Chapter 5

Gender Roles in Agricultural System

As discussed in the previous chapter, the district possesses diverse demographic, socioeconomic and agricultural production system. Production system in the study area is composed of distinct components and is complementarily interlinked with each other. Management and the labor are the crucial factors to make the system efficient and productive. In this regard, the farm households play central roles to integrate all components of the system by their managerial skill and labor contribution and they may vary among different socioeconomic classes. These are the human factors so variation persists between individuals. The social system has defined the distinct roles and responsibilities for men and women within the household and the extent is fixed by the economic condition, family structure, resource base, and social values and norms. Recognition of gender roles and the specific needs of women is the key to effective and productive system. Therefore, it is important to have the knowledge on roles of household members to make the production system efficient and productive. This chapter mainly concentrates on who does what, where do men and women work and when do men and women work and for how long.

5.1 Workload by gender

5.1.1 Daily Activities and workload

Research on household work is very important to find out the constraints to women's productive roles (Sen, 1999). Women exclusively perform reproductive works like collection of fuel, water; childcare, animal care, cooking, washing, cleaning etc. In spite of these activities, women actively participated in the productive activities (Table-5.1). The nature of the work performed by the women is different from that of men. PRA result showed that, with many household activities women in the district were engaged in the crop and livestock production. Males are mainly

responsible for the field work however; some activities of livestock production are shared by both males and females. Unlike men, rural women seldom engage in only one activity at one time. Along with work on the farm or in the house a women is also taking care of children, she may also gather firewood or water.

Table 5.1: Daily work performed by men and women of Jhapa district.

	Female	Male
Morning (6:00AM–12:00AM)	Making fire, fetching water, milking, making and serving tea for family members, making breakfast and feeding children, sweeping house, taking out cattle from the shed, preparing lunch, preparing children for school and sending them to school, washing clothes, taking lunch and cleaning the utensils and kitchen.	Giving feed and fodder to the livestock, milking and working in the field.
Day (12:00 AM-5:00 PM)	Fodder collection and feeding to the livestock, giving water to the cows, buffaloes and goats and working in the field.	Working in the field.
Evening (5:00 PM–8:00 PM)	Fetching water, Making snacks for children and feeding them, cooking feed (*khole)* for animals milking, cooking and feeding dinner and cleaning utensils and kitchen.	Giving cooked feed *(khole)* and fodder to the animals and milking

Source: PRA-2004

Since paddy is the main crop, which is sown in the rainy season and both men and women remain engaged almost whole day. It was observed that time hours spent by the women of the Jhapa district was more than the time spent by the men as it was 11 hours 25 minutes in winter and 13 hours 30 minutes in rainy season. However, the men of the Jhapa district spent 8 hours 15 in winter and 10 hours 10 minutes in rainy season (Table-5.2).

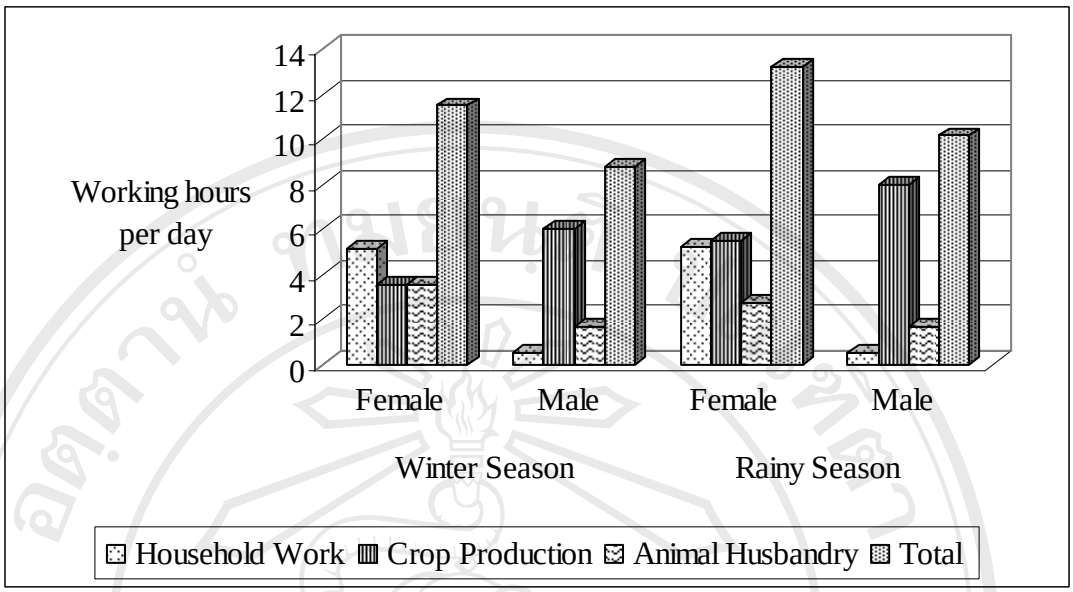

Figure 5.1: Daily working hours by activities in Jhapa district
Source: PRA-2004

It was found that both men and women spent more time in summer than in winter. In winter farmers were busy in harvesting of paddy, and sowing of wheat, vegetables and other winter crops. In winter both men and women were less busy than in summer season. Still, in this season women devoted more time hours than that of men. Women of Jhapa district spent almost half of their daily working hours in household chores (Figure-5.1). Women spent more than five hours per day in household works in both winter and rainy seasons. In rainy season women's working hours were increased by the farm activities. Even though, other members of family shared all animal-rearing activities, still women devoted more time hours in animal production activities. The result showed that a woman spent 2 hours 55 minutes in winter and 2 hours 45 minutes in rainy season while her male counter part spent only 1 hour 40 minutes in both seasons in animal production activities. Time hours spent by male household head in the crop production activities was found greater than that of female in both seasons. In all activities of farm production, men spent 6 hours in winter season and eight hours in rainy season while women spent 3 hours 30 minutes in winter season and 5 hours 30 minutes in rainy season.

Table 5.2: Daily work routine of gender by detail activities and time spent.

Activities	Winter Season				Rainy Season			
	Female		Male		Female		Male	
	H	M	H	M	H	M	H	M
Household works								
Making fire in *chulo*	-	5	-	-	-	5	-	0
Bringing water	-	15	-	-	-	15	-	0
Sweeping /cleaning house	-	20	-	-	-	20	-	0
Bringing fire wood		5	-	-	-	5	-	0
Making lunch, and cleaning kitchen	1	25	-	-	1	20	-	0
Talking with neighbors	-	10	-	30	-	10	-	30
Making Snacks and feeding	-	50	-	-	1	-	-	0
Sending children to school	-	20	-	-	-	20	-	0
Washing clothes	-	0	-	-	-	20	-	0
Preparing dinner and cleaning kitchen	1	30	-	-	1	20	-	0
Animal production works								
Giving grasses/straw to livestock.	-	30	-	30	-	20	-	30
Giving twig to goat	-	20	-	-	-	20	-	0
Feeding chicken/ pig	-	10	-	-	-	10	-	0
Milking	-	15	-	20	-	20	-	20
Cooking *khole*	-	30	-	-	-	30	-	0
Cleaning shed	-	20	-	10	-	15	-	10
Feeding *khole* to livestock	-	30	-	25	-	30	-	20
Giving water to livestock	-	10	-	20	-	10	-	20
Giving water to goat Pig	-	10	-	-	-	10	-	0
Crop production works								
Working in the field	3	0	6	0	5	30	8	0
Total	11	25	8	15	13	30	10	10

Source: PRA-2004. H = Hours M = Minutes

5.1.2 Seasonal activities and workload

The monthly agricultural activities performed by the farmers in the study area are presented in the Table-5.3.

Negi and et al, 1997, reported that the introduction of the new varieties of the commercial crops, has translated into an improvement in the economic and living conditions of the farmers. On the other hand, the working hours of the farmers, particularly farm women have also increased. Figure- 5.2 shows, the workload of men and women in the study area. Generally farmers were most busy during the months of June, July, October, November, and December. June and July are the peak time for paddy transplanting and during these months both men and women have high work load. Similarly, during October, November, and December farmers are busy in harvesting and threshing paddy and also land preparation and sowing of wheat, lentil, potato, vegetables and other winter crops. In October and November, both male and female members of the family spent equal time in field but in December relatively male members of the family spent more time than that of female. It is because of that most of the works of field preparation for sowing winter crops are performed by the males. Farmers are moderately busy in the other months of the year. However, compared with men, the women are busier except in February. During the August farmers are busy in weeding of the paddy field in which women contribute more than men. September is the beginning for the winter season vegetable cultivation. January, March and April are the main months for the vegetable growing and in those months women remain busier than men. February is the month when maize is sown and men are busier than women in field preparation and sowing of maize crop. In April, farmers are busy in wheat and lentil harvesting.

Table 5.3: Monthly agricultural activities performed by men and women of study area.

Months	Activities
January	Sowing/ transplanting vegetables, sowing late potato, threshing paddy
February	Sowing late season winter vegetables, Sowing spring vegetables, nursery for spring paddy and Sowing maize
March	Weeding and hoeing maize, harvesting and threshing lentil, transplanting of spring paddy and sowing mung bean, harvesting potato.
April	Harvesting and threshing of wheat, sowing cucurbits, lady's finger and other vegetables, sowing mung bean, harvesting spring vegetables.
May	Sowing cucurbits, weeding and hoeing of early sown cucurbits, preparing nursery bed of paddy, harvesting cucurbits, lady's finger and other vegetables.
June	Harvesting maize harvesting of spring paddy and land preparation for paddy, harvesting cucurbits, lady's finger and other vegetables.
July	Paddy transplanting.
August	Paddy transplanting and weeding of early sown paddy.
September	Weeding of paddy, land preparation for winter vegetables.
October	Sowing of winter vegetables, harvesting early paddy.
November	Harvesting paddy, land preparation for wheat, lentil and sowing of wheat, lentil and winter vegetables.
December	Harvesting of paddy, sowing wheat, lentil and potato, harvesting early winter vegetables.

Source: PRA-2004

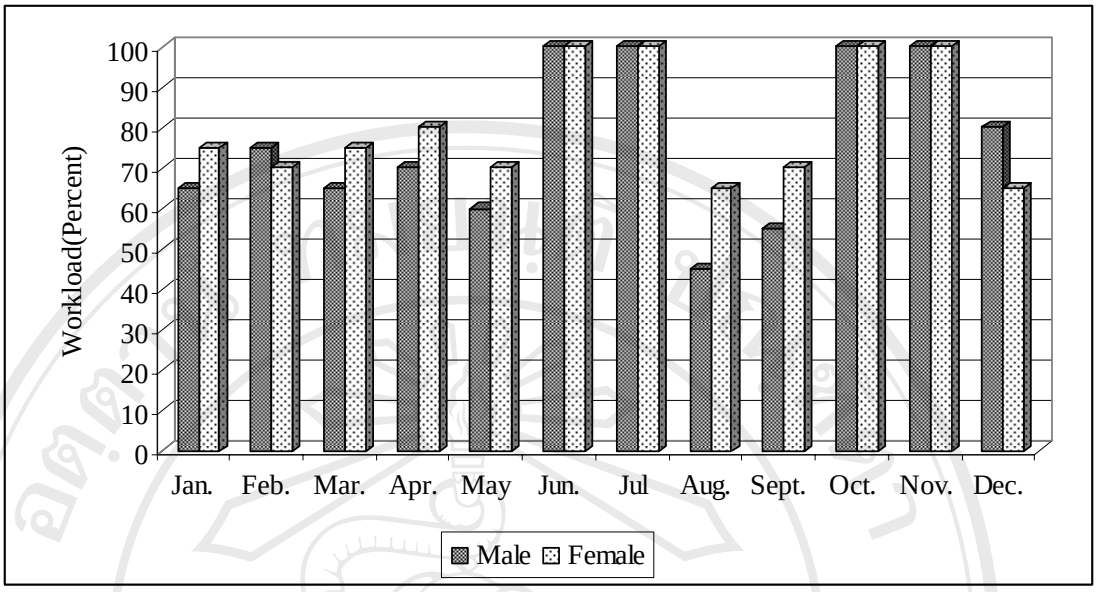

Figure 5.2: Seasonal workload of farmers in Jhapa district
Source: Survey-2004

5.2 Gender participation in agricultural production

Agriculture is the main source of employment in the district and both men and women actively take part in most of the agricultural production activities. The involvement of women and men in different activities of agricultural production varies according to the type of crop and cropping system and the socio economic status of the family. Men plough the fields and drive draught animals whereas women do the major share of sowing, weeding, applying fertilizer and pesticides, harvesting and threshing. In subsistence food production, women's role has been central one, and this includes crop production care and management of livestock and birds and products for family consumption and use (Bajracharya, 1999). The author pointed out the importance of women roles in the agricultural system.

In this section, percentage of men and women's share in all activities of food grain and vegetable production and animal rearing was asked during the formal field survey. Men and women's participation in different activities of agricultural production then analyzed and discussed.

5.2.1 Food grain production

Paddy

The results of the study show that women's contribution in paddy production was significantly lower than that of men (Table-5.4). On an average women's share in the production of paddy was 35 percent.

Table 5.4: Men and women's participation in crop production in Jhapa district.

Economic class	Paddy		Wheat		Maize		Vegetable	
	M	F	M	F	M	F	M	F
	---------- Percent ----------							
Hill migrated								
Poor	60.6 *	39.4	65.4 *	34.6	60.2*	39.8	33.5	66.5*
Medium	66.4*	33.6	67.2*	32.8	62.5*	37.5	38.3	61.7*
Rich	66.7*	33.3	68.1*	31.9	60.3*	39.7	43.9	55.1*
Average	66.6	33.4	66.9	33.1	61.0	39.0	38.9	61.1
Local								
Poor	63.3*	36.7	64.9*	35.1	65.0*	35.0	35.2	64.8*
Medium	72.4*	27.6	62.0*	38.0	67.2*	32.8	44.0	56.0*
Rich	62.6*	37.4	71.0*	29.0	62.5*	37.5	28.5	71.5*
Average	66.1	33.9	66.0	34.0	64.9	35.1	35.9	64.1
Over all average	64.8*	35.2	65.7*	34.3	63.0*	37.0	37.0	63.0*

* Significant difference at $p<0.05$

Source: Survey-2004

In each economic class men's contributions in production of paddy were statistically greater than that of women. It was observed that 39.4 and 60.6 percent of works of paddy production were performed by the women and men of hill migrated-poor economic class respectively. The involvement of men and women from the local-poor category in similar production activity was 63.3 and 36.7 percent respectively, was performed by local-medium women. Similarly, work shares of

women in paddy production from hill migrated-rich and local-rich economic category 33.3 and 37.4 respectively.

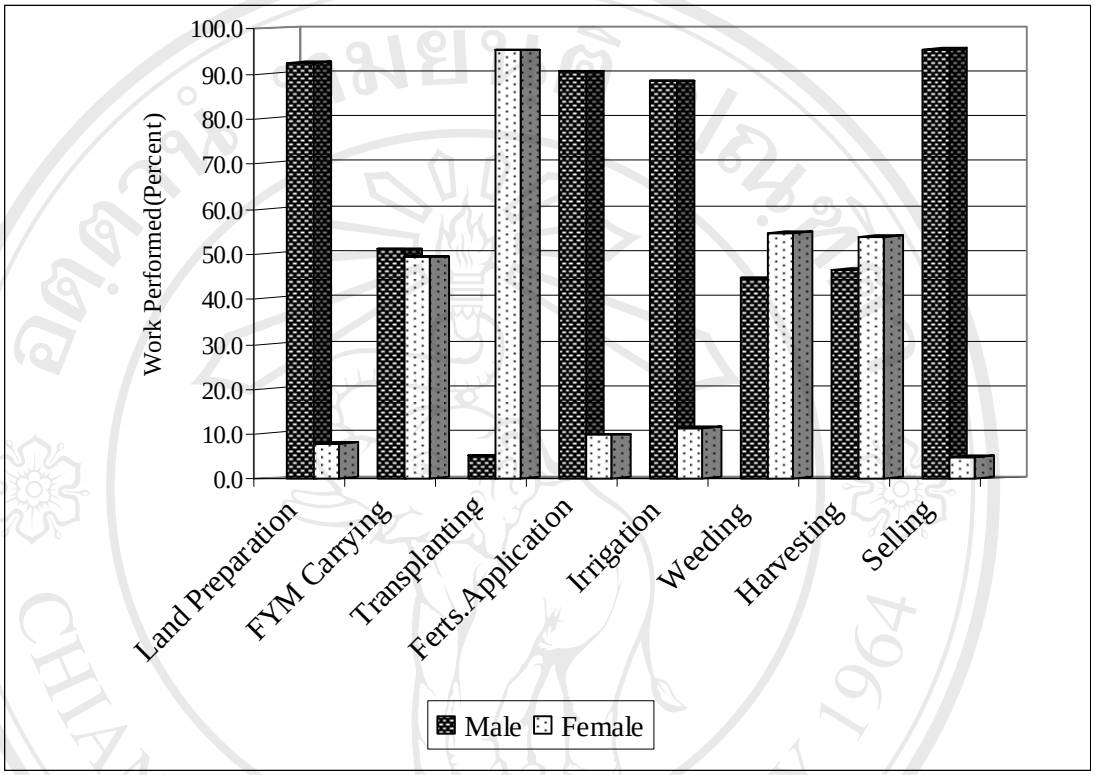

Figure 5.3: Men's and women's participation in different activities of paddy production

Source: Survey, 2004

Women's share in paddy production in the district was lower, however their contribution was higher in labor-intensive activities such as transplanting, weeding, and harvesting. FYM carrying and application was equally shared by both males and female since, it is not statistically significant. Women exclusively performed the transplanting of paddy while land preparation, irrigation and fertilizers application were performed exclusively by men (Figure-5.3). Women's share in transplanting, farmyard manure carrying and application, weeding and harvesting were 95, 49.2, 54.6, and 53.7 percent respectively. Men's share in field preparation, irrigation, fertilizer application and selling of grains were 92.3, 90.4, 88.2 and 95.2 percent respectively (Table-5.5).

Table5.5: Men's and women's participation in different activities of crop production in Jhapa district

Activities	Paddy		Wheat		Maize		Vegetable	
	M	F	M	F	M	F	M	F
	---------- Percent ----------							
Land Preparation	92.3*	7.7	86.9*	13.1	82.4*	17.2	50.6	49.4
Farmyard manure Carrying	50.8	49.2	47.1	52.9	44.8	55.2*	33.1	66.9*
Transplanting/sowing	5.0	95.0*	94.4*	5.6	73.7*	26.3	32.0	68.7*
Fertilizer application	90.4*	9.6	90.0*	10.0	87.4*	12.6	51.0	49.0
Irrigation	88.2*	11.3	92.7*	7.3	93.1*	6.9	37.1	62.9*
Weeding	44.4	54.6*	0.0	0.0	40.8	59.2*	34.0	66.0*
Harvesting	46.3	53.7*	53.3	46.7	49.5	51.5	24.4	75.6*
Selling	95.2*	4.8	95.1*	4.9	93.4*	6.6	36.5	63.5*

* Significant difference at $p<0.05$

Source: Survey-2004

Maize

Maize is cultivated both in upland (*bar*i) and low land (*khet*) with irrigation or without irrigation. Overall contribution of women in maize production was found significantly lower than that of men. Women's and men's shares in maize cultivation were 37.0 and 63.0 percent, respectively (Table-5.4). There was not much difference in women's shares in maize production among different economic classes. In all activities of maize production, women of poor economic class of hill migrated community contributed the highest percentage of works, followed by women of rich and medium economic class from hill migrated community, poor, medium and rich economic class of local community.

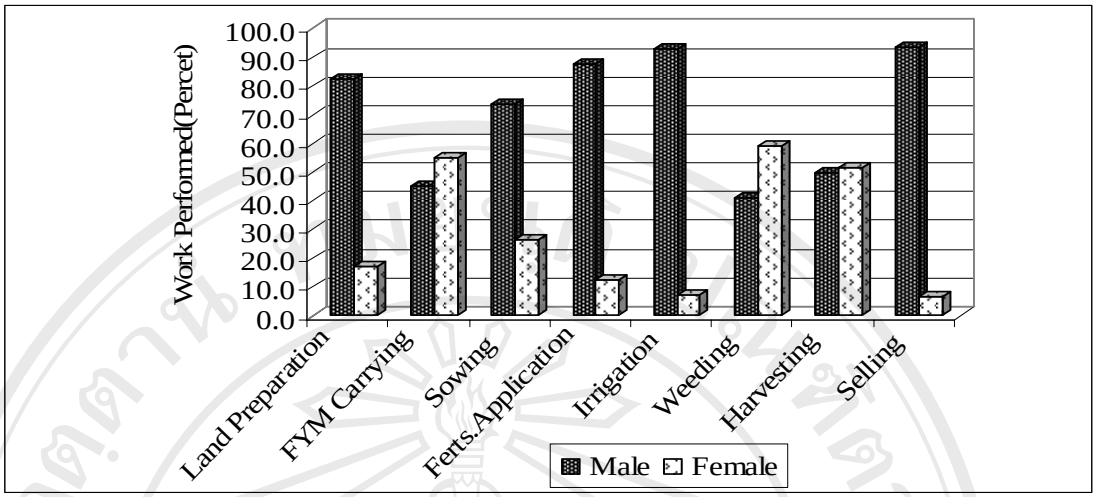

Figure5.4: Men's and women's participation in different activities of maize production

Source: Survey-2004

We can look at gender participation in maize cultivation by activities (Figure-5.4). Men's shares were significantly higher than that of women in land preparation and sowing, fertilizer application and irrigation. Women were found to involve in clod breaking during land preparation. In the district, maize is generally sown along the furrows of the hoe and women drop the maize seeds behind the plough. Mostly women were assigned labor intensive task of maize cultivation and their contribution in labor intensive activities like carrying of farmyard manure and weeding were significantly greater than that of men (Table-5.5). Harvesting of maize was more or less equally shared by both men and women.

Wheat

The study of workload regarding wheat cultivation revealed that women's contribution in wheat cultivation was significantly lower than that of men (Table-5.4). On average men and women shared 65.7 and 34.3 percent of work respectively in all activities of wheat production. The study also pointed that the women from all communities were more or less equally contributed. Among the economic strata, contribution of women medium economic class from local community was the

highest in wheat production, followed by women of poor economic class of local community, poor, medium and rich economic class of hill migrated community and rich economic class of local community.

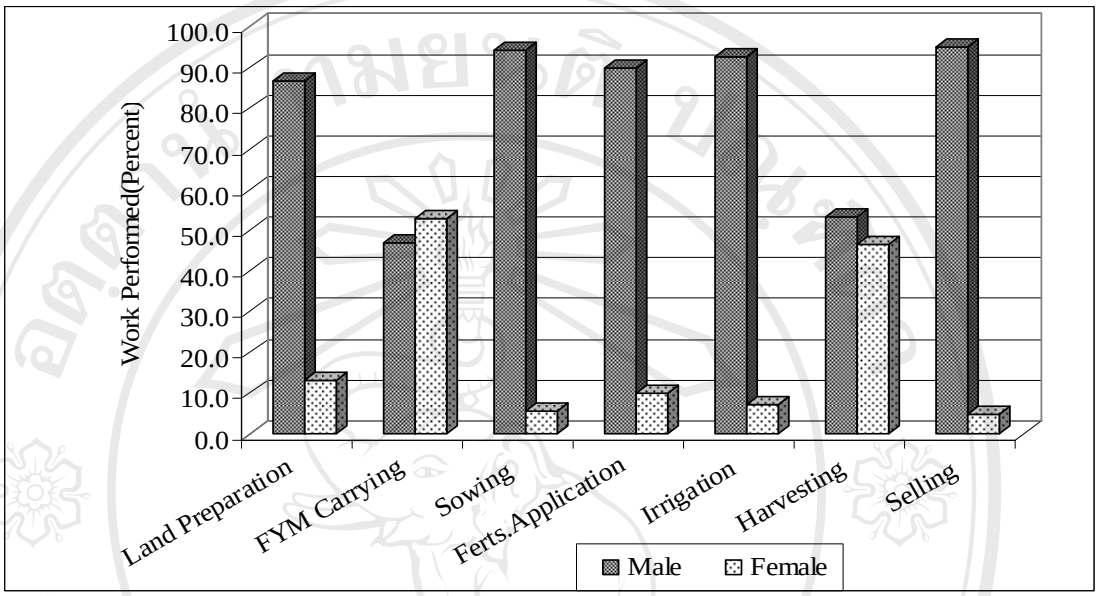

Figure 5.5: Men's and women's participation in different activities of wheat production
Source: Survey-2004

In all activities of wheat production men's contribution was greater than that of women except farmyard manure carrying and application, and harvesting (Figure-5.5). The share between men and women in farmyard manure carrying and application and harvesting of crop was statistically insignificant (Table-5.5), which indicates that they both shared equal works.

5.2.2 Vegetable Cultivation

The result of the study showed that the women's share in vegetable cultivation was significantly higher than that of men. Most of the activities in vegetable cultivation were exclusively performed by the women. The work share of men and women in over all activities of vegetable farming were 37.0 and 63.0 percent respectively (Table-5.4). It was observed that 33.5 and 66.5 percent of works of vegetable production were performed by the hill migrated-poor men and women

respectively. The involvement of men and women from the local-poor category in similar production activity was 35.2 and 64.8 percent respectively. Like wise, 38.3 percent men and 61.7 percent women from hill migrated-medium households were found to participate vegetable production activities. It was found that among all, the lowest percentage work in vegetable production, 55.0 percent was performed by hill migrated-rich women. Similarly, work share of women in vegetable production from local-medium and local-rich class were 56.0and 71.5 percent respectively.

We can observe women's contribution in vegetable cultivation by production activities. Men's and women's shares were more or less equal in land preparation and fertilizer application as they are not statistically significant (Table-5.5). Other activities like farmyard manure application, transplanting, weeding, harvesting and selling were almost exclusively performed by the women (Figure-5.6). Women's contribution was significantly more than that of men in farmyard manure application, sowing, fertilizer application, weeding, harvesting and selling of vegetable cultivation.

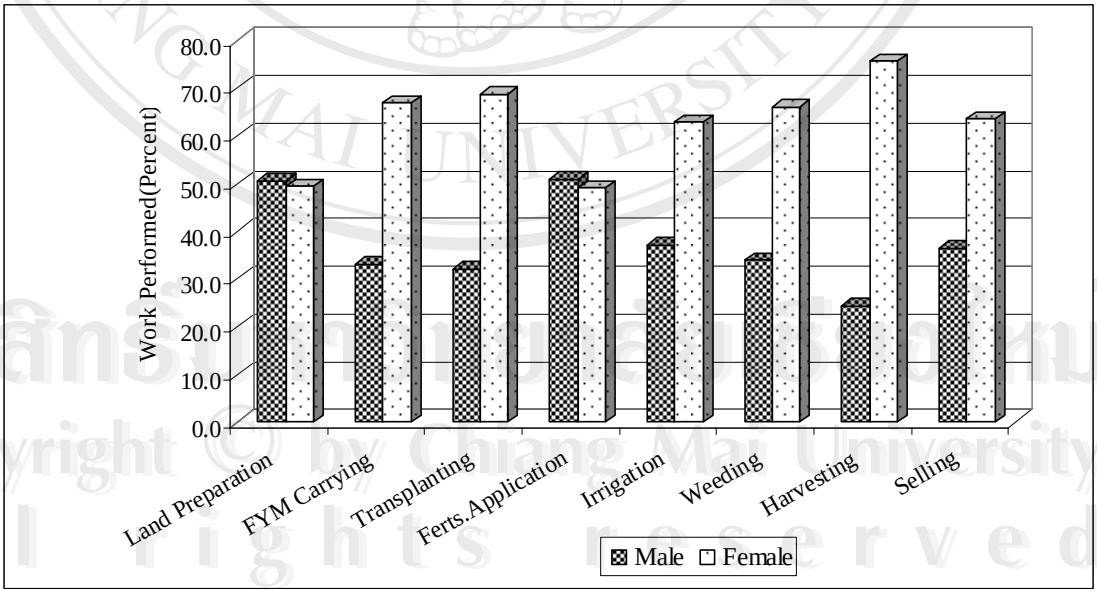

Figure 5.6: Men's and women's participation in different activities of vegetable cultivation

Source: Survey-2004

5.2.3 Large animal raising

The rural women play a significant role in animal husbandry. Women are extensively involved in livestock rearing both by tradition and by the current need to improve income.

Cattle

Cattle are the major animals kept in the district both for milking and drafting. Women make a considerable contribution to cattle production.

Table5.6: Men's and women's participation in large animal rearing in Jhapa district

Community	Cow		Buffalo	
	Male	Female	Male	Female
	---------- Percent ----------			
Hill migrated				
Poor	46.8	53.2*	54.5*	45.5
Medium	40.5	59.5*	55.0 *	45.0
Rich	45.5	54.5*	60.4*	39.6
Average	44.3	55.7	56.6	43.4
Local				
Poor	40.6	59.4*	59.0*	41.0
Medium	39.5	60.5*	65.2*	34.8
Rich	45.4	54.6*	56.7*	43.3
Average	41.8	58.2	60.3	39.7
Overall Average	43.2	56.8*	58.0*	42.0

Source: Survey-2004

* Significant difference at $p<0.05$

The analysis result showed that women in cattle raising contributed significantly more than that of men (Table-5.6). On average women's labor share in

all activities in cattle production was almost 57 percent. Likewise, in all economic classes, women contribution was observed significantly greater than that of men. No significant variations in work share in cattle production among the women of different economic classes were observed. The study of work share between males and females in Jhapa district indicated that women generally involved in the tasks like collecting green grasses, feeding, grazing, cleaning sheds, and composting animal waste and selling of milk and milk products (Figure-5.7). In these tasks, women contributed significantly more than that of men.

Table5.7: Men's and women's participation in different activities of large animal rearing in Jhapa district

Activities	Cow		Buffalo	
	Male	Female	Male	Female
	----------Percent ----------			
Feeding management	38.7	61.3*	57.7*	42.3
Cleaning shed	19.5	80.8*	25.5	74.5*
Caring of sick animal	39.6	59.4*	72.3*	27.7
milking	45.2	54.8*	69.4*	30.6
Selling animals	94.6*	5.4	96.2*	3.8
Selling of milk and milk products	20.0	80.0*	28.6	71.4*

Source: Survey-2004

*Significant difference at $p<0.05$

It was found that the women contribution in feeding management, cleaning shed, caring of sick animals, milking, selling of milk and milk products were 61.3, 80.8, 59.4, 54.8, 5.4, and 80.0 percent respectively. However, men contributed significantly greater than that of women in buying and selling of animals (Table-5.7).

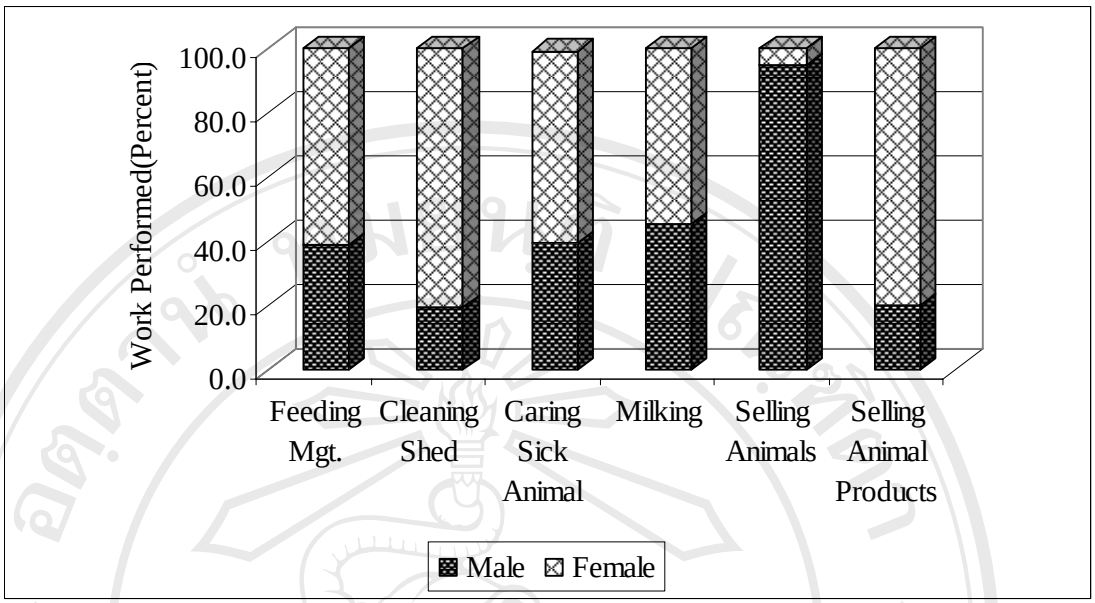

Figure 5.7: Men's and women's participation in different activities of cattle rearing.
Source: Survey-2004

Buffalo

Buffalo is the second most important livestock in the district and kept for milk and draft purpose. The study showed that the opposite situation as described in case of cattle. In buffalo rearing men's labor share was significantly higher than that of women. Involvement of men and women in buffalo rearing was 42.0 and 58.0 percent respectively. It is due to the fact that buffalo is considered harder to handle and generally male members in the family take responsibility for care and management. Among all economic classes, women of poor and medium economic class of hill migrated community contributed the highest work in buffalo rearing followed by women from rich and poor economic class of local community, women of rich economic class of hill migrated community and women of medium economic class of local community (Table-5.6).

The analysis based on the activities (Figure-5.8), shows that men's contribution was statistically higher in all activities of buffalo rearing except cleaning shed and selling of milk and milk products. Though, men contributed their work in

caring for the buffalo, it was women who share more responsibility for caring for buffalo by collecting fodder and, cleaning. The study revealed that the women contribution in feeding management, cleaning shed, caring of sick animal, milking, selling of milk and milk products were 42.3, 74.5, 27.7, 30.6, 3.8, and 71.4 respectively (Table-5.7).

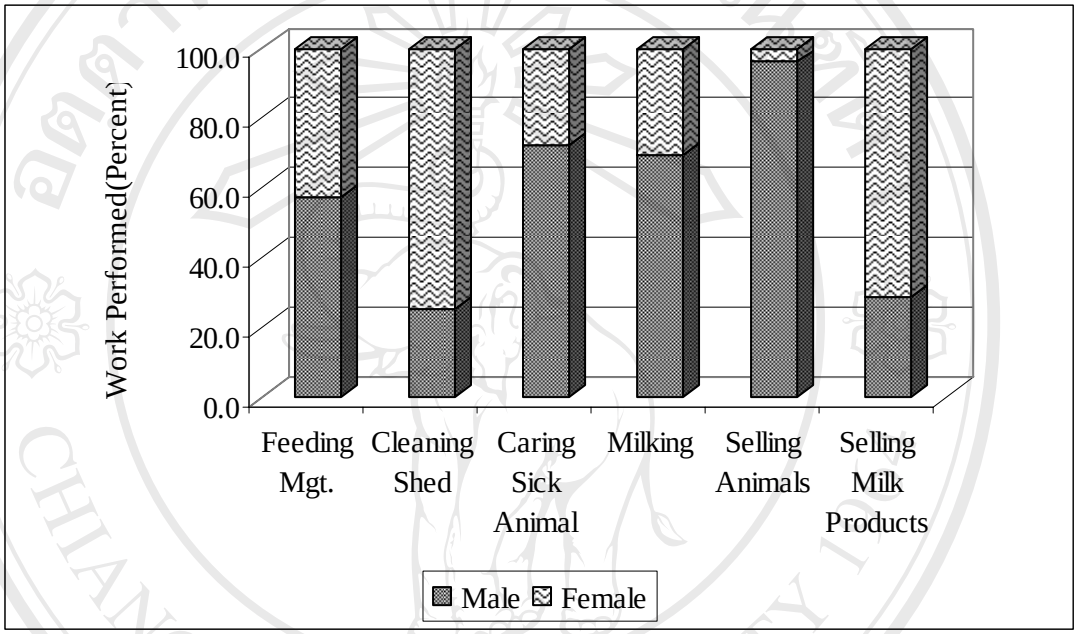

Figure 5.8: Men and women participation in different activities of buffalo rearing.
Source: Survey-2004

5.2.4 Small animal raising

Small animals are the major source of income especially for the small holders in Jhapa district. Women play crucial roles in rearing these animals.

Goat

Goat keeping was almost totally managed by women. On average men and women contributed 24 and 76 percent respectively in all activities of goat rearing. The work shared by women of different economic classes was not much different and they performed almost equal percentage of works in goat (Table-5.8).

Table5.8: Men's and women's participation in small animal rearing in Jhapa district

Community	Goat		Pig		Chicken	
	Male	Female	Male	Female	Male	Female
	----------Percent ----------					
Hill Migrated						
Poor	23.8	76.2*	24.2	75.8*	9.1	90.9*
Medium	18.4	81.6*	14.5	85.5*	8.3	91.7*
Rich	23.7	76.3*	14.0	86.0*	3.1	96.9*
Average	22.0	78.0	17.6	82.4*	6.8	93.2
Local						
Poor	22.3	77.7*	26.0	74.0*	13.0	87.0*
Medium	18.2	81.8*	24.5	75.5*	20.3	79.7*
Rich	32.2	67.8*	20.7	79.3*	6.8	93.2*
Average	24.2	75.8	23.7	76.3*	13.4	86.6
Overall average	23.2	76.8*	20.8	79.2*	10.3	89.7*

* Significant difference at $p<0.05$

Source: Survey-2004

In raising goat, activities like feeding management, cleaning of shed, and care of sick animals were almost solely carried out by women however, in most cases, buying and selling of these small animals were performed by male (Figure-5.9). Women's participation in feeding management, cleaning shed, caring sick animals and selling animals were 77.0, 88.0, 100.0, and 37.0 respectively (Table-5.9).

Table5.9: Men and women's participation in different activities of small animal rearing in Jhapa district

Activities	Goat		Pig		Chicken	
	Male	Female	Male	Female	Male	Female
	----------Percent ----------					
Feeding Management	23.8	76.2*	25.8	74.2*	7.5	92.5*
Cleaning Shed	12.0	88.0*	7.3	92.7*	1.7	98.3*
Caring Sick Animal	0.0	100.0*	22.1	77.9*	31.6	68.4*
Selling Animals	62.9*	37.1	69.3*	30.7	44.3	55.7*

* Significant difference at $p<0.05$

Source: Survey-2004

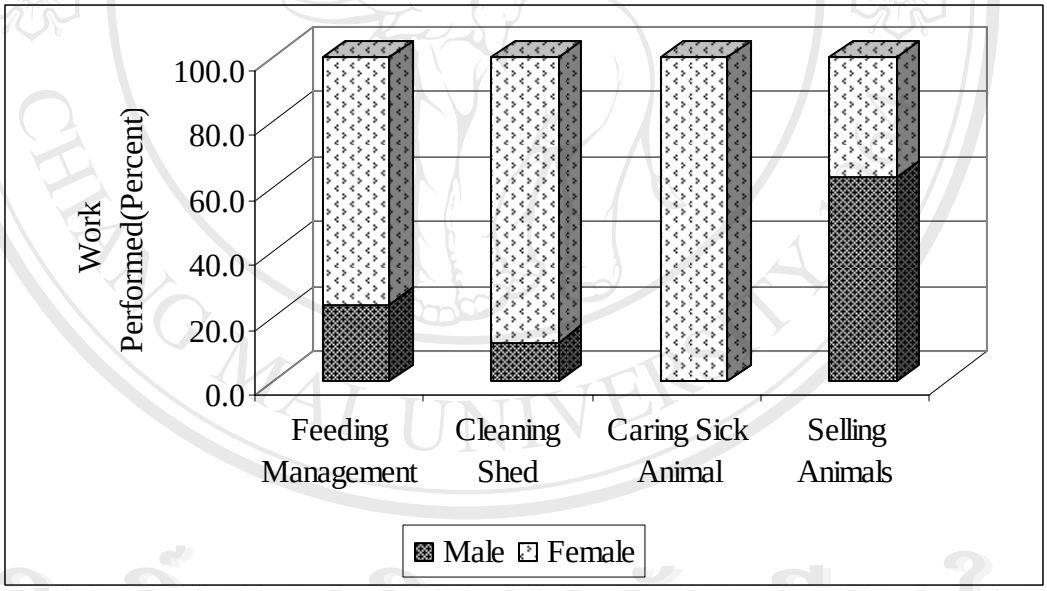

Figure 5.9: Men's and women's participation in different activities of goat rearing.
Source: Survey-2004

Pig

In case of pig rearing women make a significant contribution (Table-5.8). The results of the study showed that women contributed significantly more than that of men in pig rearing. On average women's labor share in all activities of pig production

was 79.0 percent. Likewise, in all economic classes, women contribution was observed significantly greater than that of men.

Analysis of contribution of men and women in pig rearing (Figure-5.10) showed that women's contribution was greater than that of men except selling of animals. The study revealed that the women contribution in feeding management, cleaning shed, caring of sick animal, selling animals were 74.2, 92.7, 77.9 and 30.7 percent, respectively (Table-5.9).

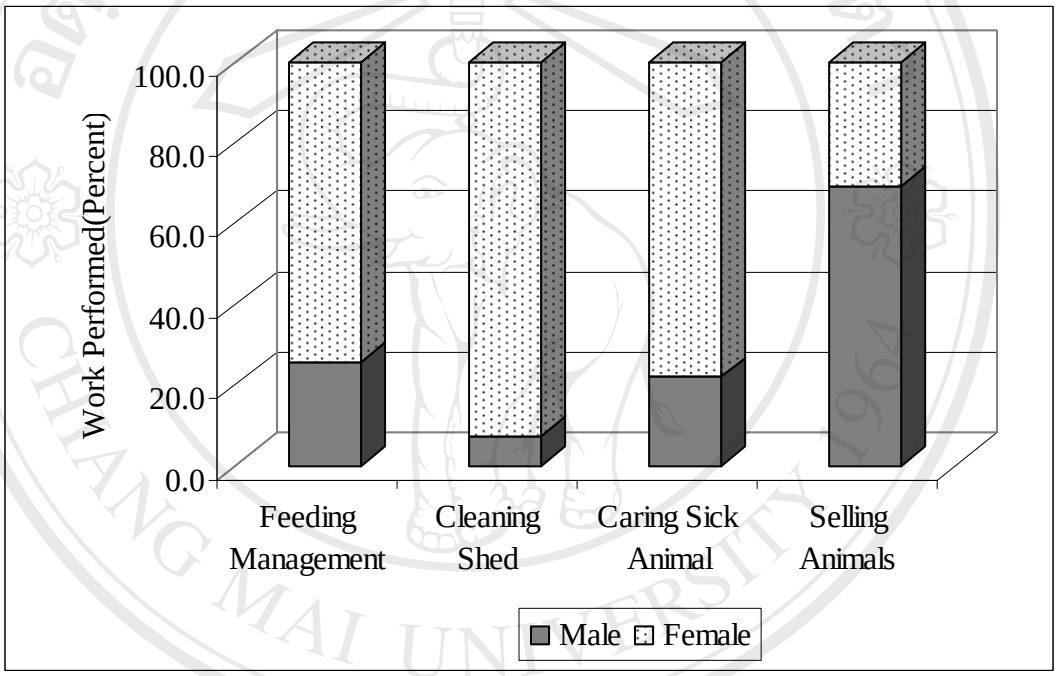

Figure 5.10: Men's and women's participation in different activities of pig rearing.
Source: Survey-2004

Chicken

Almost all works in poultry rearing were performed by women in case of poultry rearing. The result of the study showed that women labor contribution in poultry keeping was significantly more than that of men. On average 90 percent work was performed shared by women alone (Table-5.8). The work performed by females in the poultry keeping among different economic classes was not much different and they share almost equal percentage of works.

Activities like feeding management, cleaning of shed, care of sick fowl and selling of chicken were almost solely carried out by women (Figure-5.11).Women's participation feeding management, cleaning shed, caring sick animals and selling animals were 92.5, 98.3, 68.4, and 55.7 respectively (Table-5.9).

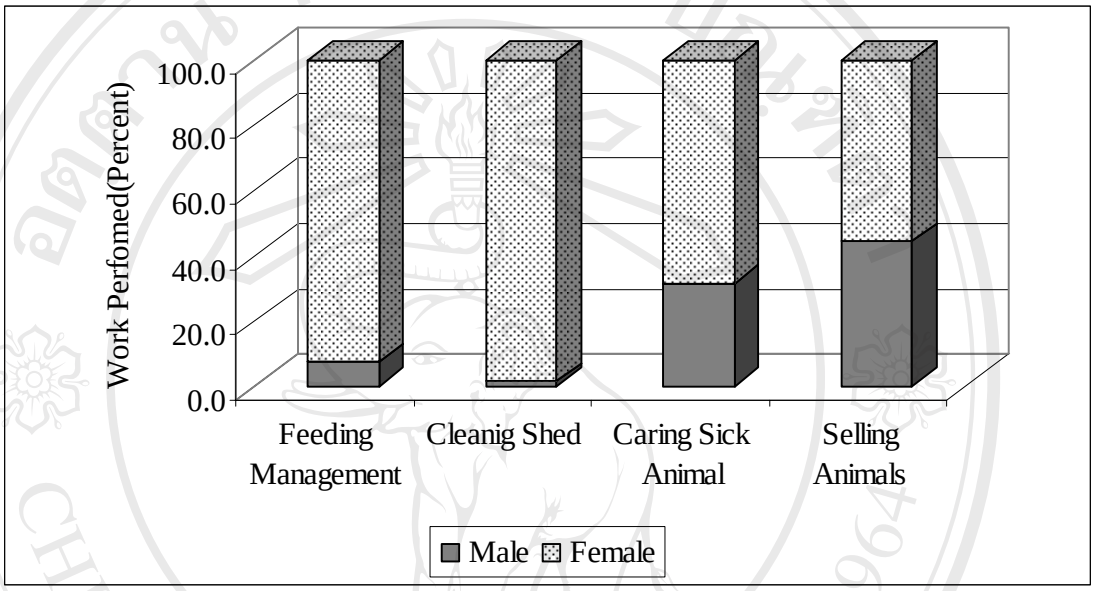

Figure 5.11: Men's and women's participation in different activities of chicken rearing.

Source: Survey-2004

5.3 Labor use pattern in agricultural production

The analysis of the labor use in different activities of agricultural production is very important in the mix subsistence farming system of the district as the labor is the crucial factor of production. Data for this section were derived from the formal survey, analyzed through the mean test of difference using t-test and the contribution by women and men were presented exactly in mandays.

Total mandays spent by women in overall activities of agricultural production through out the year were greater than that of the men (Figure-5.12). Women were engaged for 290 days and men for 248 days per year. The result showed that the labor contribution by women and men in cereal crop production activities was 95 and 116

mandays respectively. Women spent 42 mandays in vegetable production and 153 mandays in animal rearing and men spent 23 mandays in vegetable production and 109 mandays in animal rearing.

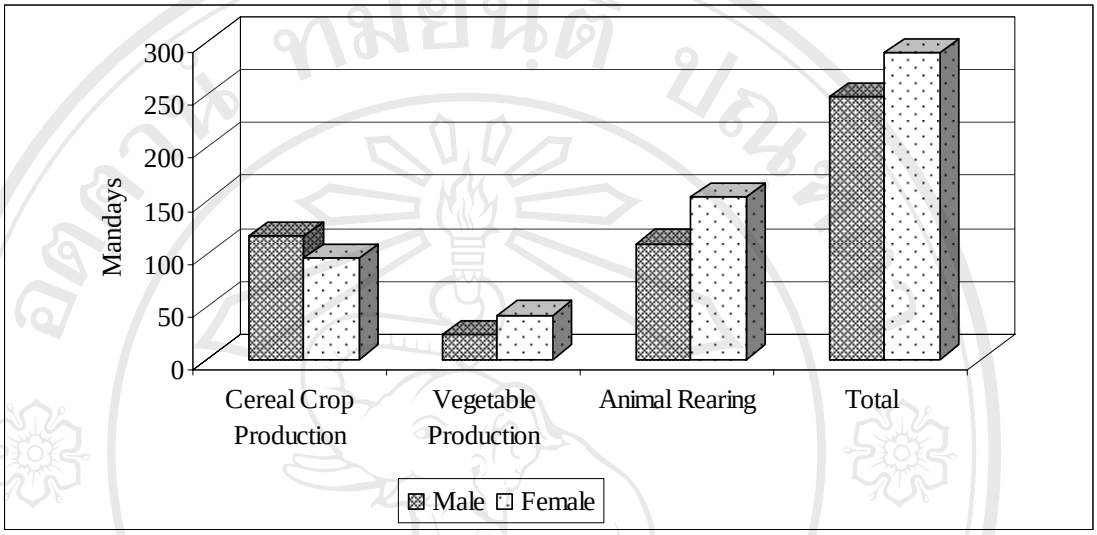

Figure 5.12: Labor contribution in agriculture
Source: Survey-2004

5.3.1 Cereal production

Paddy

The results of the analysis revealed that the labor contribution in paddy production by males in all economic classes was greater than that of females (Figure-5.13). However, mean test of mandays spent by men and women in paddy production in all economic strata were not statistically significant except in case of medium and rich economic class of local community (Table-5.10).

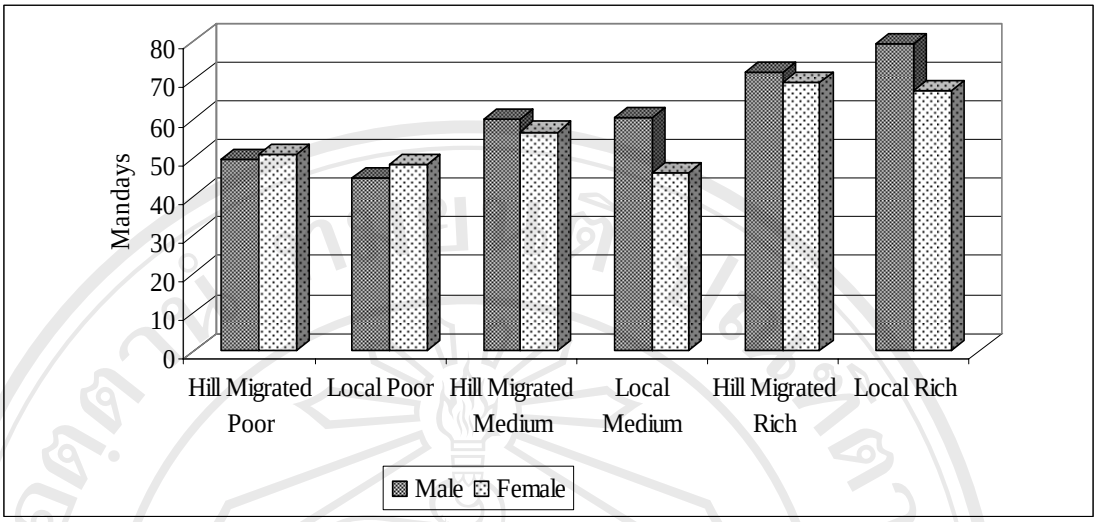

Figure 5.13: Labor use pattern of different economic classes in paddy production
Source: Survey-2004

Table 5.10: Labor use pattern of different communities in crop production in Jhapa district.

Communities	Paddy		Wheat		Maize		Vegetable	
	M	F	M	F	M	F	M	F
	---------- Mandays ----------							
Hill migrated								
Poor	49.4	51	23.8*	15.9	27*	22.7	13.7	33.2*
Medium	59.95	56.7	21.9*	16	25.4*	16.3	24.5	46*
Rich	72.2	69.6	26.5*	12	39.8*	27.5	29.6	53.9*
Average	60.5	59.1	24.1	14.6	30.7	22.2	22.6	44.4
Local								
Poor	44.8	48.1	19.2*	13.5	24*	14.8	17.5	35.1*
Medium	60.2*	46	21.6*	14.6	37.8*	16	23.1	39.7*
Rich	79.5*	67.3	29.1*	14	40.4*	18.9	26.8	46*
Average	61.5	53.8	23.3	14.0	34.1	16.6	22.5	40.3

Significant difference at $p<0.05$

Source: Survey-2004

The total mandays spent by men and women were 61 and 56.5 respectively (Table-5.10). The difference between the labor used by men and women in production of paddy was found statistically insignificant.

Table5.11: Labor use pattern in different activities of crop production in Jhapa district

Activities	Paddy		Wheat		Maize		Vegetable	
	M	F	M	F	M	F	M	F
	----------Mandays ----------							
Land Preparation	32.4*	1.9	10.5*	3.0	14.0*	3.0	5.0	10.5*
FYM Carrying	3.5	4.7	1.5	5.2*	1.0	4.0*	2.0	4.1*
Transplanting	0.0	26.5*	2.0*	0.2	5.0*	2.0	3.2	6.2*
Fertilizer Application	2.4*	0.2	1.0*	0.2	1.0*	0.2	2.0	3.5*
Irrigation	4.6*	1.0	1.9*	0.2	1.3*	0.3	3.5	4.5*
Weeding	7.3	8.7	0	0	4.5	7.0*	2.5	6.0*
Harvesting	9.9	13.4*	6.5	5.5	3.9	6.5*	2.3	4.0*
Selling	0.9*	0.2	0.6*	0.0	0.7*	0.1	2.0	3.5*
Total	61.0	56.5	24.0*	15.3*	31.4*	23.1	22.5	42.3*

* Significant difference at $p<0.05$

Source: Survey-2004

It was observed that women were engaged in paddy transplanting alone. Women's labor contribution was significantly higher than that of men in paddy harvesting. Similarly men almost exclusively contributed their labor in land preparation, fertilizer application, irrigation and selling of the crop. Other activities like farmyard manure carrying and application, and weeding are more or less equally shared by the men and women. The women's labor contribution were 1.9,4.7,26.5, 0.2,1.0,8.7,13.4,0.2, in land preparation, farmyard manure application, transplanting, fertilizer application, irrigation, weeding, harvesting and selling of crop respectively.

Wheat

Due to the variation in land holding size, the amount of labor used in the production of wheat varies among the economic classes (Figure-5.14). Comparison of labor use pattern revealed that men contributed significantly more labor than that of women in wheat production (Table-5.10). The labor use pattern indicted that in each economic category men's contribution was significantly greater than that of women. Among all, women of hill migrated-poor and medium economic class spent the highest 16 mandays and the women of hill migrated-rich spent the lowest 12 mandays in wheat production.

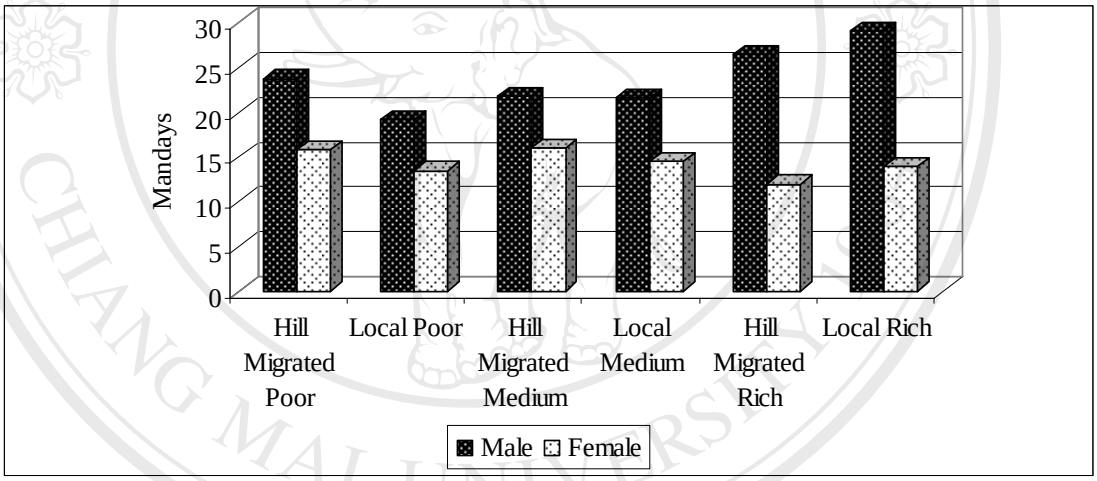

Figure 5.14: Labor use pattern of different economic classes in wheat production
Source: Survey-2004

The total men and women's labor used in the production of wheat was 24 and 15.3 mandays respectively (Table-5.11). It was found that women performed significantly more works in carrying and application of farm yard manure. Men's labor contribution was significantly more than those of women in land preparation, sowing, fertilizer application, irrigation and selling of products. However, there was not significant difference between men and women's labor contribution in harvesting of wheat crop.

Maize

On average, involvement of men and women in different activities of maize cultivation were found 34 and 22 mandays respectively, which are significantly different from each other. Analysis of results between the men and women among the different economic classes showed that men's spent more mandays than women in production of maize (Figure-5.15).

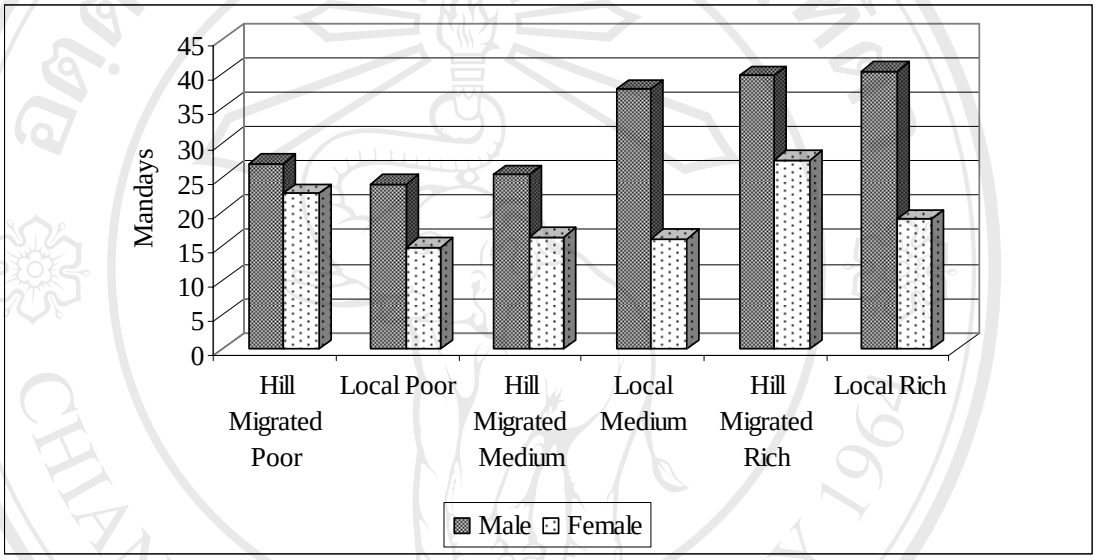

Figure 5.15: Labor use pattern of different economic classes in maize production
Source: Survey-2004

The mandays spent by men and women were 31.4 and 23.1 in all activities of maize cultivation, respectively (Table-5.11). The result of the study indicated that women's involvement in carrying and application of farmyard manure, weeding and harvesting of maize crop were significantly more than that of men. On the other hand, men spent significantly more mandays than women in land preparation, sowing, irrigation, fertilizer application and selling of the crops.

5.3.2 Vegetables

The labor use in vegetable production was different among women of economic classes (Figure-5.16). Generally, it was observed that more labor was used in the cultivation of the vegetables in higher economic classes. Analysis of labor use

pattern showed that women from different economic classes made significantly greater labor share than men in every aspects of vegetable cultivation (Table-5.10). The results of the analysis also pointed out that the hill migrated-rich women contributed the highest, 53.9 mandays followed by hill migrated-medium and local-rich women, 46 mandays; local-poor women, 35.2 mandays and hill migrated-poor women, 33.2 mandays in vegetable production.

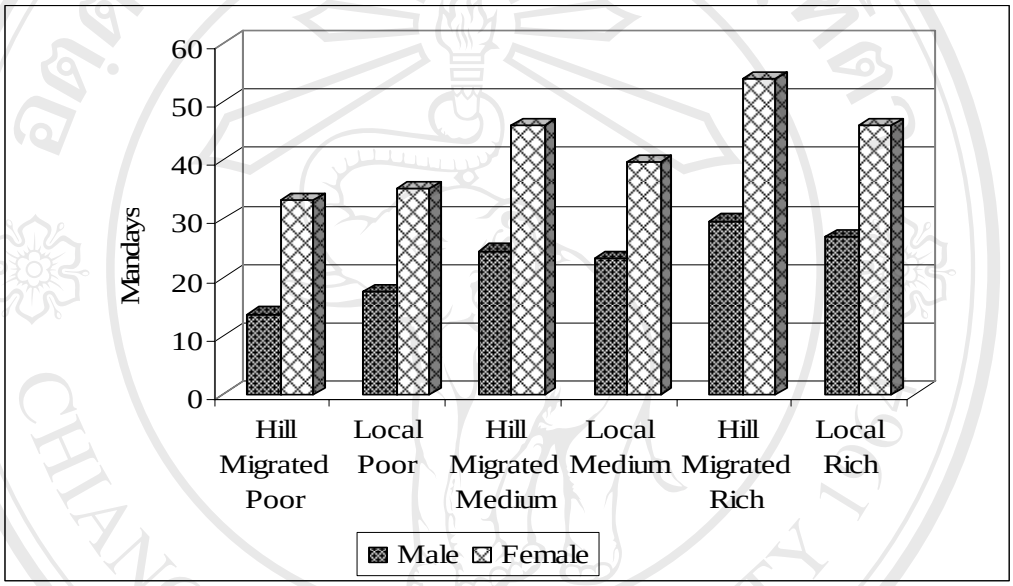

Figure 5.16: Labor use pattern of different economic classes in vegetable production
Source: Survey-2004

Over all contribution of women in vegetable production were 42.3 mandays which significantly higher than men's contribution, 22.5 mandays (Table-5.11). In all activities of vegetable cultivation women's labor contribution was significantly higher than that of men. Unlike cereal cultivation, it was observed that the women spent more labor than men in all activities including land preparation, FYM carrying and application, sowing/transplanting, fertilizer application, irrigation, weeding, harvesting and selling of vegetables.

5.3.3 Animal rearing

Cattle

Men and women both take part in cattle rearing. The mean test of difference between men and women's labor contribution in cattle rearing was found significant. It was also found that women's labor use for cattle rearing in all socio-economic strata was significantly more than that of their male counterparts except in hill migrated-poor (Figure-5.17). The labor used in cow rearing was not varied much among women of different economic strata. Among the women of different economic classes, local-medium women spent the highest and the hill migrated-poor women spent the lowest mandays in over all care and management of cattle (Table-5.12).

Table5.12: Labor use pattern of in large animal rearing in Jhapa district

Economic class	Cow		Buffalo	
	Male	Female	Male	Female
	----------Mandays----------			
Hill migrated community				
Poor	46.8	53.2	69.1*	57.70
Medium	40.5	59.5*	52.6*	43.30
Rich	45.5	54.5*	60*	39.40
Average	44.3	55.7	60.6	46.8
Local community				
Poor	40.6	59.4*	42*	29.10
Medium	39.5	60.5*	49.5*	26.40
Rich	45.4	54.6*	52.4*	40.00

Source: Survey-2004
* Significant difference at $p<0.05$

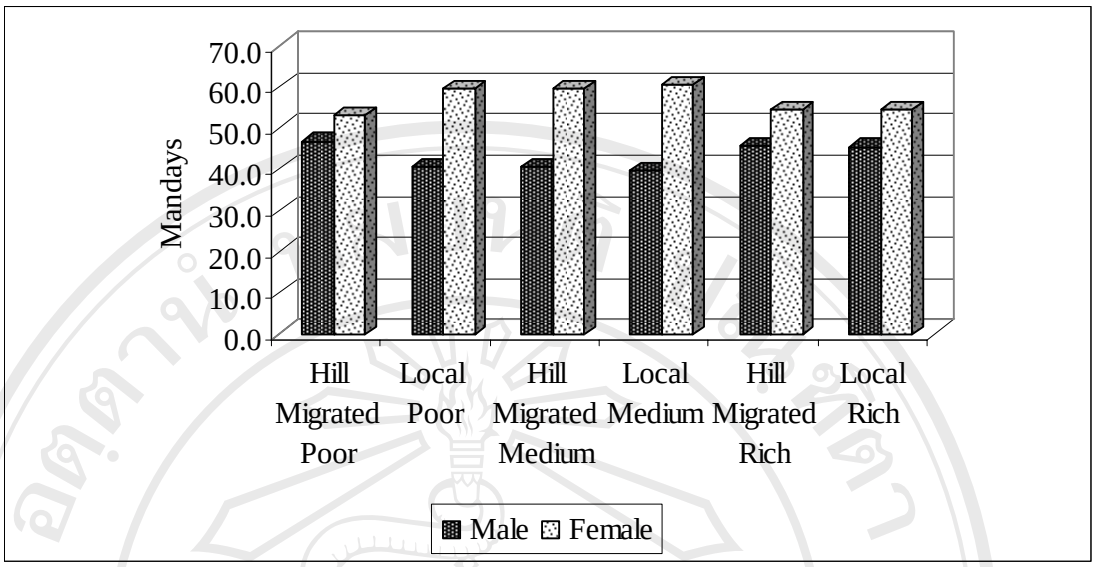

Figure 5.17: Labor use pattern of different economic classes in cattle rearing.
Source: Survey-2004

Overall participation of women and men in cattle rearing activities was 60 and 42 days per year respectively (Table-5.13). The findings of the study showed that women contributed more men-days in most of the activities of cattle raising. Women's contribution in feeding management, cleaning shed, selling of milk and milk products was found significantly more than that of men. Men's contribution was significantly greater than women in caring of sick cattle and selling cattle. Mandays spent by women in milking was greater than those by men, however, the difference is not statistically significant.

Table5.13: Labor use pattern in different activities of large animal rearing in Jhapa district

Activities	Cattle		Buffalo	
	Male	Female	Male	Female
	----------Mandays----------			
Feeding Management	14.3	22.6*	23.8*	14.5
Cleaning Shed	11.4	20.0*	8.0	15.1*
Caring Sick Animal	1.8*	1.0	1.6*	0.6
Milking	10.5	12.8	17.4*	5.8
Selling Animals	2.5*	0.1	2.1*	0.1
Selling Milk and Milk Products	1.45	3.5*	1.4	3.4*
Total	42.0	60.1*	54.3*	39.5

* Significant difference at $p<0.05$

Source: Survey-2004

Buffalo

Unlike cattle, men's participation in buffalo production was found significantly higher than that of women. The analysis on the labor use pattern in buffalo rearing between male and female among different economic classes revealed that the men's labor share was significantly higher than that of women. The results of the analysis also pointed out that the women of hill migrated-poor economic class contributed the highest, 57.7 mandays in buffalo rearing followed by women of hill migrated-medium economic class, 43.3 mandays; women of local-rich economic class, 40 mandays; women of hill migrated-rich economic class, 39.4 mandays; women of local-poor economic class, 29.1mandays and women of local-medium economic class, 26.4 mandays (Table-5.12).

Overall, women and men spent 54.3 and 39.5 men-days respectively in a year in all activities of buffalo production (Table- 5.13). In most of the activities of the buffalo production men's labor contribution was found significantly greater than that of women. Women's contribution in cleaning shed and selling of milk and milk

products was statistically more than that of men. Men's contribution was significantly greater than women in feeding management, milking, caring of sick animal and selling animals. Women spent more mandays in selling of buffalo milk and milk product.

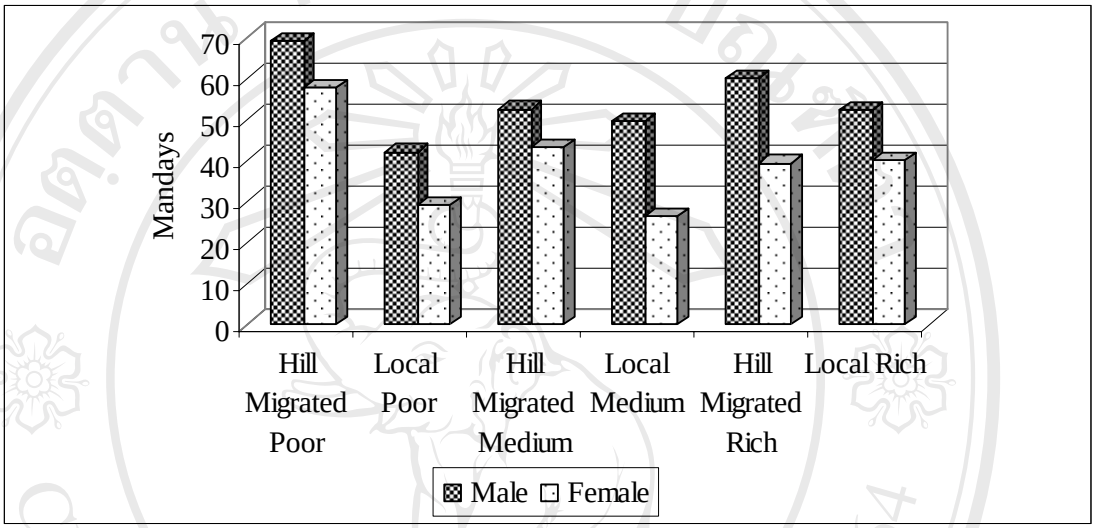

Figure 5.18: Labor use pattern of different economic classes in buffalo rearing.
Source: Survey-2004

Goat

This study showed that women's labor share in goat rearing was significantly higher than that of men. In all economic strata, women spent more mandays than men in the goat production (Figure-5.19).

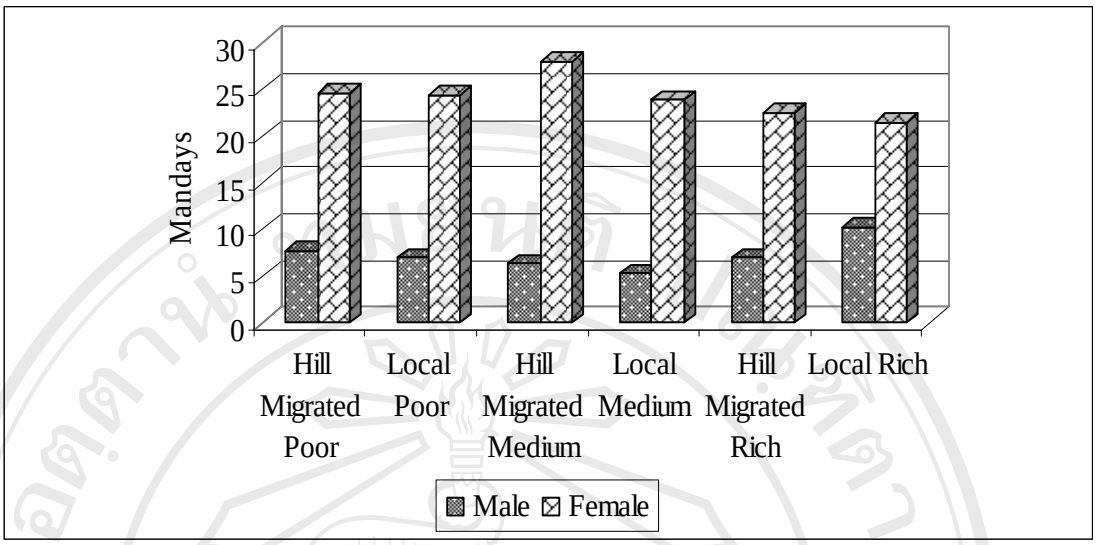

Figure 5.19: Labor use pattern of different economic classes in goat keeping.

Source: Survey-2004

Table 5.14: Labor use pattern in small animal rearing in Jhapa district

Economic strata	Goat		Pig		Chicken	
	Male	Female	Male	Female	Male	Female
	----------Mandays----------					
Hill migrated community						
Poor	7.7	24.6*	3.6	11.3*	0.7	7*
Medium	6.3	28.0*	2.5	14.7*	0.9	10*
Rich	7	22.5*	2.6	16.0*	0.4	12.4*
Average	7.0	25.0	2.9	14.0	0.7	9.8
Local community						
Poor	7	24.4*	6.5	18.5*	1.2	8*
Medium	5.3	23.9*	5.2	16.0*	2.7	10.6*
Rich	10.2	21.5*	5	19.2*	0.6	8.2*
Average	7.5	23.3	5.6	17.9	1.5	8.9

* Significant difference at $p<0.05$

Source: Survey-2004

On average men and women contributed 7.2 and 27.0 men days respectively in all activities of goat keeping. Activity wise analysis of the result showed that except selling of the animals, all the activities of goat rearing were almost exclusively carried out by women (Table-5.15). Men's participation in selling of animals was significantly higher than that of women.

Table 5.15: Labor use pattern in different activities of small rearing in Jhapa district

Activates	Goat		Pig		Chicken	
	Male	Female	Male	Female	Male	Female
	..……Mandays……..					
Feeding Management	4.4	14.2*	2.9	8.2*	0.4	4.5*
Cleaning Shed	1.6	11.6*	0.6	7.1*	0.1	4.8*
Caring Sick Animal	0.0	1.0*	0.1	0.3*	0	0.1
Selling Animals	1.2*	0.2	0.7*	0.3	0.6	0.8
Total	7.2	27.0*	4.2	16*	1.0	10.2*

* Significant difference at $p<0.05$

Source: Survey-2004

Pig

In pig raising also, women of Jhapa district devoted significantly more men-days than men. Like wise, in all economic classes, women contribution was observed significantly greater than that of men (Figure- 5.20).

Over all, men and women spent 4.2 and 16 mandays for pig rearing (Table-5.15). Analysis based on the different activities of pig rearing indicated that the women's contributions were significantly greater than that of men in all activities except selling of animals.

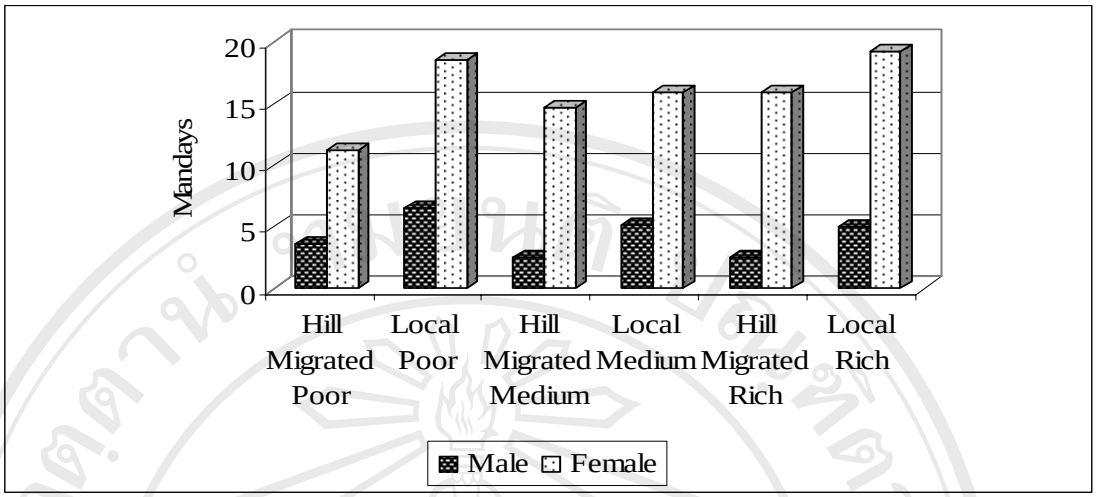

Figure 5.20: Labor use pattern of different economic classes in pig keeping.
Source: Survey-2004

Poultry

Almost all works of poultry rearing were performed by women. Women's labor contribution in poultry production was 10.2 mandays which is significantly higher than that of men (Figure- 5.21). Activities like feeding management, cleaning of shed, and care of sick chicken were almost exclusively carried out by women (Table-5.15). However, selling chicken was equally shared by men and women.

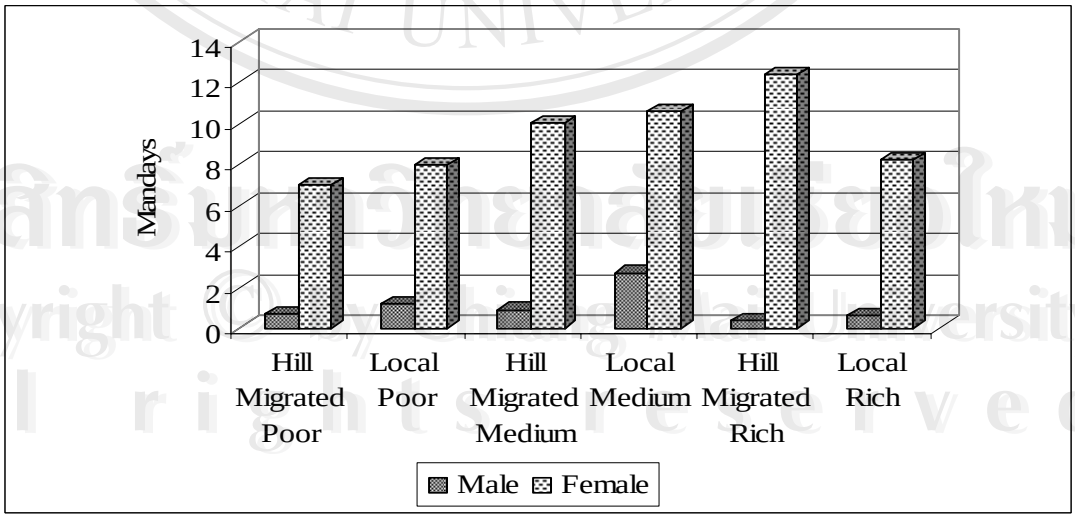

Figure 5.21: Labor use pattern of different economic classes in poultry keeping.
Source: Survey-2004