

**CHAPTER IV**  
**ROLE OF RURAL WOMEN IN AGRICULTURE AND ALLIED**  
**ACTIVITIES: CASE STUDY OF BARPETA DISTRICT OF ASSAM**

**4.01. Selection of villages for survey in Barpeta District:**

The present chapter is based on field information collected from respondents in selected villages of Barpeta District. Barpeta District of Assam has two sub-divisions, namely, Bajali and Barpeta. Thus, in the first stage we have selected purposively two blocks, namely Gobardhana Development Block and Chakchaka Development Block from Barpeta sub-division and another two Blocks, namely, Jalah Development Block and Bajali Development Block from Bajali sub-division based upon data collected from concerned Block Development Office on female work participation. There are twelve Development blocks in Barpeta District, namely, Barpeta, Chenga, Sarukhetri, Gomafulbari, Pakabetbari, Bhawanipur, Bajali, Ruposhi, Gobardhana, Jalah and Mandia. Out of these blocks, eight blocks namely Barpeta, Chenga, Sarukhetri, Gomafulbari, Ruposhi, Gobardhana, Mandia and Chakchaka Development Blocks fall under Barpeta Sub-division and remaining four blocks namely Pakabetbari, Bhawanipur, Bajali and Jalah Development Block fall under Bajali Sub-division. The data on female work participation collected from Block Office are as follows.

**Table 4.01**

**Female Work Participation in the Blocks of Barpeta and Bajali Sub-Divisions of Assam**

Sub-Division	Dev. Blocks	Total Female Population	Female Workers	FWPR (%)
Barpeta	Barpeta	76207	9149	11.1
	Chenga	69119	10091	14.6
	Sarukhetri	74996	10349	13.8
	Gomafulbari	52917	7990	15.1
	Ruposhi	59664	8830	14.8
	Gobardhana	71039	11650	16.4
	Mandia	61553	8002	13.0
	Chakchaka	41317	6652	16.1
Bajali	Pakabetbari	82948	12774	15.4
	Bhawanipur	76498	11092	14.5
	Bajali	74556	11854	15.9
	Jalah	68497	11781	17.2

From the collected data as mentioned above it has been observed that female work participation rate in Gobardhana (16.4 per cent) and Chakchaka (16.1 per cent) under Barpeta Sub-division are the highest. Similarly FWPR in Bajali (15.9 per cent) and Jalah (17.2 per cent) Development Block are the highest under Bajali Sub-division. Thus, we have selected purposively these four blocks in our first stage of sampling, as mentioned in the initial chapter of the study.

In the second stage of purposive sampling, two villages from each of the Blocks are selected purposively depending upon the same criterion *i.e.* female work participation rates. Hence, we have selected Khoirabari (FWPR 15.4 per cent) and Kalpani village (FWPR 15.9 per cent) from Gobardhana Development Block and Puthimari (FWPR 14.8 per cent) and Nichuka village (FWPR 15.2 per cent) from Chakchaka Development Block as per data collected from concerned Block Development Office. Further, we have selected Jalah (FWPR 21.2 per cent) and Baghmara village (FWPR 20.2 per cent) from Jalah Development Block and Akaya (FWPR 14.8 per cent) and Bhogpur village (FWPR 14.2 per cent) from Bajali Development Block on the basis of same criteria *i.e.* high female work participation. Thus, the total number of villages to be surveyed is eight. All the eight villages are sub-divided into three groups according to their FWPR. Group A includes Jalah and Baghmara village having higher FWPR, Group B contains Khoirabari, Kalpani and Nichuka village having lower FWPR than Group A and Group C includes Puthimari, Akaya and Bhogpur village with the lowest FWPR among the selected villages.

In the third stage, we first collected a list of female cultivators and agricultural labourers of selected villages (or groups) from concerned Block Development Office. Then 20 percent sample was selected at random from each group of female cultivators and agricultural labourers. The selection design has been depicted in Table 4.02.

So in all there were 1056 female cultivators and 1018 female agricultural labourers in the selected villages. Out of these 210 female cultivators and 203 labourers were selected as the sample for the survey. The number of the selected sample of the cultivators was 78, 67 and 65 in groups A, B and C respectively. On the other hand, the selected sample of the labourers was 69, 70 and 64 in groups A, B and C respectively.

Table 4.02

**Number of Female Cultivators and Agricultural labourers households in the sample**

Group	Villages	Total female cultivator households	No. of Selected female cultivator households	Total female Agri. Labour households	Number of Slected Agri. Labour households (female)
A	Jalah	260	51	230	46
	Baghmara	135	27	115	23
Sub Total Group A		395	78	345	69
B	Khoirabari	124	25	201	40
	Kalpani	106	21	85	17
	Nichuka	105	21	65	13
Sub Total Group B		335	67	351	70
C	Puthimari	101	20	111	22
	Akaya	115	23	85	17
	Bhogpur	110	22	126	25
Sub Total Group C		326	65	322	64
<b>Grand Total</b>		<b>1056</b>	<b>210</b>	<b>1018</b>	<b>203</b>

An open ended schedule had been prepared to collect relevant data on the basis of the personal interview method. The collected data in terms of the number of hours spent in various activities were converted subsequently into per (8 hours) day equivalents for analysis of the role of female cultivators and agricultural labourers in our study groups. The collected data were also analysed to examine their economic position in terms of income, consumption, assets, liabilities, housing conditions, etc.

The schedule included all the relevant questions, keeping in view the objectives of the study. This schedule was tested for checking the reliability of the questions to be asked and columns were filled so that no misinterpretation was possible. So far as the primary data was concerned, this questionnaire was filled up through personal interview with the selected female cultivators and agricultural labourers.

The schedule was duly filled by interviewing respondents in order to obtain the following information:

- i) Social and Demographic Indicators *viz.*, name of Districts, Block, Village, whether agricultural labourer or cultivator, name of the Head of the family, number of family members, religion, caste, educational level, main and subsidiary occupation of the family.
- ii) Time Use indicators: Time spent in agriculture and allied activities.
- iii) Economic Indicators: Income from different sources like income from permanent labour, casual labour, crop sharing, income from dairying, poultry and sale of manure along with income from salaries, pensions, interest on deposits and miscellaneous sources of income both for the labourers and the female cultivators.
- iv) Household Consumption Indicators: Expenditure on various items; the quantity and value of the expenditure for both the agricultural labourers and female cultivators.
- v) Physical Capital Indicators: Durable and livestock assets of female cultivators and agricultural labourers.
- vi) Indebtedness of Households: Savings and debt position of female cultivators and agricultural labourers.
- vii) Miscellaneous information.

It is evident from the foregoing chapter that majority of female workers in rural areas of Assam as well as in Barpeta District are either cultivators or agricultural labourers (Table 3.08). But it is observed that they are also performing various non-farm activities like management of livestock, poultry, handloom and weaving, sericulture, etc. The extent to which these activities are recognized and given due recognition, depends on, among other factors, socio-economic status, ethnicity, customs and traditions, religious beliefs and education. However, there are still too few studies that attempt to capture the role of female cultivators and agricultural labourers in both farm and off farm sectors, especially in Assam.

Therefore, the principal objective of this chapter is to examine in greater detail, the role of female cultivators and agricultural labourers in crop production and allied activities in rural Assam. In attempting to do so, we paid particular attention to the many activities that are often not counted as economically productive in spite of the time spent in care of livestock and poultry farming.

#### 4.02. Female Cultivators and Agricultural labourers in Crop Cultivation:

As agriculture is the mainstay in the economy of our sample villages, the contribution of female cultivators and agricultural labourers in terms of labour hours in the cultivation of both food and cash crops have been represented in Table 4.03

**Table 4.03**  
**Time Use Pattern of Female Cultivators and Agricultural Labourers in Crop Cultivation**

Group	Workers	Person days (8 hours per worker)							Total
		Food Crops					Cash Crops		
		Autumn Rice	Winter Rice	Summer Rice	Pulses	Vegetables	Oil Seeds	Sugar Cane	
1	2	3	4	5	6	7	8	9	10
A	Cultivators	15.2 (13.99)	45.57 (38.4)	18.28 (16.82)	8.90 (8.19)	11.28 (10.38)	9.30 (8.56)	10.1 (9.29)	118.63
	Agricultural Labourers	12.8 (15.38)	32.46 (35.58)	15.19 (18.25)	7.10 (8.53)	9.12 (10.96)	6.14 (7.37)	8.4 (10.09)	91.21
B	Cultivators	13.80 (13.08)	40.14 (38.06)	16.18 (15.34)	7.26 (6.88)	10.18 (9.65)	8.28 (7.85)	9.60 (9.10)	105.44
	Agricultural Labourers	11.20 (14.13)	26.24 (33.11)	14.40 (18.17)	6.60 (8.33)	8.42 (10.62)	5.12 (6.46)	7.25 (9.15)	79.23
C	Cultivators	12.40 (13.15)	35.12 (37.25)	15.20 (16.12)	6.48 (6.87)	9.12 (9.67)	7.70 (8.16)	8.25 (8.75)	94.27
	Agricultural Labourers	9.14 (13.55)	22.23 (32.96)	12.41 (18.40)	5.28 (7.83)	7.41 (10.98)	4.80 (7.11)	6.16 (9.13)	67.43
Total	Cultivators	41.4 (13.00)	120.83 (37.95)	49.66 (15.59)	22.64 (7.11)	30.58 (9.60)	25.28 (7.94)	27.95 (8.77)	318.34
	Agricultural Labourers	33.14 (13.93)	80.93 (34.02)	42.00 (17.65)	18.98 (7.97)	24.95 (10.48)	16.06 (6.75)	21.81 (9.16)	237.87

Source: Field Survey

N.B.: Figures in brackets are percentages.

It is evident from Table 4.03 that the female cultivators are employed in crop cultivation around 318 days in a year against around 237 days for agricultural

labourers indicating that the labour time involvement of female cultivators in crop cultivation is more than agricultural labourers. The possible reasons may be that agricultural labourers have fixed working hours against which the wages are paid and therefore there is no compulsion to work for more hours to earn the fixed wages on their part and reluctance on the part of cultivators to hire labour beyond a certain number of labour days. On the other hand, cultivators working on their own fields for no wages can have flexible working days and are willing to supplement the work of agricultural labourers till the completion of the task. For agricultural labourers, they are able to work for as many days as cultivators are willing to hire them. In respect of the study groups, the employment of female cultivators and agricultural labourers in crop cultivation are more in Group A followed by Group B and Group C. The labour time involvement of female cultivators are around 119 days, 105 days and 94 days in Group A, B and C respectively as against around 91 days, 79 days and 67 days of female agricultural labourers in the same groups indicating possibility of higher resource base in Group A followed by Group B and Group C.

It is also evident from Table 4.03 that majority of female cultivators and agricultural labourers are engaged in food crop production rather than cash crops in all groups. Disaggregating by food crops and cash crops and aggregating over the groups, it has been observed that around 83 percent of female cultivators are engaged in food crops as against only around 17 percent in cash crops and about 84 percent of agricultural labourers in food crops as against only almost 16 percent in cash crops which is indicative of the predominance of family farming adopted by both the sections of the society. However, the labour time involvement of both female cultivators and agricultural labourers are more in rice cultivation than pulses and vegetables in the category of food crops. The labour time involvement of female cultivators and agricultural labourers in the cultivation of autumn, winter and summer rice are almost same i.e. almost 66 percent as rice is the major cultivation. For the cultivation of other food crops like pulses and vegetables, the labour time involvement of female cultivators and agricultural labourers is also same i.e. around 7-8 and 9-10 percent. It indicates that there is no major distinction in farming methods for production of food crops for both cultivators and labourers. Similar phenomenon has been observed in the cultivation of cash crops, i.e. oilseeds and sugarcane, where about 8 and 9 percent of labour time of female cultivators and about 7 and 9 percent of labour time of agricultural labourers are used in the cultivation of oilseeds and

sugarcane respectively. Thus, less than 10 percent of the labour time of both female cultivators and agricultural labourers are used in the cultivation of cash crops indicating a near subsistence village economy.

Though labour time involvement of female cultivators and agricultural labourers are higher in rice cultivation in respect of all groups, yet differences of labour time involvement have been observed where around 36 and 34 percent of labour time of female cultivators and agricultural labourers are used in the cultivation of winter rice in comparison to around 13 and 14 percent in autumn rice and around 15 and 18 percent in summer rice. This is primarily because winter rice is the principal Kharif crop in the study area with normal rainfall occurring during this period that is suitable for rice production. Scanty or deficient rainfall during the cultivation of autumn and summer rice may be the possible reason for lower time involvement of female cultivators and agricultural labourers. Moreover, labour time involvement of female cultivators and agricultural labourers are marginally higher in the cultivation of sugarcane in comparison to oilseeds. The labour time spent by female cultivators in the cultivation of oilseeds and sugarcane are about 8 and 9 percent respectively as against about 7 and 9 percent for agricultural labourers as oilseeds is mainly a Rabi crop grown under scanty or deficient rainfall in our study area and there is the lack of adequate irrigation system.

In respect of groups also, it has been observed that most of the female cultivators and agricultural labourers use their labour time in the cultivation of food crops rather than cash crops. It has been observed that approximately 83 percent of labour time of female cultivators in all the three groups is spent on the production of food crops as against approximately 16 percent in the cultivation of cash crops. For agricultural labourers, the labour time involvement in the cultivation of food crops hovered around 84 percent for Group A and Group B and around 83 percent in Group C as against 15-16 percent for in the production of cash crops in the three groups. Thus, the labour time spent in food crops and cash crops by female cultivators and agricultural labourers are almost similar indicating no major distinction in farming methods for the cultivation of these crops between female cultivators and agricultural labourers as well as between the groups of villages under study. However, differences in labour time use between female cultivators and agricultural labourers may be noted in case of the different types of crops in our study groups. In case of winter rice, the percentages of labour time involvement of female cultivators are higher than

agricultural labourers in different groups. It varies between 37-38 percent for female cultivators in Groups A, B and C as against 32-35 percent for female agricultural labourers in the three groups. But in case of autumn and summer rice, the time involvement of female agricultural labourers is higher than female cultivators in different groups. The time involvement of female agricultural labourers in autumn rice varies from 13 percent in Group C to around 15 percent in Group A as against around 13 percent of female cultivators in Groups A, B and C. Similarly, the time involvement of female agricultural labourers in summer rice is around 18 percent for the three groups as against 15-16 for female cultivators in the groups. The possible reason for such variation in labour time involvement may be the very seasonality of agricultural operations. As the cultivation of rice is predominately dependent upon the availability of water, variations in demand for labour time involvement occur due to the nature and amount of rain recorded. Generally, rains come on time during the sowing period of winter rice (June-August) and therefore agricultural operations run as scheduled and accordingly generate demand for female cultivators than agricultural labourers as the usual pattern as because cultivators working on their own field for no wages can have flexible working days and are not willing to supplement it with the work of agricultural labourers till the completion of the task. Conversely, labour time involvement of female agricultural labourers are noticeably higher than female cultivators for summer and autumn rice possibly due to scanty and deficient rainfall and reluctance on the part of cultivators to engage themselves in the arduous task of cultivation in the absence of proper irrigation thus relying on more of hired labour for this. Similar phenomenon has also been observed in the cultivation of pulses and vegetables where labour time involvement of female agricultural labourers is marginally higher than female cultivators in different groups. In case of pulses, the labour time involvement of female agricultural labourers is around 8 percent in the three groups as against 6-7 percent of cultivators. Similarly, in case of vegetables, the labour time involvement of female agricultural labourers is around 10 percent in the three groups in comparison to marginally lower percentage of female cultivators i.e. about 9 percent in the same groups. The possible reasoning is similar – scanty and deficient rainfall during this period and inclination to use more of hired labour by the female cultivators.

In case of cash crops, the time involvement of both female cultivators and agricultural labourers in sugarcane is more than oilseeds. The time involvement of

female cultivators and agricultural labourers in sugarcane are around 9-10 percent in Group A, B and C. But in case of oilseeds, the time involvement of female cultivators are around 8 in the three Groups as against 6-7 percent of agricultural labourers in the same Group of villages. The possible reason may be the differences in crop duration of sugarcane and oilseeds. Though the sowing period of sugarcane is April-June, the harvesting period is December-February requiring more use of labour time. But the crop duration of oilseeds is relatively shorter. The sowing period of oilseed is November-January and harvesting period is March-April requiring less use of farm labour.

### ***Contract Mix:***

Family labour as permanent labour accounts for much of the total labour use in crop cultivation. The terms of contract for hired labour are both permanent and casual in nature. Labour, which is engaged for a specific period - annual, bi-annual or seasonal basis is permanent, but the labourers who are employed on daily basis are casual. However, only men are hired as permanent labour on contract for the entire season, and women are not hired as permanent workers. Both men and women are hired as casual labour, and are engaged for specific agricultural operations either on piece rate or daily wage basis.

It has been observed from Table 4.04 that the time involvement of female cultivators in crop cultivation is higher as family labour and time involvement of female agricultural labourers as casual labour is higher than family labour. It is around 208 days as family labour for cultivators as against around 111 days as casual labour. On the other hand, about 133 days of female agricultural labourers using their labour time as casual labour as against about 104 days as family labour. As the female cultivators have their own land to cultivate, they prefer to use more time in farm works for their livelihood. But agricultural labourers do not have their own land. They prefer more to use their labour time in casual works as casual workers enjoy more freedom. Similar phenomenon has been observed in various groups where labour time involvement of female cultivators as family labour is around 81, 74 and 52 days in group A, B and C respectively as against only around 37 days as casual labour in group A followed by 31 in group B and 42 days in group C.

**Table 4.04**  
Labour Contract Mix, by crop

Group	Workers	Labour	Person Days (8 hours per workers)							Total
			Food crops					Cash crops		
			Autumn rice	Winter rice	Summer rice	Pulses	Vegetables	Oilseeds	Sugarcane	
1	2	3	4	5	6	7	8	9	10	11
A	Cultivators	Family Labour	13.03 (15.98)	20.42 (28.73)	14.66(17.98)	7.33(8.99)	8.39(10.29)	6.92(8.49)	7.74(9.49)	81.49
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	5.57 (14.99)	11.32 (30.47)	6.31(16.96)	3.34(8.89)	4.08(10.98)	2.78(7.48)	3.75(10.09)	37.14
	Agricultural Labourers	Family Labour	5.01 (13.1)	14.13 (36.88)	5.82(15.2)	2.72(7.1)	3.75(9.8)	3.4(8.9)	3.48(9.1)	38.31
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	7.45 (14.1)	16.0 (30.24)	9.04(17.1)	4.39(8.3)	5.34(10.1)	4.97(9.4)	5.71(10.8)	52.90
B	Cultivators	Family Labour	11.8 (15.87)	20.88 (28.1)	13.00(17.5)	6.24(8.4)	7.57(10.2)	6.01(8.1)	8.81(11.85)	74.31
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	4.42 (14.19)	10.34 (33.21)	5.01(16.1)	2.70(8.7)	3.23(10.4)	2.30(7.4)	3.13(10.07)	31.13
	Agricultural Labourers	Family Labour	5.57 (12.9)	16.37 (37.88)	6.39(14.8)	3.02(7.0)	4.27(9.9)	3.75(8.7)	3.84(8.9)	43.21
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	4.97 (13.8)	10.7 (29.7)	6.08(16.9)	3.20(8.9)	3.63(10.1)	3.27(9.1)	4.17(11.7)	36.02
C	Cultivators	Family Labour	7.8 (15.2)	16.31 (31.42)	8.77(16.9)	4.56(8.8)	5.24(10.1)	4.41(8.5)	4.82(9.3)	51.90
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	6.05 (14.3)	14.13 (33.34)	6.83(15.9)	3.72(8.8)	4.27(10.1)	3.05(7.2)	4.32(10.2)	42.37
	Agricultural Labourers	Family Labour	2.99 (13.1)	8.76 (38.33)	3.22(14.1)	1.69(7.4)	2.23(9.8)	2.05(9.0)	1.91(8.4)	22.85
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	6.28 (14.1)	14.87 (33.35)	7.22(16.2)	3.61(8.1)	4.36(9.8)	3.92(8.8)	4.32(9.7)	44.58
Total	Cultivators	Family Labour	32.63 (15.71)	60.61 (29.18)	36.43(17.53)	18.13(8.72)	21.2(10.20)	18.91(9.10)	17.62(8.48)	207.70
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	16.04 (14.49)	35.79 (32.34)	18.15(16.40)	9.76(8.82)	11.58(10.46)	8.13(7.34)	11.2(10.12)	110.64
	Agricultural Labourers	Family Labour	13.57 (12.96)	39.26 (37.61)	15.43(14.78)	7.43(7.11)	10.25(9.82)	9.2(8.81)	9.23(8.84)	104.37
		Permanently hired	---	---	---	---	---	---	---	---
		Casual Labour	18.7 (14.00)	51.57 (38.7)	22.34(16.73)	11.2(8.38)	13.33(9.8)	14.16(10.6)	15.2(11.38)	133.50

Source: Field survey

N.B.: Figures in brackets are percentages.

The labour time involvement of female cultivators as family labour is maximum in group A followed by group B and lowest in group C indicating a possible correlation between time involvement as family labour and resource base. But labour time involvement of female cultivators as casual labour is higher in group C followed by group A and group B which indicates that resource base of group C is minimum and more poverty stricken and hence they are compelled to use their labour time more as casual labour. On the other hand, the resource base of agricultural labourers is low and they prefer to use their labour time more as casual labour. For agricultural labourers the labour time use as family labour is around 38, 43 and 23 in group A, B and C respectively as against higher labour time involvement as casual labour around 53 days in group A, 36 days in group B and around 44 days in group C indicating labour time involvement of labourers as family labour is maximum in group B and minimum in group C and labour time involvement as casual labour is maximum in group A and minimum in group B. The possible reason for such differences may be the same i.e., different resource base resulting mainly from different levels of socioeconomic development among group of villages under study.

Considering food crops and cash crops separately, it has been observed that labour time involvement of female cultivators and agricultural labourers as family labour is a little over 80 percent in case of food crops as against around 17 percent in cash crops for all groups. Similarly, the labour time involvement of female cultivators and agricultural labourers as casual labour is around 80 percent in food crops as against 17 percent approximately for cultivators and 19 percent for labourers in cash crops, indicating that labour time spent for cultivators as family labour and casual labour are almost uniform as there is no major distinction in farming methods between the two groups. Further, the labour time involvement as family labour and casual labour is higher in food crops than cash crops, indicating that agriculture is not yet commercialized and it has remained traditional and family-based.

Rice is the major crop among all the food crops. Rice cultivation accounts for around 62 percent of labour use as family labour as against 63 percent as casual labour in all groups among female cultivators. Similarly, the time involvement as family labour among agricultural labourers for the cultivation of rice is approximately 65 percent as against 69 percent as casual labour indicating use of marginally higher proportion of casual labour than family labour. Similar phenomenon has been observed in the cultivation of pulses and vegetables where labour time involvement of

female cultivators and agricultural labourers as casual labour is marginally higher than family labour, though the difference is small. In case of cash crops, the labour time involvement of female cultivators and agricultural labourers as casual labour is higher than family labour. Combining the two cash crops i.e. oilseeds and sugarcane, the labour time involvement of female cultivators and agricultural labourers as family labour is around 8 and 17 percent respectively as against almost 16 percent of cultivators and 22 percent of labourers as casual labour. The possible reason is that the traditional method of cultivation does not pay much attention to management problems (farm and labour management) as such, but relied more on the use of casual labour during peak seasons to fulfill the labour requirements.

In respect of groups, the labour time involvement of female cultivators as family labour is little over 80 percent in the three groups as against 82 percent of casual labour in groups A, B and group C indicating no major distinction in labour use pattern in various groups for the cultivation of food crops. Similarities are observed in labour time spent by agricultural labourers as family labour and casual labour in food crops where labour time involvement of agricultural labourers as family labour is around 82 percent of total labour time in group A, B and C as against around 80 percent of casual labour in groups A and B and 81 percent in group C, indicating no major differences in farming methods for the cultivation of food crops. But, the labour time use of female cultivators and agricultural labourers as family labour and casual labour in the cultivation of cash crops is low in comparison to food crops varying between 18 - 20 percent of family labour and casual labour with the latter having a higher time involvement by female cultivators in groups A, B and C. Similarly, 18-20 percent of family labour and casual labour is used by agricultural labourers in groups A, B and C. It shows that the labour time use of female cultivators and agricultural labourers as casual labour in the cultivation of cash crops is marginally higher than family labour indicating reluctance on the part of cultivators and labourers to engage themselves as family labour with no wages at all and intensity to use more of hire labour on casual basis.

Moreover, rice cultivation accounts for around 63 percent of labour use as family labour for female cultivators in group A, 62 percent in group B and approximately little over 63 percent in group C as against about 62, 64 and 63 percent of casual labour in group A, B and C respectively. Similarly, the time involvement as family labour among agricultural labourers for the cultivation of rice is around 65, 66

and 64 percent in group A, B and C respectively as against about 61 percent of casual labour in group A, 60 percent in group B and 64 percent in group C. Similar phenomenon has been observed in the cultivation of pulses and vegetables where labour time use of female cultivators as family labour and casual labour is hovering around 19 percent pointing to the absence of any major distinction between the use of family and casual labour. For agricultural labourers the labour time use as family labour, however, is marginally lower than casual labour. The possible reason may be the landlessness among agricultural labourers and preference given by them to casual labour to earn more wages necessary for their subsistence. In case of cash crops, although labour time involvement of female cultivators as family labour and casual labour has no major distinction, yet the labour time use of agricultural labourers as casual labour is higher than family labour. This is indicative of the compulsion to engage as casual labour to earn more wages as the sowing season of sugarcane and summer rice and both sowing and harvesting season of oilseeds and pulses is over the same period and hence the cultivators prefer to use more of hired labour as casual labour to meet the additional labour requirements.

Although labour time involvement of female cultivators and agricultural labourers in the form of family and casual labour is highest in the rice cultivation, yet such involvement is not the same among the three varieties of rice. The labour time use of female cultivators as family labour is the highest for winter rice as it is a major kharif crop and use of family labour is lowest for summer rice as summer rice is increasingly being substituted by jute in our study area due to low productivity of summer rice in comparison to jute. But, the use of casual labour is higher than family labour for winter rice and lower than family labour for autumn and summer rice for female cultivators. The use of casual labour by female cultivators for winter rice in group A, B and C indicate the willingness by the cultivators to supplement their work by the casual labour as family labour do not earn any wages for working on their own farm. But the labour time use of female cultivators as casual labour is lower for the cultivation of autumn rice in group A, B and C as against family labour in the same groups. Similarly, the labour time use of female cultivators as casual labour is marginally lower for the cultivation of summer rice in group A, B and C as against family labour in the same group. The possible reason may be the higher productivity of winter rice in comparison to autumn and summer rice and reluctance on the part of cultivators not to use hired labour.

But for agricultural labourers the use of labour time as casual labour is close to 14 percent for the cultivation of autumn rice in the three groups as against 13-15 percent of labour time use of family labour in the same group. Similarly, the use of labour time as casual labour is comparatively higher (highest for Group A) for the cultivation of summer rice in the groups than the percentage of family labour time in the same groups. Thus, the use of casual labour is higher than family labour for the cultivation of autumn and summer rice. The possible reason runs along similar lines which is — lower productivity of autumn and summer rice and inclination of the labourers to engage themselves as casual labourers to enjoy greater freedom with flexible working days and flexible wages.

In case of other food crops, the labour time use of female cultivators and agricultural labourers as family and casual labour is higher in vegetables than pulses. For cultivators the labour time use as family labour is around 9 percent for pulses in groups A, B and C as against 10 percent for vegetables in the same group. Similarly, the labour time use as casual labour for cultivation of pulses is around 9 percent with negligible variation amongst the groups A, B and C respectively for female cultivators as against approximately 10 percent of casual labour in the cultivation of vegetables in the groups. Similar is the case of agricultural labourers where labour time use for the cultivation of vegetables as family labour is around 10 percent in the groups A, B and C similar to percentage of days spent by casual labour for the same groups. Group B and C have comparatively higher percentage days by casual labour for the cultivation of pulses than group A. The finding is carried over family labour by the groups for the cultivation of pulses. The possible reason may be that the vegetables are grown throughout the year (both kharif and rabi season) while pulses are sown and harvested in a particular season i.e. November to mid-February in our study area.

In case of cash crops, the use of family and casual labour for female cultivators and agricultural labourers is higher for sugarcane than oilseeds. The labour time use of female cultivators as family labour in sugarcane is higher (highest in Group B) than family labour in the cultivation of oilseeds. Similarly, the labour use of female cultivators as casual labour for the cultivation of sugarcane is around 10 percent in the groups A, B and C, which is significantly higher than around 7 percent for cultivation of pulses in the groups. For agricultural labourers, the labour time use as family labour for the cultivation of sugarcane is higher by 1 percentage point in the groups than family labour for the cultivation of pulses. Very little variation is there

between labour time use of agricultural labourers as casual labour for the cultivation of sugarcane and casual labour for the cultivation of pulses within the groups. The possible reason for higher labour time involvement of family and casual labour in sugarcane for both female cultivators and agricultural labourers may be due to the longer gestation lag for sugarcane than oilseeds.

### *Segregated Activities*

There is considerable specificity to the operations in which female cultivators and agricultural labourers participate in crop production as is evident from Table 4.05.

**Table 4.05**  
Working days of Female Cultivators and Agricultural Labourers by farm activities  
[Number of Days (8 hrs) spent]

Cultivators	Farm activities										Total Working Days
	Group	Land Preparation, Ploughing etc	Irrigation	Fertilizers application	Sowing	Transplanting	Use of Insecticides & Pesticides	Hand Weeding	Use of Weeder Herbicide	Harvesting	
A	--	5.69 (4.8)	9.25 (7.8)	8.06 (6.8)	37.24 (31.4)	--	7.47 (6.4)	--	37.0 (31.2)	13.92 (11.73)	118.63
B	--	4.85 (4.6)	7.80 (7.4)	6.74 (6.4)	32.79 (31.1)	--	5.37 (5.1)	--	32.46 (30.79)	16.26 (15.43)	105.44
C	--	3.58 (3.8)	6.50 (6.9)	5.46 (5.8)	27.43 (29.1)	--	4.33 (4.6)	--	28.10 (29.81)	17.16 (18.20)	94.27
<b>Total</b>	--	<b>14.12</b> <b>(4.43)</b>	<b>23.55</b> <b>(7.39)</b>	<b>20.26</b> <b>(6.36)</b>	<b>97.46</b> <b>(30.61)</b>	--	<b>17.17</b> <b>(5.39)</b>	--	<b>97.56</b> <b>(30.64)</b>	<b>47.34</b> <b>(14.87)</b>	<b>318.34</b>
<b>Labourers</b>											
A	--	3.83 (4.2)	5.74 (6.3)	5.29 (5.8)	25.63 (28.1)	--	5.29 (5.8)	--	26.54 (29.1)	18.89 (20.71)	91.21
B	--	3.08 (3.9)	4.35 (5.5)	4.11 (5.2)	21.55 (27.2)	--	3.72 (4.7)	--	22.34 (28.2)	20.08 (25.31)	79.23
C	--	2.56 (3.8)	2.94 (4.8)	2.49 (3.7)	18.13 (26.9)	--	2.76 (4.1)	--	18.74 (27.8)	19.81 (29.37)	67.43
<b>Total</b>	--	<b>9.47</b> <b>(3.98)</b>	<b>13.03</b> <b>(5.47)</b>	<b>11.89</b> <b>(4.99)</b>	<b>65.31</b> <b>(27.45)</b>	--	<b>11.77</b> <b>(4.94)</b>	--	<b>67.62</b> <b>(28.42)</b>	<b>58.78</b> <b>(24.71)</b>	<b>237.87</b>

Source: Field survey

N.B.: Figures in brackets are percentages

It has been observed from the above table that the total working days for female cultivators in crop cultivation is 318.34 days where 118.63 days is employed in Group A, 105.44 days in Group B and 94.27 days in Group C. Transplanting and harvesting is the major farm activity where more than 60 percent of labour time of female cultivators are used followed by around 7 percent in fertilizer applications and approximately 4 percent in irrigation. Post harvest operation accounts for around 15 percent of labour use and in the rest of the activities like sowing and hand weeding accounts for only 12 percent of labour time use among female cultivators. In respect of groups around 62 percent of labour time of female cultivators is used in transplanting and harvesting activities in group A, and B and about 59 percent in group C. Fertilizer application accounts for 7-8 percent of labour time of female cultivators in group A, B and C as against only 4-5 percent of labour time use in irrigation in the same group indicating that the method of agriculture is still traditional as the use of labour time in modern input is lower, like, application of chemical fertilizer and irrigation. In rest of the activities like sowing and hand weeding, around 13 percent of labour time of female cultivators are used in group A, approximately 11 percent in group B and 10 percent group C. It can further be noted that the labour time use of female cultivators in post harvest operations like grinding, de-husking, storing, winnowing and even marketing, is highest in group C which has been worked out at around 18 percent followed by 15 percent in group B and close to 12 percent in group A indicating that the resource base of group C cultivators is lowest followed by group B and A and as a result they are compelled to use their labour time in more labourious tasks like post harvesting activities.

On the other hand, the labour time use of agricultural labourers in crop cultivation is 237.87 days where 91.21 days is employed in group A, 79.23 days in group B and 67.43 days in group C. Transplanting and harvesting together accounts for 56 percent of labour use of the total working days followed by 25 percent in post harvest operations, 5 percent in fertilizer application and 3 percent in irrigation. For rest of the activities like sowing and hand weeding only 10 percent of labour time of female agricultural labourers are used. It indicates that transplanting and harvesting are the major farm activities where a significant proportion of agricultural labourers devoted their labour time and the demand for labourers increased during the period of transplanting and harvesting as both the activities are low paid and laborious. With respect to the groups, approximately 57 percent of labour time of agricultural

labourers is used in transplanting and harvesting activities in group A, around 55 percent in group B and 54 percent in group C. Fertilizer application accounts for 5-6 percent of labour time of agricultural labourers in the three groups as against only 4-5 percent of labour time used in irrigation indicating the lesser importance of modern inputs like irrigation and chemical fertilizer since method of agriculture is still traditional. In rest of the activities like sowing and hand weeding about 12 percent of labour time of agricultural labourers is used in group A, 10 percent in group B and 8 percent in group C. Moreover, the labour time use of female agricultural labourers in low paid and laborious post harvest operation is more in group C with about 29 percent followed by 25 percent in group B and 21 percent in group A indicating reluctance on the part of the cultivators to engage themselves in low paid and laborious tasks resulting in engagement of more agricultural labourers with fixed wages.

### ***Seasonality in Employment:***

It is well known that agricultural production systems are characterized by seasonality, with peak periods associated with the necessity to complete specific farm operations within a definite time frame leading to peak and slack season of female labour employment. Table 4.06 depicts the seasonal variations of employment of female cultivators and agricultural labourers.

**Table: 4.06**  
Month-wise employment of labour days (8 hours) per worker

Month	Employed days of females in farm activities					
	Group A		Group B		Group C	
	Cultivators	Agricultural Labourers	Cultivators	Agricultural Labourers	Cultivators	Agricultural Labourers
May	8.3(6.99)	6.11(6.7)	7.16(6.8)	5.22(6.6)	6.41(6.7)	4.38(6.5)
June	11.3(9.52)	8.75(9.6)	9.59(9.1)	7.44(9.4)	9.49(10.06)	6.27(9.3)
July	19.53(16.46)	15.59(17.1)	18.97(17.99)	13.38(16.9)	16.36(17.35)	11.66(17.3)
August	17.6(14.83)	14.04(15.4)	16.23(15.39)	11.96(15.1)	14.85(15.75)	10.51(15.6)
September	3.8(3.2)	3.46(3.8)	3.26(3.1)	2.69(3.4)	3.94(4.17)	2.49(3.7)
October	5.6(4.72)	4.19(4.6)	4.85(4.6)	3.32(4.2)	5.33(5.86)	3.03(4.5)
November	10.2(8.59)	8.30(9.1)	8.85(8.4)	7.13(9.0)	8.83(9.36)	6.00(8.9)
December	17.1(14.41)	14.31(15.7)	14.65(13.9)	12.51(15.8)	13.00(13.8)	10.51(15.6)
January	7.8(6.57)	6.56(7.2)	6.53(6.2)	5.86(7.4)	5.75(6.1)	4.78(7.1)
February	6.6(5.56)	5.83(6.4)	5.58(5.3)	5.14(6.5)	4.90(5.2)	4.24(6.3)
March	5.6(4.72)	2.64(2.9)	4.85(4.6)	2.58(3.25)	4.14(4.4)	2.09(3.1)
April	5.2(4.38)	1.43(1.56)	3.92(4.3)	2.00(2.52)	1.27(1.34)	1.47(2.18)
Total	118.63	91.21	105.44	79.23	94.27	67.43

Source: Field survey

N.B.: Figures in brackets are percentages

It has been observed from Table 4.06 that the farm activities of female cultivators and agricultural labourers are not spread uniformly for the whole year. June to August are the busy months where a little over 40 percent of labour time of female cultivators are used in transplanting activities in winter rice in the groups, although labour force participation rate in group A is the highest followed by group B and group C. It is an indication of possible inverse relationship between resource base and employment of women in transplanting activities i.e., greater the resource base, less is the women engagement in transplanting activities as transplanting activities is a tedious job and therefore, preference is given by female cultivators on non-farm activities. November-December is the harvesting season where around 31 percent of labour time of female cultivators is used in the groups indicating no major distinction of employment patterns of female cultivators in harvesting activities in various groups as it is less tedious than transplanting activities. January-May and September-October is the lean period where 28 percent of labour time of female cultivators is used in group A, 27 percent in group B and 24 percent in group C as against about 8 percent in Sep-Oct in group A and B and about 10 percent in group C as these months corresponds to the cultivation of summer and autumn rice with scanty or deficient rainfall and therefore demand for female cultivators in farm activities are comparatively lower.

June-August is also busy months for agricultural labourers where around 42 percent of labour time of labourers is used in transplanting activities in winter rice in group A and C, and 41 percent in group B indicating no major distinction of female labour employment in various groups particularly in kharif crop. November-December is the harvesting period of winter rice and, therefore, 25 percent of labour time of female agricultural labourers is employed in group A and B and 24 percent of labour time in group C indicating almost same percentage of labour time use in various groups. Jan-May are the lean months where 18 percent of labour time of labourers are employed in group A, 16 percent in group B and 15 percent in group C as these months correspond to the cultivation of summer and autumn rice with inadequate rainfall. September-October is also the lean months where labour time use of female cultivators and labourers are the minimum. It is only 7-8 percent in the three groups as farm activities in these months are almost nil except minor irrigation in some selected plot of land and second time application of chemical fertilizer on winter rice known as 'topdressing'.

#### 4.03. Female Cultivators and Agricultural Labourers in livestock and poultry related activities:

Female cultivators and agricultural labourers also spend considerable amount of time in economically productive allied activities. While some of these are recorded as such, it is more often the case that labour time spent on some of these activities is unaccounted for, or termed as 'household work'. A suitable example of unaccounted labour time is provided by the time spent in care of animals. In fact, female cultivators and agricultural labourers spend as much time in the care of livestock as in crop production activities.

**Table 4.07**  
Female Cultivators and Agricultural Labourers in Livestock and Poultry related activities.  
Number of Days (8 hrs) spent

Cultivators		Livestock activities							
Group	Cleaning Cattle/ Poultry Shed	Collection of fodder/ Preparation of feeds	Feeding	Grazing Cattle	Milking	Processing Livestock Products	Maintaining Poultry/Ducks	Attending Sick/ Pregnant Animals	Total Working Days
A	11.52 (13.5)	15.71 (18.4)	9.73 (11.4)	6.91 (8.1)	7.51 (8.8)	6.31 (7.4)	15.50 (18.15)	9.56 (11.2)	85.4
B	9.96 (13.77)	13.58 (18.78)	9.1 (12.58)	5.84 (8.07)	6.12 (8.46)	5.2 (7.19)	13.2 (18.27)	8.30 (11.47)	72.3
C	8.80 (13.56)	12.42 (18.70)	8.1 (12.19)	5.62 (8.46)	5.48 (8.25)	4.62 (6.95)	13.56 (20.42)	7.80 (11.74)	66.4
<b>Total</b>	<b>30.28</b> <b>(13.51)</b>	<b>41.71</b> <b>(18.61)</b>	<b>26.93</b> <b>(12.01)</b>	<b>18.37</b> <b>(8.19)</b>	<b>19.11</b> <b>(8.52)</b>	<b>16.13</b> <b>(7.19)</b>	<b>42.26</b> <b>(18.85)</b>	<b>25.66</b> <b>(11.45)</b>	<b>224.10</b>
Labourers									
A	8.40 (13.52)	11.85 (19.08)	7.9 (12.72)	5.12 (8.24)	5.0 (8.05)	3.98 (6.40)	13.05 (21.01)	6.8 (10.95)	62.1
B	7.12 (12.62)	10.40 (18.43)	6.8 (12.05)	4.90 (6.68)	4.98 (8.82)	4.1 (7.26)	11.9 (21.09)	6.2 (10.99)	56.4
C	6.14 (12.73)	9.39 (19.48)	5.7 (11.82)	3.80 (7.88)	3.98 (8.25)	3.2 (6.63)	10.59 (21.97)	5.4 (11.20)	48.2
<b>Total</b>	<b>21.66</b> <b>(12.99)</b>	<b>31.64</b> <b>(18.98)</b>	<b>20.4</b> <b>(12.23)</b>	<b>13.82</b> <b>(8.29)</b>	<b>13.96</b> <b>(8.37)</b>	<b>11.28</b> <b>(6.76)</b>	<b>35.54</b> <b>(21.31)</b>	<b>18.4</b> <b>(11.03)</b>	<b>166.70</b>

Source: Field survey

N.B.: Figures in brackets are percentages

It has been observed from Table 4.07 that the total labour time use of female cultivators are 224.10 days where around 38 percent of labour time is used in group A, 34 percent in group B and around 32 percent in group C, indicating no major distinction of labour time use of female cultivators in livestock and poultry related activities among the group of villages. One possible reason for this is because of the presence of higher livestock base among the group of villages of cultivators. Collection of fodder/ preparation of feeds and maintaining poultry/ ducks accounts for 37 percent of total labour time use in livestock activities followed by 26 percent in cleaning cattle/ poultry shed and feeding and 35 percent of labour time use in rest of the activities like grazing cattle, milking, processing livestock products and attending to sick/ pregnant animals. In respect of groups, around 36 percent of labour time of female cultivators are used in collection of fodder/ preparation of feeds and maintaining poultry/ ducks in group A, 37 percent in group B and 39 percent in group C, indicating no major distinction of labour time use of cultivators in dairy and poultry farming as livestock base among group of cultivators are almost same. Cleaning cattle/poultry shed and feeding of livestock accounts for 25-26 percent of labour time use to the total working days in the three groups. In rest of the activities like grazing cattle, milking, processing livestock products and attending sick/ pregnant animals almost 35 percent of labour time of female cultivators are used in group A, B and C indicating no major differences among the groups as they have almost similar livestock base.

The total labour time use of agricultural labourers in livestock activities are 166.70 days where 37 percent of labour time is used in group A, 34 percent in group B and 29 percent in group C indicating no major distinction of labour time use of labourers in livestock and poultry related activities in various groups as they may have almost same livestock base. Collection of fodder/preparation of feeds and maintaining poultry/ ducks accounts for around 40 percent of labour time use to the total working days, 25 percent in cleaning/ poultry shed and feeding of livestock and 34 percent in rest of the activities like grazing cattle, milking, processing livestock products and attending sick/ pregnant animals as against 37, 25 and 35 percent of labour time of female cultivators used in the same activities, as mentioned earlier. It indicates that there is no major distinction between female cultivators and agricultural labourers regarding their use of labour time in cleaning/ poultry shed, feeding of livestock and other activities like grazing cattle, milking, processing livestock

products and attending sick/ pregnant animals except marginal difference (2.83) between cultivators and labourers on activities like collection of fodder/preparation of feeds and maintaining poultry/ ducks, although livestock base of cultivators are higher than labourers. In respect of groups 40-41 percent of labour time of agricultural labourers are used their labour time in collection of fodder/ preparation of feeds and maintaining poultry/ ducks in group A, B and C. Cleaning cattle/ poultry shed and feeding of livestock accounts for 24-26 percent of labour time use to the total working days in group A, B and C. In rest of the activities like grazing cattle, milking, processing livestock products and attending sick/ pregnant animals about 33 percent of labour time of female agricultural labourers are used in group A, 36 percent in group B and 34 percent in group C indicating no major distinction of labour time involvement of agricultural labourers in various activities of dairy farming in all the three groups. Subsistence farming may be an influencing factor for involvement of almost same labour time in various livestock and poultry related activities to supplement their income. Although labourers are less economically affluent than cultivators, yet livestock base of both the two groups may be the same due to the presence of 'livestock sharing' system under which the labourers are allowed to borrow livestock from cultivators and the income derived from such livestock are generally divided equally between the two groups.

#### **4.04. Female Cultivators and Agricultural Labourers in Sericulture:**

It has been observed that Eri (*Philosomia recini*) and Muga (*Antherea asama*) are two important sericultural activities in which female cultivators and agricultural labourers are engaged in belonging particularly to the Bodo women (Plain tribe). Two or three batches of Eri/Muga are reared per year depending on availability of seed cocoons, host plants and family labour. They are engaged in the entire gamut of activities of collecting leaves, feeding, ensuring that predators/ birds/ insects are kept away, reeling, spinning and weaving as depicted in table 4.08.

Table 4.08  
Female Cultivators and Agricultural Labourers in Sericultural activities  
Number of Days (8 hrs) spent

Cultivators							
Group	Sericultural activities						Total Working Days
	Collecting leaves	Feeding	Keeping away of Predators/ birds/ insects	Reeling	Spinning	Weaving	
A	8.3 (19.62)	10.0 (23.63)	4.6 (10.87)	9.2 (21.74)	4.2 (9.92)	6.0 (14.18)	42.3
B	7.2 (18.50)	9.2 (23.65)	4.8 (12.33)	8.2 (21.07)	3.6 (9.25)	5.9 (15.16)	38.9
C	6.4 (16.71)	9.4 (24.54)	4.2 (10.96)	8.8 (22.97)	3.1 (8.09)	6.4 (16.71)	38.3
<b>Total</b>	<b>21.9 (18.32)</b>	<b>28.6 (23.33)</b>	<b>13.60 (11.38)</b>	<b>26.20 (21.92)</b>	<b>10.90 (9.12)</b>	<b>18.30 (15.31)</b>	<b>119.50</b>
Labourers							
A	7.4 (16.01)	11.6 (25.10)	4.6 (9.95)	8.4 (18.18)	7.3 (15.80)	6.9 (14.93)	46.20
B	6.6 (16.05)	9.2 (22.38)	4.2 (10.21)	8.2 (19.95)	6.7 (16.30)	6.2 (15.08)	41.10
C	6.1 (16.26)	7.8 (20.8)	4.4 (11.73)	7.2 (19.20)	6.60 (17.60)	5.4 (14.40)	37.50
<b>Total</b>	<b>20.1 (16.10)</b>	<b>28.6 (22.91)</b>	<b>13.20 (10.57)</b>	<b>23.80 (19.07)</b>	<b>20.6 (16.50)</b>	<b>18.50 (14.82)</b>	<b>124.80</b>

Source: Field survey

N.B.: Figures in brackets are percentages

It has been observed from Table 4.08 that the total working days of female cultivators in sericultural activities were 119.50 days where almost 38 percent of labour time were used in group A, 33 percent in group B and 30 percent of labour time in group C indicating higher involvement of labour time in group A followed by group B and group C as group A contains more 'Bodo' (Plain tribe) population (Jalah and Baghmara) than group B (Khoirabari, Kalpani and Nichuka) and group C (Puthimari, Akaya and Bhogpur). It is evident that sericultural activities in our sample village is still traditional and family-based as total labour days used by female cultivators in this activity is only 119.50 days in comparison to 318.34 days in agriculture and 224.10 days in poultry and dairy farming. Feeding and reeling accounts for almost 46 percent of labour time to the total working days followed by 34 percent in collecting leaves and weaving, and 21 percent in rest of the activities like keeping away of predators/ birds/ insects and spinning indicating that the female cultivators is mostly used in unpaid/ low paid sericultural jobs. Similar phenomenon has been observed in various groups where almost 47 percent of labour time of female

cultivators were used in feeding and reeling activities in group A, 44 percent in group B and 42 percent in group C in comparison to 35 percent of labour time use in collecting leaves and weaving in group A followed by 32 percent in group B and 30 percent in group C. In rest of the activities like keeping away of predators/ birds/ insects and spinning, 21 percent of labour time of female cultivators was used in group A, 19 percent in group B and 17 percent in group C.

On the other hand, the total working days used by agricultural labourers in sericultural activities is 124.80 days which is marginally higher than cultivators as the difference of labour time use between cultivators and labourers is only 5.3 (2.16 percent) days. Out of total working days, 37 percent of labour time of labourers were used in group A, 34 percent in group B and 30 percent in group C indicating the same – more tribal population in group A than group B and group C. Feeding and reeling accounts for almost 42 percent of labour time use followed by 31 percent in collecting leaves and weaving and 27 percent in rest of the activities in comparison to 46 percent of labour time of female cultivators in feeding and reeling and 34 percent in collecting leaves and weaving indicating that labour time use of cultivators in these activities are higher than labourers which may be due to higher resource base of cultivators than labourers. For rest of the activities like keeping away of predators/ birds/ insects and spinning, 27 percent of agricultural labourers used their labour time as against 20 percent of cultivators indicating that labourers use their labour time more in tedious jobs than cultivators. In respect of groups, 44 percent of labour time of labourers is used in feeding and reeling in group A, 42 percent in group B and 40 percent group C as group A contains more tribal women than group B and C. Collecting leaves and weaving, accounts for almost 31 percent of labour time use of agricultural labourers in group A, and 30 percent in group B and C indicating no major distinction of labour time use in these activities. In rest of the activities like keeping away of predators/ birds/ insects and spinning 26 percent of labourers use their labour time in group A, 27 percent in group B and 29 percent in group C indicating that more labour time use by agricultural labourers in unpaid sericultural activities in group C out of necessity followed by group B and group A.

#### 4.05. Female Cultivators and Agricultural Labourers in Handloom and Weaving:

Also important among other non-farm activities, is handloom and weaving, in which significant per cent of female cultivators and agricultural labourers are engaged in (Table 4.09).

**Table 4.09**  
Female Cultivators and Agricultural Labourers in Handloom Weaving  
Number of Days (8 hrs) spent

Cultivators		Handloom and Weaving activities							Total Working Days
Group	Purchase Yarn	Washing	Dyeing	Starching	Operation of 'Chekeri'	Passing the threads through Bamboo Comb	Weaving	Polishing	
A	5.20 (9.17)	3.92 (6.91)	4.33 (7.63)	3.04 (5.36)	6.87 (12.11)	7.04 (12.41)	21.87 (38.57)	4.33 (7.63)	56.70
B	4.98 (9.17)	3.62 (6.66)	4.10 (7.55)	3.82 (7.03)	6.07 (11.17)	6.98 (12.85)	21.11 (38.87)	3.62 (6.66)	54.30
C	3.78 (7.39)	2.90 (5.67)	3.91 (7.64)	3.69 (7.21)	5.98 (11.69)	7.10 (13.88)	20.75 (40.59)	3.01 (5.88)	51.12
<b>Total</b>	<b>13.96</b> <b>(8.61)</b>	<b>10.44</b> <b>(6.43)</b>	<b>12.34</b> <b>(7.61)</b>	<b>10.55</b> <b>(6.50)</b>	<b>18.92</b> <b>(11.67)</b>	<b>21.12</b> <b>(13.02)</b>	<b>63.73</b> <b>(39.31)</b>	<b>10.96</b> <b>(6.76)</b>	<b>162.12</b>
Labourers									
A	1.8 (3.71)	2.9 (5.99)	3.8 (7.85)	2.4 (4.95)	6.7 (13.84)	7.2 (14.87)	22.6 (46.69)	1.00 (2.06)	48.40
B	1.6 (3.36)	2.8 (5.89)	3.6 (7.57)	2.6 (5.47)	6.8 (14.31)	7.0 (14.73)	21.80 (45.89)	1.34 (2.82)	47.50
C	1.7 (3.72)	2.4 (5.25)	3.5 (7.66)	2.3 (5.03)	6.4 (14.01)	6.9 (15.11)	20.72 (45.37)	1.74 (3.81)	45.66
<b>Total</b>	<b>5.1</b> <b>(3.60)</b>	<b>8.1</b> <b>(5.72)</b>	<b>10.9</b> <b>(7.69)</b>	<b>7.3</b> <b>(5.15)</b>	<b>19.9</b> <b>(14.05)</b>	<b>21.1</b> <b>(14.90)</b>	<b>65.12</b> <b>(45.98)</b>	<b>4.08</b> <b>(2.88)</b>	<b>141.60</b>

Source: Field survey

N.B.: Figures in brackets are percentages

It has been observed from Table 4.09 that the total working days of female cultivators in handloom and weaving is 162.12 days as against 141.60 days of agricultural labourers where 56.70, 54.30 and 51.12 days of cultivators used their labour time in group A, B and C respectively. Agricultural labourers however spend lesser number of days in each group of villages. Labour time involvement of female cultivators in handloom weaving is more than agricultural labourers as the cultivators have greater number of commercial looms than labourers, although the number of commercial looms is very few. Weaving is the major activity where labour time use

of female cultivators is, however, lower than labourers. This is particularly because the labourers use their labour time when hired for the few commercial looms owned by cultivators. Operation of 'chereki' and passing threads through bamboo combs is a time consuming and tedious job and around 30 percent of labour time of agricultural labourers is used on this activity as against only 15 percent by cultivators indicating reluctance on the part of cultivators to engage themselves in tedious job of handloom and weaving which may be due to better economic condition of cultivators than labourers. Purchase of yarn relate to financial matter and only 4 percent of labour time is used by labourers on it, in comparison to almost 9 percent of labour time of cultivators indicating that the role of labourers in decision making activities is less than cultivators. In rest of the activities like washing, dying, starching and polishing 27 percent of labour time is used by cultivators in comparison to 21 percent of labourers as these activities are less tedious and less time consuming.

In respect of groups, there is very little variation of labour time use of cultivators in weaving activities. Similar observation has been made for labour time use of agricultural labourers in the groups, although the labourers spent 20 percent more labour time in weaving than cultivators. Thus, there is no major distinction of labour use in weaving within various groups of cultivators and labourers, although labour time use of labourers in weaving as a whole is higher than cultivators. In the activities like operation of 'chereki' and use of bamboo combs for the purpose of passing threads, around 24 percent of labour time is used by cultivators in groups A, B and C as against 29 percent of labour time by labourers in the same group. It indicate that the labour time use of labourers is higher than cultivators in some selected handloom activities as the cultivators are reluctant to use their labour time in tedious and time consuming job owing to better earnings from crop cultivation, dairy and poultry farming than agricultural labourers. The time spent by labourers in the purchase of yarn is almost negligible between various groups reflecting no major distinction in decision making capacity of labourers in groups as the society is mainly male dominated. However, the labour time use of cultivators in the purchase of yarn is comparatively higher in group A and B with 9 percent and lower in group C with only 7 percent indicating that group A and B can enjoy more independence in the purchase of yarn than group C. In rest of the activities like washing, dying, starching and polishing, 27 percent of labour time of cultivators is spent in group A, B and C as against 21-22 percent by labourers in the same groups indicating no major distinction

of labour time use between various groups, although the labour time use of cultivators is higher than labourers.

#### 4.06. Female Cultivators and Agricultural Labourers in Food Processing:

Food Processing, particularly preparing varieties of rice products both for domestic consumption and sale, is done by female cultivators and agricultural labourers and they spent significant labour time as is depicted in Table 4.10

**Table 4.10.**  
**Female Cultivators and Agricultural Labourers in Food Processing**  
**Number of Days (8 hrs) spent**

Cultivators	Food Processing activities		Total Working Days
	Domestic Consumption	Commercial	
A	16.8 (63.15)	9.8 (36.84)	26.6
B	15.8 (63.20)	9.2 (36.80)	25.0
C	15.6 (63.15)	8.4 (34.00)	24.7
<b>Total</b>	<b>48.2</b> <b>(62.84)</b>	<b>27.4</b> <b>(35.72)</b>	<b>76.7</b>
<b>Labourers</b>			
A	15.2 (61.29)	9.6 (38.70)	24.8
B	14.3 (60.08)	9.5 (39.91)	23.8
C	13.84 (59.91)	9.26 (40.08)	23.1
<b>Total</b>	<b>43.34</b> <b>(60.44)</b>	<b>28.36</b> <b>(39.55)</b>	<b>71.7</b>

Source: Field survey

N.B.: Figures in brackets are percentages

It has been observed from Table 4.10 that the female cultivators used 76.7 days of labour time in food processing where around 63 percent were used in domestic consumption as against 36 percent in commercial purpose. On the other hand, the agricultural labourers used 71.7 days of labour time in food processing where around 60 percent were used in domestic consumption as against 40 percent in commercial purpose. It indicates that the agricultural labourers used more labour time than cultivators in commercial food processing as the labourers are landless and, therefore, they compel to use more of labour time in commercial food processing out of necessity particularly during lean period of crop cultivation. In respect of groups, the total working days in food processing for cultivators is 26.6, 25.0 and 24.7 days in group A, B and C respectively as against 24.8 days of agricultural labourers in group

A followed by 23.8 days in group B and 23.1 days in group C. Domestic consumption accounts for about 63 percent of labour time of female cultivators in group A, B and C as against 60-61 percent of labourers in the same group indicating no major distinction of labour time use of female cultivators and labourers in domestic consumption. But the percentage of labour time use of female cultivators in commercial consumption accounts for around 37 percent in group A and B and 34 percent in group C as against higher percent of labour time of labourers which is around 38-40 percent in the three groups as the labourers compel to pay particular attention to use their labour time in commercial food processing particularly during lean season of crop cultivation to supplement their income.

#### 4.07. Women's Work in Aggregate:

Taking into account all the activities of female cultivators and agricultural labourers, it is being observed that they spent a significant labour time in rural household as in evident in Table 4.11.

**Table 4.11**  
**Aggregate Labour Time of Women Workers**  
**Person days (8 hrs per worker)**

Cultivators						
Groups	Crop Cultivation	Livestock and Poultry related activities	Sericultural activities	Handloom Weaving	Food Processing	Total Working Days
A	118.63 (35.98)	85.4 (25.90)	42.3 (12.83)	56.70 (17.20)	26.6 (8.06)	329.63 (36.61)
B	105.44 (35.62)	72.3 (24.43)	38.9 (13.14)	54.30 (18.34)	25.0 (8.44)	295.94 (32.86)
C	94.27 (34.30)	66.4 (24.16)	38.3 (13.93)	51.12 (18.60)	24.7 (8.98)	274.79 (30.52)
<b>Total</b>	<b>318.34</b> (35.35)	<b>224.10</b> (24.89)	<b>119.50</b> (13.27)	<b>162.12</b> (18.00)	<b>76.7</b> (8.51)	<b>900.36</b>
Labourers						
A	91.21 (33.44)	62.1 (22.77)	46.20 (16.94)	48.40 (17.74)	24.8 (9.09)	272.71 (36.72)
B	79.23 (31.94)	56.4 (22.73)	41.10 (16.57)	47.50 (19.15)	23.8 (9.59)	248.03 (33.39)
C	67.43 (30.38)	48.2 (21.72)	37.50 (16.90)	45.66 (20.57)	23.1 (10.41)	221.89 (29.87)
<b>Total</b>	<b>237.87</b> (32.03)	<b>166.70</b> (22.44)	<b>124.80</b> (16.80)	<b>141.60</b> (19.06)	<b>71.7</b> (9.65)	<b>742.63</b>

Source: Field survey

N.B.: Figures in brackets are percentages

The aggregate number of working days of female cultivators is 900.36 days where around 37 percent of labour time is used in Group A, 33 percent in Group B and 31 percent in Group C. It means labour time utilisation of cultivators is marginally higher in group A followed by group B and C. By activities, the evidence presented in Table 4.11 indicates that crop cultivation accounted for almost 35 percent of labour time of female cultivators to the total working days followed by 25 percent in livestock and poultry related activities, 13 percent in Sericultural activities, 18 percent in handloom weaving and around 8 percent in food processing. In respect of groups approximately 36 percent of labour time of female cultivators were used in crop cultivation in Group A and B and 34 percent in Group C. Livestock and Poultry related activities accounted for 26 percent of labour time of female cultivators in Group A, 24 percent in Group B and C. Sericultural activities accounted for almost 13 percent of labour time of female cultivators in Group A, 13 and B and 14 percent in Group C. But handloom weaving accounted for around 17 percent, 18 percent and 19 percent of labour time of female cultivators in Group A, B and C respectively. On the other hand food processing accounted for around 8-9 percent of labour time of female cultivators in the three groups. But most important to note is that only a little over one third of female cultivators – the 318.34 days spent in crop cultivation is visible and recognised as ‘work’.

On the other hand, the total working days of female agricultural labourers is 742.63 days where 272.71 days of labour time were used in Group A, 248.03 days in Group B and 221.89 days in Group C. It means almost 37 percent of labour time to the total working days were used in Group A, followed by 33 percent in Group B and 30 percent in Group C. By activities, crop cultivation accounted for around 32 percent of labour time of female agricultural labourers to the total working days followed by 22 percent in livestock and poultry related activities, 17 percent in sericultural activities, 19 percent in handloom weaving and 10 percent in food processing. In respect of groups 33.44 percent of labour time of agricultural labourers were used in crop cultivation in Group A, 31.94 percent in Group B and 30.38 percent in Group C. Livestock and poultry related activities accounted for around 23 percent of labour time of female agricultural labourers in Group A and B and 22 percent in Group C. Sericultural activities accounted for almost 17 percent of labour time of female agricultural labourers in the three Groups. But handloom weaving accounted for almost 18 percent, 19 percent and 21 percent of labour time of female agricultural

labourers were used in Group A, B and C respectively. On the other hand, food processing accounted for 9-10 percent of labour time of female agricultural labourers in Group A, B and C respectively. But, the number of days which is visible and accounted as 'work' for labourers is only 237.87 days spent in crop cultivation indicating 80.47 days less than cultivators. Moreover, almost 65 percent of labour days used by cultivators are not considered as 'work' as against 68 percent of labourers indicating percentage of time involvement of labourers in non-farm activities are higher than labourers as they are landless and such time involvement is invisible and do not considered as 'work'

#### **4.08. Differences in Labour Time Use of Female Cultivators and Agricultural Labourers:**

The difference of the labour time use of female cultivators and agricultural labourers is analysed in table 4.12.

**Table 4.12**  
**Difference in the labour time Use of Female & Agricultural Labourers**

	A	B	C	Total
Time Spent by Cultivators	329.63	295.94	274.79	900.36
Time Spent by labourers	272.71	284.03	221.89	742.63
Difference	56.92	47.91	52.9	157.73
Percentage of difference	9.44	8.80	10.65	9.60

It has been observed from Table 4.12 that the difference of labour time use of female cultivators and agricultural labourers is 157.73 days i.e. around 10 percent. Similarly, in the three groups the cultivators is having more labour time use than the labourers and the percentage of difference is around 9 points in group A and B and around 11 points in group C. The difference is higher in group C followed by group A and B indicating more inequalities in the use of labour time among cultivators and labourers in group C. The possible reason for greater inequality of labour time use of group C workers may be the higher resource-base of cultivators and landlessness of labourers.

#### 4.09. Variation of Labour Time use of Female Cultivators and Agricultural Labourers:

Group wise variation of labour time use of female cultivators and agricultural labourers is studied and is given in Table 4.13.

Table 4.13  
Co-efficient of variation of labour time used

Cultivators			
Groups	Mean	S.D.	C.V
A	65.92	6.84	10.37
B	59.18	8.05	13.60
C	54.95	7.24	13.18
Total	60.01	7.37	12.38
Labourers			
A	54.54	6.62	12.13
B	49.60	5.79	11.67
C	44.37	4.85	10.93
Total	148.51	5.75	11.57

To compare the variation of labour time use of female cultivators and agricultural labourers the co-efficient of variation has been calculated and the result is represented in Table 4.13. It has been observed that the co-efficient of variation of cultivators is around 12 percent as against around 11 percent of labourers indicating that the labour time use of female cultivators is more inconsistent than labourers. The possible reason may be the higher resource base of cultivators than labourers with regular flow of income as they have their own land and reluctance on the part of cultivators to engage themselves in low paid and tedious job and intensity to use more labourers on hire basis. In respect of groups, the coefficient of variation (C.V.) of the cultivators is around 10, 14 and 13 percent in group A, B and C respectively indicating that the labour time use of group A and C is more consistent than group B as group A and C have more tribal (Bodo women) women than group B. It has been observed during field study that the tribal women use more labour time in agriculture and allied activities may be due to their poverty. Being dominated mainly by non-tribe women, the labour time use of group B villages is comparatively inconsistent, though the CV of this group is only 1 percent less than group C and around 4 percent less than group A. On the other hand the CV of group A and B is around 12 percent as against 11 percent of group C. It indicates that the labour time use of group C labourers is comparatively more consistent than group A and B as group C labourers

use more labour time in non-farm activities, particularly handloom weaving and food processing than group A and B.

#### 4.10. Analysis of Variance of Labour Time-use of Female Cultivators and Agricultural Labourers:

Group wise labour time use of female cultivators and agricultural labourers has been analysed using ANOVA technique (one-way classification model) and the result is represented in Table: 4.14.

**Table 4.14**  
**ANOVA technique (One-way Classification Model)**

Cultivators					
Source of Variation	Degree of freedom	Sum of Squares	Mean sum Of Squares	Variance Ratio	Critical value at 5% level of significance
Between Groups	2	310	155	F = 0.156	$F_{0.5} = 3.8853$
Within Groups	12	11890	990.83		
Total	14	12200			
Labourers					
Between Groups	2	255	127.5	F = 0.302	$F_{0.5} = 3.8853$
Within Groups	12	5056	421.33		
Total	14	5311			

It has been observed from Table 4.14 that the variance ratio (F) is 0.156 for female cultivators and 0.302 for female agricultural labourers in our sample villages as against critical value at 5 percent level of significance ( $F_{0.5}$ ) 3.8853 indicating that  $F < F_{0.5}$  and, therefore, the difference in the labour time use of female cultivators and agricultural labourers among various groups is statistically insignificant. In other words, there is no significant difference among group A, B and C of labour time use of female cultivators and agricultural labourers.

#### 4.11. Comparison of labour time use of Female Cultivators and Agricultural Labourers within the Groups:

The labour time use of female cultivators and agricultural labourers is compared within the groups using "Z" test as given in Table 4.15

Let the labour time use of female cultivators and agricultural labourers be  $\mu_1$  and  $\mu_2$ . Let the null hypothesis ( $H_0$ ) be  $\mu_1 = \mu_2$  against the alternative hypothesis ( $H_1$ ) be  $\mu_1 > \mu_2$ .

The test statistic is 
$$Z = \frac{\bar{X}_1 - \bar{X}_2}{SE(\bar{X}_1 - \bar{X}_2)}$$

Where  $SE(\bar{X}_1 - \bar{X}_2) = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$

The results are given in Table 4.15.

Table 4.15: 'Z' Test

Group	Labour Time Use		Mean		SD		Z Value	SE at 5% level of significance
	Cultivators	Labourers	Cultivators	Labourers	Cultivators	Labourers		
A	329.63	272.71	66	54	32.70	21.78	0.056	1.96
B	295.94	248.03	59	50	27.80	18.12	0.067	1.96
C	274.79	221.89	55	44	23.13	14.14	0.082	1.96

It has been observed from Table 4.15 that the calculated values of Z in all the groups (group A, B and C) are less than 1.96 SE at 5% level of significance, therefore, we may accept the null hypothesis ( $H_0$ ) and reject the alternative hypothesis ( $H_1$ ) i.e. labour time use of female cultivators and agricultural labourers within the groups provides no evidence of difference, although, the cultivators have their own land as against landlessness of labourers. It indicates that resource base particularly land ownership play a minor role for use of labour time of cultivators and labourers.

### Conclusion

As agriculture is the mainstay in the economy of our sample villages, the contribution of female cultivators and agricultural labourers in terms of labour hours in the cultivation of both food and cash crops is significant. However, majority of female cultivators and agricultural labourers are engaged in food crop production rather than cash crops indicating predominance of subsistence family farming adopted by both the sections of the society. The labour time involvement of both the sections of the society is more in rice cultivation than pulses and vegetables as rice is the major food crops in our study area. In respect of groups, there is no major distinction of

labour time use of female cultivators and agricultural labourers in both food crops and cash crops. It indicates that there is no major distinction in farming methods in crop production for both cultivators and labourers. It has also been observed that the labour time involvement of cultivators and labourers is high during normal rainfall and low during dry months indicating the practice of traditional methods of cultivation and lack of adequate irrigational facilities. Moreover, the female cultivators prefer to use more labour time in farm works for their livelihood as they have their own land to cultivate. But, agricultural labourers do not have their own land. They prefer more to use their labour time in casual works. Further, there is also considerable specificity to the operation in which female cultivators and agricultural labourers participate in crop production. Transplanting and harvesting is the major farm activity where almost 60 percent of labour time of cultivators and labourers are used. There is also great deal of seasonality of labour time use of female cultivators and labourers. June to August is the busy months where almost 40 percent of labour time of cultivators and labourers are used in transplanting activity. November-December is the harvesting season where more than 31 percent of labour time of cultivators and labourers is used. But January-May and September-October is the lean period where around 28 percent of labour time is used by cultivators and labourers. The female cultivators and agricultural labourers also spend considerable time in economically productive allied activities like livestock and poultry farming, sericulture, handloom weaving and food processing. Combining labour time use in all the activities it has been found that the labour time use of cultivators is almost 10 percent more than labourers.

However, the analysis of variance of labour time use of female cultivators and agricultural labourers between groups (group A, B and C) using ANOVA technique in our sample villages provides no evidence of difference. Similarly, the analysis of variance of labour time use of female cultivators and agricultural labourers within the two groups using z-test shows no significant differences i.e., labour time use of female cultivators and agricultural labourers are almost the same, although the cultivators have their own land as against landlessness of labourers. Thus there is no inter-village and intra-village difference regarding labour time use of female cultivators and agricultural labourers.