanting/ sowing of seedlings to main field (Participation Index=0.86 against 0.14 of male); weeding and intercultural operations (Participation Index=0.85 against 0.15 of male); cutting/ harvesting of the crops (Participation Index=0.83 against 0.17 of male) and carrying of plants to threshing floor (Participation Index=0.78 against 0.22 of male). All other activities although are predominantly undertaken by the male, but it is seen that Wilcoxon (Z)-value is not significant ($p = .480$) which indicates that although there is difference in participation level in individual activities but on an average participation level of female and male are statistically at par.

The result in the Table 4 shows that in livestock rearing activities female participation is more in case of feeding of poultry birds (Participation Index=0.84 against 0.16 of male); Watering of animals/poultry birds (Participation Index=0.53 against 0.47 of male) and produces separate for household consumption floor (Participation Index=0.83 against 0.18 of male). All other activities although are predominantly undertaken by the male, but it is seen that Wilcoxon (Z)-value is not significant ($p = 0.124$) which indicates that although there is difference in participation level in individual activities but on an average participation level of female and male are statistically at par.

Table.1 Distribution of farm families according to socio-economic characters

Class	Hnahthial village(N=40)	Thiltlang village (N=40)	Statistical implication
Family type(Scale: Nos.of family members)			
Nuclear	38 (95.00)	35 (87.50)	χ^2 (Chi-square) = 180.35 p<.001
Joint	2 (5.00)	5 (12.50)	
Primary Occupation (Scale: Occupation from which maximum income comes)			
Farming	26(65.00)	27(67.50)	χ^2 (Chi-square) = 180.02 p<.001
Livestock	11(27.50)	10(25.00)	
Others	3(7.50)	3(7.5)	
Land Holding (Scale: Area in hectare)			
Upto 1.0 ha	12(30.00)	6(15.00)	χ^2 (Chi-square) = 180.76 p<.001
>1.0-2.5	24(60.00)	31(77.50)	
>2.5	4(10.00)	3(7.50)	
Social Participation (Scale: Membership of social organisation)			
Member	37(92.50)	29(72.50)	χ^2 (Chi-square) = 181.39 p<.001
Non-member	3(7.50)	11(27.50)	

Table.2 Distribution of respondents according to their personal characters

Class	Hnahthial village(N=40)	Thiltlang village (N=40)	Statistical implication
Age group(Scale: Chronological age rounded to nearer integer in yrs)			
Young (upto 30 yrs)	3(7.5)	2(5.0)	χ^2 (Chi-square) = 180.86 p<.001
Middle aged (31-50)	21(52.50)	29(72.50)	
Old aged (> 50)	16(40.00)	9(22.50)	
Educational Qualification (Scale: Year of formal education undergone)			
No formal education	2(5.00)	3(7.50)	χ^2 (Chi-square) = 180.48 p<.001
Primary (Upto class- 4)	5(12.50)	4(10.00)	
Middle School (class 5-8)	21(52.50)	16(40.00)	
High School (class 9-12)	9(22.50)	12(30.00)	
Above	3(7.50)	5(12.50)	
Source of information (Scale: Frequency of visit within available village source)			
Neighbours/friends/relatives	4(10.00)	3(7.50)	χ^2 (Chi-square) = 180.07 p<.001
State extension system	19(47.50)	21(52.50)	
Krishi Vigyan Kendras	17(42.50)	16(40.00)	

Table.3 Distribution of men and women farmers participating different agricultural activities (expressed in frequency and percentage)

Activity	Predominantly by Male	Predominantly by Female	Joint	Male Participation Index	Female Participation Index
Ploughing operation for main field and seed bed preparation	74 (92.50)	-	6 (7.5)	0.96	0.04
Sorting and selection of healthy seeds for sowing	15 (18.75)	11 (13.75)	54 (67.50)	0.53	0.48
Nursery raising and management operations	65 (81.25)	6 (7.50)	9 (11.25)	0.87	0.13
Uprooting of seedlings for planting	7 (8.75)	61 (76.25)	12 (15.00)	0.16	0.84
Transplanting/ sowing of seedlings to main field	9 (11.25)	67 (83.75)	4 (5.00)	0.14	0.86
Application of insecticide and plant protection measures	73 (91.25)	7 (8.75)	-	0.91	0.09
Irrigation / Watering of plants	71 (88.75)	4 (5.00)	5 (6.25)	0.92	0.08
Weeding and intercultural operations	7 (8.75)	63 (78.75)	10 (12.50)	0.15	0.85
Application of FYM/ fertilizers management	59 (73.75)	15 (18.75)	6 (7.50)	0.78	0.23
Decision making of farm enterprises	6 (7.50)	2 (2.50)	72 (90.00)	0.53	0.48
Cutting/ harvesting of the crops	12 (15.00)	65 (81.25)	3 (3.75)	0.17	0.83
Carrying of plants to threshing floor	14 (17.50)	59 (73.75)	7 (8.75)	0.22	0.78
Average Participation Index				0.53	0.47
Wilcoxon Signed Rank Test (Z)-value = 0.71; p =0.480					

Table.4 Distribution of men and women farmers participating different Livestock/poultry rearing activities

Activity	Predominantly by Male	Predominantly by Female	Joint	Male Participation Index	Female Participation Index
Decision making in livestock/poultry management	16 (20.00)	5(6.25)	59 (73.75)	0.57	0.43
Collection of fodder/feeds for livestock consumption	57 (71.25)	14 (17.50)	9 (11.25)	0.77	0.23
Grazing of animals in field	51 (63.75)	25 (31.25)	4 (5.00)	0.66	0.34
Feeding of poultry birds	5 (6.25)	59 (73.75)	16 (20.00)	0.16	0.84
Milking of animal	51 (63.75)	23 (28.75)	6 (7.50)	0.68	0.33
Watering of animals/poultry birds	11 (13.75)	16 (20.00)	53 (66.25)	0.47	0.53
Care of livestock/poultry in breeding/hatching etc	14 (17.50)	9 (11.25)	57 (71.25)	0.53	0.47
Health Care of sick animals/ birds	9 (11.25)	5 (6.25)	66 (82.50)	0.53	0.48
Shed management/ cleaning	69 (86.25)	3 (3.75)	8 (10.00)	0.91	0.09
Animal/poultry waste management	65 (81.25)	4 (5.00)	11 (13.75)	0.88	0.12
Produces separate for household consumption	11 (13.75)	63 (78.75)	6 (7.50)	0.18	0.83
Consult with Veterinary service	61 (76.25)	17 (21.25)	2 (2.50)	0.78	0.23
Purchase and sale of animals	18 (22.50)	9 (11.25)	53 (66.25)	0.63	0.37
Average Participation Index				0.59	0.41
Wilcoxon Signed Rank Test (Z)-value = 1.54; p = 0.124					

Table.5 Distribution of men and women farmers participating different post-harvest and marketing activities

Activity	Predominantly by Male	Predominantly by Female	Joint	Male Participation Index	Female Participation Index
Threshing of harvest products	71 (88.75)	2 (2.50)	7 (8.75)	0.93	0.07
Winnowing of harvest products	63 (78.75)	6 (7.50)	11 (13.75)	0.86	0.14
Cleaning of harvest products	4 (5.00)	69 (86.25)	7 (8.75)	0.09	0.91
Bagging of harvest products	73 (91.25)	2 (2.50)	5 (6.25)	0.94	0.06
Carrying of harvests products to store house	9 (11.25)	5 (6.25)	66 (82.50)	0.53	0.48
Drying of harvest products	8 (10.00)	57 (71.25)	15 (18.75)	0.19	0.81
Milling of harvest products	9(11.25)	67 (83.75)	4 (5.00)	0.14	0.86
Processing of produce	3 (3.75)	65 (81.25)	12 (15)	0.11	0.89
Retention for consumption and household consumption	2 (2.50)	7 (8.75)	71 (88.75)	0.47	0.53
Retention for seed for next season	13 (13.75)	3 (3.75)	64 (80.00)	0.56	0.44
Storage of harvest products	14 (17.50)	6 (7.50)	60 (75.00)	0.55	0.45
Selling to market during financial needs	18 (22.50)	59 (73.75)	3(3.75)	0.24	0.76
Decision in quantity to be sold for financial support	17 (21.25)	9 (11.25)	54 (67.50)	0.55	0.45
Separation of produces for household use	14 (17.50)	59 (73.75)	7 (8.75)	0.22	0.78
Carrying the produces to sale in market	7 (8.75)	61 (76.25)	12 (15.00)	0.16	0.84
Management of revenue generated from sale	12 (15.00)	62 (77.50)	6 (7.50)	0.19	0.81
Average Participation Index				0.42	0.58
Wilcoxon Signed Rank Test (Z)-value = 0.65; p = 0.518					

Fig.1 Map of Mizoram district with location of the study village

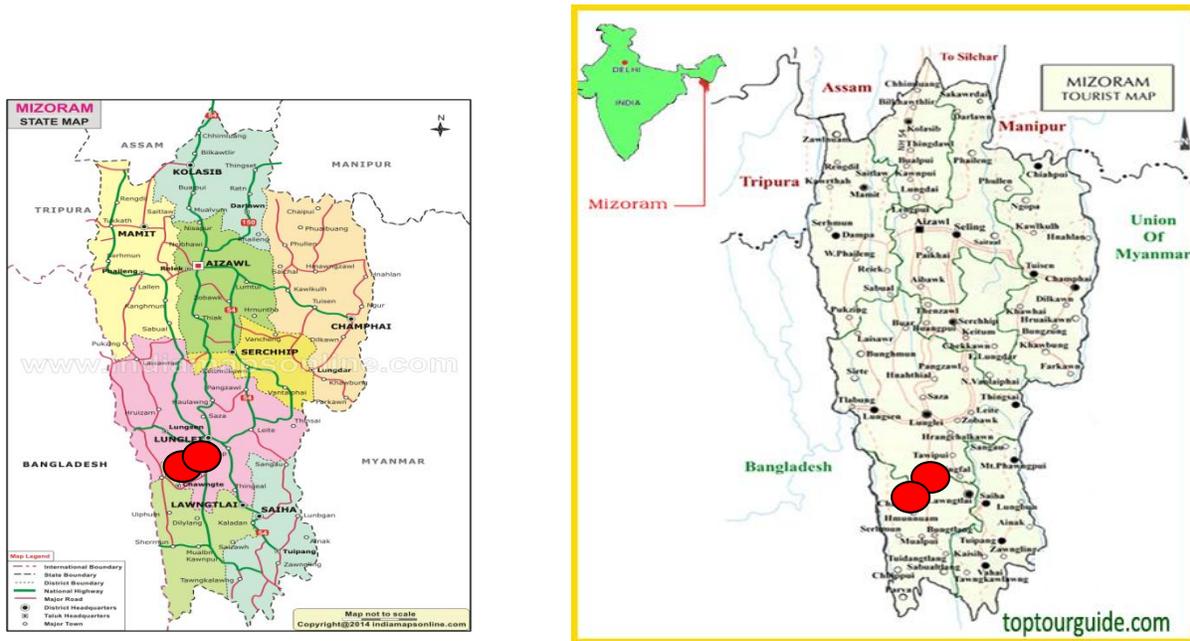
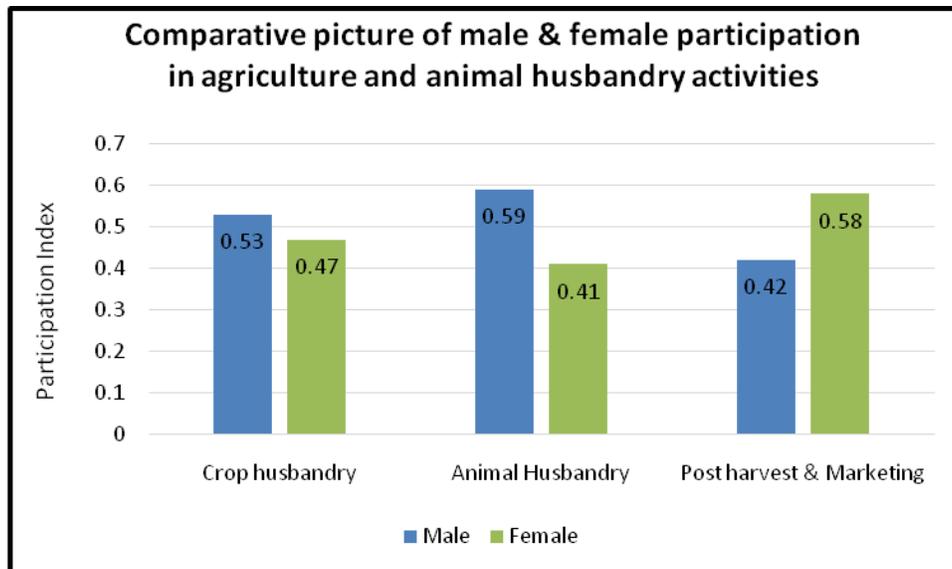


Fig.2 Comparative picture of male and female participation in agriculture and Animal husbandry activities



The result in the Table 5 shows that regarding different post-harvest and marketing activities female participation is more in case of cleaning of harvest products (Participation Index=0.91 against 0.09 of male); drying of harvest products (Participation Index=0.81 against 0.19

of male); milling of harvest products (Participation Index=0.86 against 0.14 of male); processing of produce (Participation Index=0.89 against 0.11 of male); retention for consumption and household consumption (Participation Index=0.53 against 0.47 of male); selling to

market during financial needs (Participation Index=0.76 against 0.24 of male); separation of produces for household use (Participation Index=0.78 against 0.22 of male) carrying the produces to sale in market (Participation Index=0.84 against 0.16 of male) and management of revenue generated from sale (Participation Index=0.81 against 0.19 of male). All other activities although are predominantly undertaken by the male, but it is seen that Wilcoxon (Z)-value is not significant ($p=0.518$) which indicates that although there is difference in participation level in individual activities but on an average participation level of female and male are statistically at par.

The Figure 2 shows that in crop husbandry and animal husbandry the participation of male (PI=0.53 and 0.59 in two villages) is more as compared to female (PI=0.47 and 0.41 in respective two villages). But in post-harvest and Marketing the participation of female (PI=0.58) are more than that of male (PI=0.42).

The inference can be drawn from the findings that in tribal farm families, some of the activities are predominantly undertaken by male and some others are by female. On an average female participation is more in case of post-harvest management but less in case of agriculture and livestock rearing. Participation in agriculture and livestock rearing activities also enhance the economic empowerment of the females. It is a matter of satisfaction that both male and female in Mizoram are having statistically same level of participation. However, it should be ensured that the economic benefit of participation in activities should accrue to female also.

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