

ANALYSIS OF DRUDGERY PRONE ACTIVITIES AND GENDER INVOLVEMENT IN PADDY CULTIVATION

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ABSTRACT

Paddy is the most important crop of north eastern hill (NEH) region (NEH). It is cultivated in about 3.3 million hectares area with average productivity of 1439 Kg/ha occupying nearly 75% of the total cultivated area and 88.4% of the total food grain production. Average yield of paddy in most of the NEH states except Manipur and Tripura is very low as compared to the national average of 1930 kg/ha. Main reason for low productivity is practice of traditional method of cultivation and less area under high yielding varieties. Most of the farm operations are done manually with the help of indigenous tools and implements, which has very low output capacity and high drudgery. An investigation was carried out in Meghalaya to study the drudgery prone farm activities, tools and implements used and extent of women's participation in various farm operations of paddy cultivation. Two hundred and fifty respondents were interviewed on random basis out of which 125 were female. Analysis of data showed that there is equal participation of women in almost every activity except ploughing and puddling. However, women mainly do transplantation, weeding and harvesting and men do ploughing and threshing. The perceived drudgery in performing various activities were assessed on a four point scale i.e. easy, moderately difficult, difficult and very difficult. It was observed that majority of the respondents perceived farm activities either moderately difficult or difficult. Most of the male (77.8%) and female (100%) perceived ploughing as very difficult. A sizeable percentage of women found puddling (42.2%) and transplantation (69.6%) as very difficult and uprooting of seedling (76.3%), weeding (82.6%) and threshing (89.3%) as difficult activities. Similar response was from their male counterpart, who perceived puddling (60.7%), uprooting of seedling (85.6%), transplantation (72.3%) and weeding (76.4%) were difficult activities. Most of the male (69.4%) and female (78.3%) responded that harvesting was moderately difficult activity.

INTRODUCTION

Paddy is the most important crop of the NEH region occupying nearly 3.3 million ha which accounts nearly 88.4% of the total area under food grain crops (Anon, 2000a). Productivity of paddy in the region is very low (1439 kg/ha) as compared to the national average of 1930 kg/ha except in Manipur (2306 kg/ha). In Meghalaya the area under paddy cultivation during 1999-2000 was 0.11 million ha accounting 82.5% of the total area under food grains with average productivity of 1604 kg/ha (Anon, 2000b). Use of improved tools and machinery has played significant role in increasing productivity of food crops, achieving timeliness of operation, increasing utilization efficiency of agriculture inputs, minimizing post harvest losses and reducing drudgery to farm workers. In NEH region most of the agriculture operations are performed manually with traditional tools and implements. However, the use of mechanical power sources like tractors, power tillers, improved ploughs, sprayers and dusters, threshers and other post harvest machineries is observed in some isolated pockets. In Meghalaya, nearly half of the agriculture workers are women and they play major role in decision making of household activities and shoulder equal responsibilities in performing various agricultural operations. Therefore, the present study was conducted to find out drudgery prone farm activities, tools and implements being used for various operations and extent of women's participation in carrying out various farm operations in paddy cultivation in Meghalaya.

MATERIALS AND METHODS

The study was carried out in five different villages of Ri-Bhoi district of Meghalaya. The total sample size was 250 i.e., 50 from each village and 50% of sample size was women. The stratified sampling technique was used for selection of subjects and they were selected randomly from five different land holding categories i.e., land less, marginal, small, medium and large farmers. The categories of farmers were decided based on land holding i.e. landless (no land), marginal (< 1 acre land), small (1-2 acres land), medium (2-4 acres land) and large (> 4 acres). A structured proforma was developed to carry out the study and direct contact method was adopted for data collection. The involvement of gender was recorded based on the division of labour i.e. "who does what". The information was collected for the different farm activities. The perceived drudgery while performing various farm activities by man and woman was assessed in a four-point scale i.e. easy (1), moderately difficult (2), difficult (3), and very difficult (4).

RESULTS AND DISCUSSIONS

The information obtained from different villages was analyzed for drudgery perceived, time spent in various farm activities, involvement of women in different agricultural operations etc.. The results thus obtained are discussed below;

Basic information about respondents

Most of the population of the surveyed villages is tribal belonging to Khasi community. Respondents were of the age group ranging between 25-45 years. Literacy

rate of the agriculture workers in the state is very low and among respondents only 26% were found to be literate. Out of 250 selected respondents 6.4, 26.4, 21.6, 36.0 and 9.6% were land less, marginal, small, medium and large category of farmers respectively (Figure 1). Thus it has been observed that more than half of the farmers belong to small or medium category with land holding size of only 1.0 to 4.0 acres. Main occupation of almost every respondent farming was the and very few were found to be engaged in off-farm activities. Landless farmers worked as agricultural labour during cropping season and remained idle in off-season.

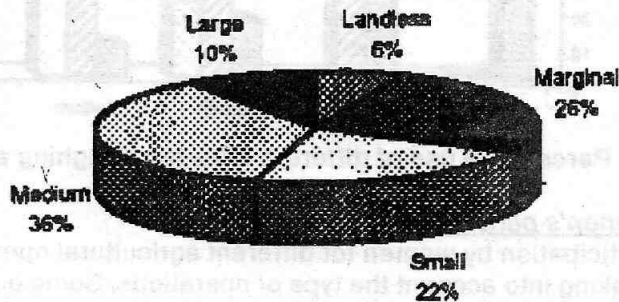


Figure 1: Land holding pattern in sample

Use of tools and implements in paddy cultivation

Paddy cultivation in Meghalaya is highly labour intensive and performed manually with the help of traditional tools and implements like spade, country plough, dao, sickle, etc. Due to undulated topography and small plot size, scope of using bigger size machinery is limited. Land preparation work i.e. ploughing, puddling and leveling is, thus done manually by spade. Manual ploughing is done with the help of large size spade whereas small spade is used for other operations like bund making, channel making, etc. Survey on the use of various improved agricultural machinery, indicated that power tiller was more popular among medium and large category of farmers. Among marginal farmers nearly two third (69%) reported that they used spade for land preparation while one third (31%) used bullock with country plough. Small farmers having land holding size of 1-2 acres, used all methods i.e. spade (16%), country plough (62%) and power tiller (22%) on custom hiring for seedbed preparation depending upon the plot size and time availability. More than half (58%) and one third (33%) of the respondents from medium land holding category responded that they used local plough and power tiller respectively for the land preparation. Percentage use of different tools and machines for land preparation work for the paddy cultivation is shown in Figure 2. Due to high upkeep cost and maintenance requirement, use of bullocks for ploughing and puddling is gradually reducing day by day. On the other hand power tiller is gaining popularity among farmers due to high capacity and lower cost of cultivation, which is good sign from mechanization point of view. However, no other improved tools are being used for any other activities.

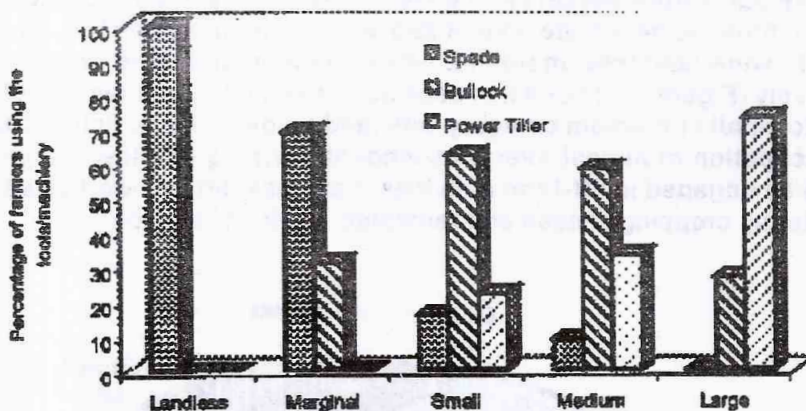


Figure 2: Percentage use of different tools for ploughing and puddling

Extent of women's participation

The work participation by women for different agricultural operation can be better understood by taking into account the type of operations. Some operations are labour intensive whereas some are effort intensive and accordingly there is division of labour based on gender. Ploughing of land is considered to be the most strenuous and mostly done by spade or country plough with the help of bullocks. It is generally carried out by men and sometime women helped in secondary operations like pulverizing the soil and leveling the field. Moreover, before starting the ploughing, women also helped men in cutting and burning of shrubs and clearing waste material from the field. Transplantation of paddy seedlings is exclusively women's job, whereas weeding, harvesting, threshing and winnowing are done by both men and women. Transportation of grains from field to storage place or storage place to market or near by road side is done by both male and female farmers workers.

Time spent in various farm activities

The working duration of agricultural workers has no fixed time. Different factors influence its duration and vary according to the type of activity, size of farm and nature of crop grown. For paddy crop, during ploughing, transplanting and harvesting, it stretched from ten to twelve hours whereas the number of hours spent per day for weeding and threshing reduced to five to seven hours. Activity wise average time spent per day by different category of farmers is presented in Table 1. The average maximum time spent/day by men was for ploughing and puddling (422.2 min/day) followed by up-rooting of seedlings (260.9 min/day), threshing (212.8 min/day), ploughing for making nursery (204.6 min/day) and making seed bed for nursery planting (179.6 min/day). While women spend maximum time day for harvesting (387.2 min/day) closely followed by transplantation of seedlings (385.1 min/day) Other time consuming activities for women were weeding (225.7 min/day), uprooting of paddy seedlings (219.9 min/day) and threshing (183.0 min/day)

Among different categories of farmers, it was observed that landless man, work generally on others field and spent more time (469.8 min/day) in field. The difference

in working duration of other categories of farmers was not significant. Though, total time spent by female workers were almost same as that of their male counterpart although activities were different. Where men spent more time for arduous work like ploughing, puddling, uprooting of seedlings etc., women spent more time in harvesting, transplantation and weeding. Among different category of respondents, landless women also spent more time as compared to other category of women workers. It can further be observed that least time consuming activities for men was transportation of grains followed by weeding, harvesting, sowing of seed, carrying of uprooted seedling and winnowing while for women it was transportation of grain followed by winnowing making seed bed for nursery sowing, sowing of seed for nursery and uprooting of seedling (Table 1).

Although women generally do not take part in activities like ploughing, puddling and carrying of uprooted seedlings they participate in more drudgery prone and miniature works like transplanting, weeding, etc. Since ploughing, puddling, harvesting and transplantation requires comparatively more time for agricultural workers, there is lot of scope to introduce improved implements for saving of time and cost for other income generation activities.

Drudgery perceived on the different activities

Paddy cultivation requires hard labour and long duration of work. Most of the field operations are performed in muddy condition, which aggravates the problem. Therefore, due to working situation and time requirement, the data was collected on the drudgery perceived by various categories of agricultural workers on a four-point scale. Perusal of data showed that ploughing and puddling were the most difficult activities followed by transplanting, weeding, threshing, etc. However, there was a slight difference in opinion between male and female workers; where 100% female workers perceived ploughing as very difficult, as against 77.8% male group. Transplantation of paddy seedlings was also perceived as very strenuous job; thus 69.6% women found it very difficult and 72.3% men expressed it as difficult job. Though weeding was mainly performed by female workers but it was almost equally expressed as difficult activity by both groups (76.4% male and 82.6% female). Few operations like harvesting and threshing were put under moderately difficult category. Though there was not much difference in percentage but surprisingly 21.7% female as and 27.0% male expressed it as difficult. Threshing can be categorized as moderately difficult for men (76.6%) and for women (69.3%) it was difficult job.

From the present study it can be concluded that in Meghalaya participation of women in various activities of paddy cultivation is very high and they participate in almost every activity except ploughing, puddling and carrying of uprooted seedlings. Moreover, women's participation is comparatively higher than men in transplanting, weeding, harvesting, etc., which are very important activities. Farmers of Meghalaya are ignorant about improved tools and machineries like tractors, weeders, sprayers, dusters, mechanical harvesters, threshers, etc. Self propelled paddy transplanter which is becoming popular in other paddy growing states needs introduction in this state to make transplanting easier. The drudgery perception was comparatively higher in female workers as compared to their male counterparts. The drudgery perception

about various agricultural operations will help designers in dealing with ergonomical issues in design and development of tools and implements suitable for paddy cultivation in hilly areas. Introduction of ergonomically designed tools and implements for paddy cultivation will not only save time, but it will also help to reduce the drudgery of operation and improve the health standard of tribal people which is largely mal-nourished and weak.

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Table 1. Average time spent (min/day) for various activities by different categories of farmers

Operation	Landless		Marginal		Small		Medium		Large		Average	
	Man	woman	Man	Woman	Man	woman	Man	woman	Man	Woman	Man	woman
	Ploughing for making nursery	277.80	-	171.60	-	187.80	-	211.20	-	259.80	-	204.62
Preparation of seedbed	205.20	175.80	160.20	144.60	163.20	135.00	188.40	130.20	220.20	109.20	179.64	135.94
Sowing of seed	129.00	110.40	87.00	91.20	140.40	151.20	151.20	157.20	174.60	140.40	132.74	134.00
Ploughing & Puddling	469.80	-	384.60	-	410.40	-	433.80	-	477.00	-	422.21	-
Uprooting of seedlings	284.40	189.00	229.20	210.60	259.80	229.80	277.20	229.80	273.60	207.00	260.88	219.93
Carrying of seedlings to field	147.00	-	116.40	-	129.00	-	140.40	-	157.80	-	133.69	-
Transplantation	130.80	398.40	193.20	415.20	175.80	397.20	127.80	356.40	168.60	373.80	169.54	385.09
Weeding	109.80	217.20	70.80	187.80	114.00	217.80	109.20	249.00	128.40	266.40	101.98	225.74
Harvesting	130.20	433.80	91.20	357.00	103.20	381.00	99.00	397.20	115.80	415.80	101.46	387.22
Threshing	229.20	189.00	195.60	174.60	210.60	186.60	217.20	194.40	237.60	151.20	212.80	183.00
Winnowing	129.60	116.40	120.60	109.80	134.40	115.20	145.50	129.00	159.00	97.80	136.81	117.15
Transportation	85.80	37.20	74.40	48.60	72.60	33.00	94.80	43.20	102.60	50.40	84.79	42.73