Gender Perspectives in Agriculture and Livestock Production: Insights from Garo Tribal Farm-Households in West Garo Hills, Meghalaya

ABSTRACT

This study was conducted in two villages situated in the West Garo Hills district of Meghalaya in 2023, focusing on a sample of 60 tribal farm families. Respondents were randomly selected from the selected villages. Statistical analyses were performed using frequencies and percentage. The findings revealed that 80.0% of households had a nuclear family structure, with 61.67% being led by males. Agriculture was the primary occupation of 51.67% of households, and 33.33% reported an annual household income ranging from Rs. 85,001 to Rs. 150,000. Additionally, 78.33% of households possessed areca nut orchards and 60.0% utilized mobile phones for communication. Credit facilities were available to 31.67% of respondents. Regarding information sources, 98.33% of males and 96.67% of females relied on friends and neighbours for agricultural information. Decision-making was reported to be joint in 65.0% of households. Crop harvesting, which was primarily performed by females (55.0%), and the selling of harvests during financial needs, which were handled by males (35.0%) and females (38.33%), were identified as patterns. Revenue management from sales was undertaken by males (36.67%) and jointly (33.33%). In livestock-related decisions, 63.0% reported joint decision-making, and the grazing of animals was managed by children within households (68.33%). For healthcare, 63.33% of independent males consulted the veterinary department during instances of animal disease. Joint decisions were made for the purchase and sale of animals (81.76%).The present findings contribute valuable insights into gender in agricultural discourse, guiding informed and inclusive development in the North East Region.

PRACTITIONER SUMMARY

The study was on 60 small Garo tribal farm families actively engaged in both agricultural and livestock activities. Study revealed thatwomen has integral role in agriculture and livestocks then men.Joint decision making in agriculture collaborative farm management, males often takes lead in financial management and certain post-harvest processes.

KEYWORDS: Gender; Tribal, Farm families; Role; Activity

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author(s).

INTRODUCTION

The empowerment of women and the bridging of gender gaps within agri-food systems are essential steps towards improving the overall well-being of women and their households. Such empowerment not only helps reduce hunger but also leads to increased incomes and enhanced resilience, as highlighted by the Food and Agriculture Organization (FAO, 2023). Although both men and women participate in agriculture globally, their roles vary significantly by region and evolve rapidly. Women's work as additional hands on family farms differs from that as wage labourers which are casual in nature; their work also differs across different regions (Pattnaik and Lahiri-Dutt, 2020).Globally, women constitute a significant portion of the agricultural labour force, averaging 43 percent in developing countries (FAO, 2011). Notably, women make up 38 percentof the agricultural labour force in developing countries, with 45.3 percent of the overall agricultural labour force being women (Ghosh and Ghosh, 2014). Gender, as a defining factor, influences access to productive resources and opportunities such as land, livestock, labour, technology, education, extension, and financial services. Women consistently face limited access to these resources in diverse contexts (Quisumbing *et al.* 2014).Beyond farm work, women are also responsible for domestic activities, often remaining invisible, and their labour frequently goes unrecognized and unpaid. Unfortunately, women cultivators are inaccurately labelled as economically inactive farmers' wives. Recognizing and addressing gender roles and the specific needs of women in agriculture are essential for fostering inclusivity and equitable development.

In India, where agriculture is primarily a family occupation, the engagement of family members, including children, is crucial, particularly in tribal farm families, where everyone contributes to the development and maintenance of the family farm or land (Singh and Chauhan, 2011). In the matrilineal society of Meghalaya, women have a significant influence on both the family and agricultural settings. They play vital roles in agricultural and livestock activities, which are crucial for small tribal farm families in Meghalaya. These families typically raise one to two milch animals, two to three pigs, and ten to fifteen poultry birds to ensure diverse production of milk, meat, and eggs. In addition, families usually keep one or two dogs for nocturnal security. The agricultural landscape in Meghalaya includes various crops, such as paddy, vegetables, and cash crops, such as arecanut and cashew nuts. They are often sold to meet the diverse needs of the family. Singh and Chauhan (2012) highlighted the

role of animal husbandry as an additional income and food source, particularly benefiting poor rural households, small and marginal farmers, and agricultural labourers. The current study aims to deepen our understanding of the distinct contributions of men and women within farm households in the West Garo Hills District of Meghalaya. This studyexamines the traditionally recognized and practiced roles of women in agricultural and livestock production activities alongside the roles traditionally attributed to men. This will enable us to unveil the nuanced dynamics shaping these roles and contributions within the unique cultural and socioeconomic context of Meghalaya's matrilineal society.The primary objectives of this study were to assess the personal and socioeconomic profile of tribal households and evaluate ~~the~~ gender involvement in agricultural and livestock-related pursuits.

METHODOLOGY

This research study was conducted in January 2023 and focused on three villages, Chenggapara (latitude 25° 21' 40.2", longitude 90° 03 07.8"),Marapara(Latitude 25° 20'N and Longitude 90°14' E) and OkkaparaSonggitcham (latitude 25° 53.4' 57", longitude 90° 55.6' 50"), situated in the West Garo Hills district of Meghalaya. This study sampled 60 small tribal farm families actively engaged in both agricultural and livestock activities. Families were selected using simple random sampling. A well-designed semi-structured interview schedule was used to obtain comprehensive information for this research. This tool was designed to capture essential details regarding the agricultural and livestock practices of the selected families. An additional gender analysis tool was incorporated to ensure a nuanced understanding of the roles and contributions of both male and female members within each household. Separate interviews were conducted with the primary male and female members of each household, allowing for an in-depth exploration of gender dynamics in agricultural and livestock-related activities. The data collected through these interviews were then systematically organized, tabulated, and analyzed using appropriate statistical methods, such as frequency and percentage. This methodological approach aimed to uncover key patterns, variations, and trends within the studied communities, providing valuable insights into the gender-specific dynamics of agricultural and livestock practices in the West Garo Hills District of Meghalaya.

RESULTS AND DISCUSSION:

The study's findings are presented below, accompanied by a discussion that contextualizes them within the framework of previous research. This comparative analysis aims to offer a deeper understanding of the observed patterns and trends ~~in relation to~~about existing knowledge in the field.

Table 1: Personal profile of the sampled respondents

Particulars	Categories	Male(n=60)		Female(n=60)	
		Frequency	Percentage	Frequency	Percentage
Age	Young (18-35 yrs)	14	23.33	12	20.00
	Middle aged (35-55 yrs)	30	50.00	38	63.33
	Old (>55 yrs)	16	26.67	10	16.67
Education	Illiterate/unlettered	14	23.33	6	10.00
	Can read and write/lettered	2	6.67	2	6.67
	Primary School	14	23.33	10	16.67
	Middle School	6	10.00	16	26.67
	High school	14	23.33	12	20.00
	Post-Matriculate	6	10.00	10	16.67
	Graduate and above	4	6.67	4	6.67
Sources of Information on Agriculture	Neighbours	43	71.67	58	96.67
	Friends	59	98.33	53	88.33
	Village headman	11	18.33	7	11.66
	Extension personal of line department	38	63.33	33	55.00
	NGOs	0	0.00	0	0.00
	KVK	0	0.00	0	0.00
Sources of Income	Agriculture	19	31.67	12	20.00
	Horticulture	18	30.00	16	26.67
	Business	6	10	1	1.67
	Service	3	5.0	2	3.33
	Livestock	0	0.00	8	13.33
	Wages	15	25.00	21	35.00
Social Participation	Member of SHG	12	20.00	18	30.00
	Member of farmers club	2	3.33	7	11.67
	Members of village development committee	16	26.67	8	13.33
	None	30	50.00	27	45.00

The findings presented in Table 1 reveal that the majority of respondents (50.00% male and 63.33% female) fall within the middle-aged category (above 35-55). Notably, the literacy rate among female respondents was higher than that of male respondents, reaching 76.67%. The majority of the respondents had completed primary, middle, or high school, with only a small percentage being graduates (6.67% each for male and female respondents). Similarly, Singh

and Deshmukh (2022) identified that majority of males and females belonged to the 'Middle' age category, followed by the 'young' age category. Additionally, most of the tribal males and females had received primary education.Regarding the primary source of agricultural information, male respondents primarily relied on friends (98.33%), whereas female respondents turned to neighbours (96.67%). In terms of sources of income, 31.67% of the male respondents were fully dependent on agriculture, while 35.0% of the female respondents relied on daily wages for their livelihood. Furthermore, 50% of the male and 45.0% of the female respondents were not members of any social organization (see Table 1).

Socioeconomic profiles of the tribal farm households

The data presented in Table 2 show that a substantial majority (80.0%) of households in this sample consisted of nuclear families with 4 to 6 members, while the remaining 20.0% were joint families, comprising 7 to 12 members. In terms of household composition, 61.67% of households were headed by males and 38.33% were headed by females. It is noteworthy that 51.67% of the household heads reported farming as their main occupation. Further, this study on annual income revealed that 33.67% of households fell within the income range of ₹85001- ₹150000, while 23.33% had incomes between ₹55001- ₹85000. In contrast, Singh and Deshmukh (2022) found that, in a tribal setting in Maharashtra, over 50 percent of males reported an annual income ranging from ₹20,001 to ₹30,000, and females in the same context had annual incomes up to ₹ 20,000. Additionally, only 6.67% of the households in this study had incomes between ₹10000 and ₹30000 (see Table 2).

Table 2: Analysis of the socioeconomic profiles of the sampled households

Particular	**Categories**	**Frequency** (n=60)	**Percentage**
Type and size of family	Nuclear (4-6 members)	48	80.0
	Joint (7-12 members)	12	20.0
Family Head	Male	37	61.67
	Female	23	38.33
Main occupation of the household head	Farming	31	51.67
	Service	4	6.67
	Business	3	5.0
	livestock	5	8.33
	Wages only	17	28.33
Annual Household Income	₹ 10000- ₹ 33000	4	6.67
	₹ 33001-₹ 55000	15	25.0
	₹ 55001- ₹ 85000	14	23.33
	₹ 85001- ₹ 150000	20	33.33

	>₹ 150000)	7	11.67
Household land holding	Below 0.5 ha	14	23.33
	0.5 – 1.0 ha	11	18.33
	1.0 – 1.5 ha	13	21.67
	1.5- 2.5 ha	16	26.67
	Above 2.5 ha	6	10.0
Household reared livestock/ birds	Pig	33	55.00
	Cattle	14	23.33
	Goat	3	5.0
	Poultry birds	56	93.33
Crops cultivated	Rice	24	40.00
	Cashewnut	41	68.33
	Arecanut	47	78.33
	Vegetables	3	5.0
Available sources of credit	Friend	19	31.67
	Neighbour	7	11.67
	Village headman	2	3.33
	Relative	16	26.67
	Money lenders	8	13.33
	Banks	8	13.33
Communication media Possessed	Radio	18	30.0
	Television	13	21.67
	Mobile phone	36	60.0
	None	16	26.67

The prevailing land use patterns among households were characterized by the cultivation of horticultural and plantation crops in upland and midland regions, whereas the lowland areas were primarily devoted to rice and vegetable cultivation. Approximately 26.67% of households owned land holdings ranging from 1.5 to 2.5 hectares, with 10.0% possessing more than 2.5 hectares. The cultivation of rice engaged only 40.0% of households, while 68.33% had cashew nut orchards, and 78.33% had areca nut orchards, providing a stable and substantial source of income on an annual basis. Conversely, vegetable cultivation was undertaken by only 5.0% of households.The primary means of credit utilization among households were friends (31.67%) and family relatives (26.67%), while only 13.33% of households sought assistance from banking institutions. Regarding communication channels, 60.0% of households owned a mobile phone, 30.0% relied on radio, 21.67% utilized television for entertainment, and 26.67% did not possess any form of communication media (Table 2).

Gender participation in agriculture

The findings in Table 3 demonstrate a clear pattern of gender roles and participation in various agricultural activities. The predominant role in the ploughing/digging of pits for

horticultural crops were played by males (68%), while during seed selection, a significant portion of farmers' families (46.67%) jointly participated. When raising the nursery, the majority of independent males (48.33%) took charge. Farm families jointly contributed to uprooting seedlings (41.67%). For transplanting or sowing seedlings/plantlets in upland/midland/wasteland, 56.67% of independent females engaged in protecting seedlings from livestock, whereas 73.33% of independent males focused on fencing.The application of insecticides was mainly conducted by 55.0% of the independent males, and watering/mulching was carried out by 60.0% of the independent males. Weeding/cleaning of the jungle was effectively managed by 51.67% of the independent females. The application of FYM/fertilizers was primarily responsible for 68.33% of independent males. Decision-making in farming was often a joint effort (65.0%), with 90.0% of independent males leading to pruning or cutting unwanted branches.During harvesting, independent males were extensively involved in intercultural operations (48.0%) and decision-making activities, such as harvesting (55.0%), storage (45.33%), and the sale of farm produce (42.00%). Independent males participated in animal husbandry, dairy business (38.67%), and financial management (36.0%). These findings indicate that gender roles and participation in various agricultural activities are distinct and display clear patterns (Unati*et al.*2012).

Table 3: Gender participation in crop production and post-harvest activities

Activity	**Male** (independent) (n=60)	**Female** (independent) (n=60)	**Children** (independent) (n=60)	**Male + Female+ Children** (joint) (n=60)
Farming				
Ploughing/digging of pit for horticultural crops	41 (68.33)	0 (0.00)	0 (0.00)	19 (31.67)
Seed selection	18 (30.0)	14 (23.33)	0 (0.00)	28 (46.67)
Nursery raising	29 (48.33)	12 (20.0)	0 (0.00)	19 (31.67)
Uprooting of seedlings	13 (21.67)	22 (36.66)	0 (0.0)	25 (41.67)
Transplanting/ sowing of seedlings/ plantlets	9 (15.0)	34 (56.67)	0 (0.00)	17 (28.33)
Fencing of planted seedlings/crop	44 (73.33)	0 (0.00)	0 (0.00)	16 (26.67)
Application of insecticide	33 (55.0)	4 (6.67)	0 (0.00)	23 (38.33)
Irrigation /	36	3	0	21

Watering/mulching	(60.0)	(5.0)	(0.00)	(35.00)
Weeding/ cleaning of jungle	17 (28.33)	31 (51.67)	0 (0.00)	12 (20.0)
Application of FYM/ fertilizers	41 (68.33)	16 (26.67)	0 (0.00)	3 (5.0)
Pruning/cutting off unwanted branches	54 (90.00)	4 (6.67)	0 (0.00)	12 (20.0)
Decision making	14 (23.33)	7 (11.67)	0 (0.00)	39 (65.0)
Harvesting				
Cutting/ harvesting of the crops	10 (16.67)	33 (55.0)	0 (0.00)	17 (28.33)
Plucking of fruits from the trees	37 (61.67)	0.0 (0.00)	0 (0.00)	23 (20.0)
Carrying harvest to threshing floor	17 (28.33)	26 (43.34)	0 (0.00)	17 (28.33)
Postharvest Management				
Threshing	28 (46.67)	11 (18.33)	0 (0.00)	21 (35.0)
Winnowing	27 (45.0)	19 (31.67)	0 (0.00)	14 (23.33)
Cleaning	18 (30.0)	26 (43.33)	0 (0.00)	16 (26.67)
Bagging of harvest	33 (55.0)	9 (15.0)	0 (0.00)	18 (30.0)
Carrying to storehouse	19 (31.67)	18 (30.0)	0 (0.00)	23 (38.33)
Drying of harvested crops	9 (15.0)	31 (51.67)	3 (5.0)	17 (28.33)
Milling	16 (26.67)	26 (43.33)	4 (6.67)	14 (23.33)
Processing of produce for commercial purposes	26 (43.33)	14 (23.34)	0 (0.00)	20 (33.33)
Retention for consumption	12 (20.0)	14 (23.33)	0 (0.00)	34 (56.67)
Retention for seed	17 (28.33)	16 (26.67)	0 (0.00)	27 (45.0)
Storage	24 (40.0)	15 (25.0)	0 (0.00)	21 (35.0)
Selling of harvest to market during financial needs	21 (35.0)	23 (38.33)	0 (0.00)	16 (26.67)
Management of Produces				
Decision in quantity to be sold	13 (21.67)	18 (30.0)	0 (0.00)	29 (46.33)
Separation of produces for household use	18 (30.0)	24 (40.0)	0 (0.00)	18 (30.0)
Carrying the produces to sale in market	22 (36.67)	23 (38.33)	0 (0.00)	15 (25.0)
Management of revenue	22	18	0	20

generated from the sale	(36.67)	(30.0)	(0.00)	(33.33)

**Figure in parentheses indicates percentage*

The post-harvest management activities of threshing and winnowing were primarily carried out by independent male respondents, accounting for 46.67% and 45.0%, respectively. Bagging was mostly handled by independent males (55.0 %), while carrying bags to the storehouse was jointly done in 38.33% of cases. Independent female respondents were responsible for drying and milling, which accounted for 51.67% of these activities. Processing for commercial purposes was overseen by independent male respondents at 43.33%, while the retention of produce for consumption and seeds after harvest was jointly decided upon by respondents at 56.67% and 45.0%, respectively. Independent male respondents were primarily responsible for storage, accounting for 40.0% of this activity. Selling products during times of financial need was led by independent female respondents at 38.33%, with joint involvement at 26.67%.In the management of produce, the decision regarding the quantity to be sold was often joint, accounting for 46.33% of the responses. Independent female respondents were responsible for separating produce for household use and carrying it to the market, accounting for 40% and 38.33% of these activities, respectively. The study highlighted that 36.67% of independent male respondents managed the revenue generated from the sale of their products. Singh and Deshmukh (2022)clearly highlighted that male had greater access to markets, credit, extension programs, and subsidies compared to females.Farid *et.al* (2009) discussed the major role of women in farming and non- farming activities especially in post-harvest operations, homestead gardening, livestock and poultry rearing, selling labour.

Gender participation in livestock production

The results presented in Table 4 highlight a collaborative approach to decision-making concerning livestock and poultry, with 63.33% of the respondents indicating shared responsibility. It is noteworthy that independent females played a vital role in the collection of fodder (40.0%), whereas the responsibility of grazing animals primarily fell on children (68.33%).

Table 4: Gender Participation in livestock production activities

Activity	**Male** (independent) (n=60)	**Female** (independent) (n=60)	**Children** (independent) (n=60)	**Male + Female+ Children** (joint) (n=60)
Decision making	10 (16.67)	12 (20.0)	0 (0.00)	38 (63.33)

Collection of fodder	11 (18.33)	24 (40.0)	12 (20.0)	13 (21.67)
Grazing of animals	17 (28.33)	2 (3.33)	41 (68.33)	0
Feeding of poultry birds	9 (15.0)	26 (43.34)	8 (13.33)	17 (28.33)
Milking of animal	18 (30.0)	27 (45.0)	0 (0.00)	15 (25.0)
Watering of animals/poultry birds	7 (11.67)	16 (26.67)	11 (18.33)	26 (43.33)
Care of livestock/poultry in breeding/hatching etc	34 (56.67)	14 (23.33)	0 (0.00)	12 (20.0)
Health Care of sick animals/ birds	38 (63.33)	17 (28.34)	0 (0.00)	5 (8.33)
Shed management/ cleaning	40 (66.67)	6 (10.0)	0 (0.00)	14 (23.33)
Animal/poultry waste management	41 (68.33)	10 (16.67)	0 (0.00)	9 (15.0)
Produces separate for household consumption	8 (13.33)	22 (36.67)	0 (0.00)	30 (50.0)
Consultation with veterinary service	38 (63.33)	19 (31.67)	0 (0.00)	3 (5.0)
Purchase and sale of animals/ birds	4 (6.66)	7 (11.67)	0 (0.00)	49 (81.67)

**Figure in parentheses indicates percentage*

Additionally, approximately 43.34% of independent females were responsible for feeding poultry birds, and 45.0% were involved in milking cows. ~~However, the findings~~ of ~~Singh and Deshmukh (2022) reported that male and female equally contributed significantly in cleaning of shed, feeding, grazing, and milking operation.~~Dipok Nath et all,2022 reported that more than 50% rural tribal women were jointly engaged in feeding and taking care of the animals.Family members collectively participated in the watering of animals/poultry birds (43.33%), whereas independent males significantly contributed to the care of livestock and poultry during breeding/hatching (56.67%) and in times of sickness (63.33%).Shed management, cleaning, and waste management were primarily overseen by independent males, accounting for 66.67% and 68.33%, respectively. The separation of produce for household consumption was typically a joint decision. Regarding seeking veterinary services, 63.33% of independent males consulted the veterinary department. Notably, the decision-making process for the purchase and sale of animals was predominantly a joint effort involving 81.76% of the respondents.

CONCLUSIONS

The socio-economic composition of tribal households and the prevailing agricultural practices in Meghalaya's West Garo Hills District are complex and distinct farming landscapes. This study reveals a significant reliance of tribal families on informal sources of credit, such as friends and family, indicating limited engagement with formal banking institutions. Mobile phones were commonly used by the sampled respondents. The study highlights gender differences in agricultural information sources, with males relying on friends and females relying on their neighbours. Cash crops such as cashews and arecanut serve as stable sources of income, but limited involvement in vegetable cultivation suggests potential areas for diversification and enhanced self-sufficiency in food production.

A comprehensive analysis of gender roles in tribal-farm households has revealed distinct and diverse patterns. The majority of farm households in nuclear family structures emphasize the integral role of women in agriculture. Higher literacy rates among female respondents underscored their pivotal contribution to the agricultural landscape. Gender roles in agricultural activities vary, with males performing tasks like ploughing, while females actively participate in seed selection, nurturing, and livestock management. This gendered division also extended to females feeding on poultry and milking cows. Household dynamics, decision-making, and income distribution reveal a complex interplay. Joint decision-making in agriculture underscores collaborative farm management, although males often take the lead in financial management and certain post-harvest processes.

This study emphasizes the need for appropriate policy and technology interventions that recognize and address distinct gender roles. Inclusive policies must address these dynamics and ensure equitable opportunities for both male and female. To promote gender equity, initiatives must be implemented to enhance women's capabilities through skill developmentand an inclusive social security frame-work.The findings contribute valuable insights into gender in agricultural discourse, guiding informed and inclusive development in the region.

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