

**CHAPTER - VI**  
**COST BENEFIT ANALYSIS OF SOME**  
**SELECTED CROPS CULTIVATED IN THE**  
**STUDY AREA**

**6.0 Introduction**

This chapter gives an account of the cost of cultivation of some selected crops cultivated by the sample farmers and the gross and net returns on output obtained are presented. Details of the cost benefit analysis (CBA) of the sample farm were obtained through a structured questionnaire (Appendix-A). The main objective in doing this exercise is to derive a comprehensive overview of the economic aspects of tobacco farming and to assess economically viable alternative crops to tobacco cultivation of the sample farmers. Such a relative profitability of the various rabi crops might help in judging the alternative crops to tobacco, if an attempt is made to wean away the farmers from cultivating tobacco. While the analysis was carried out separately for three administrative block namely Dinhata-I, Dinhata-II and Sitai. The CBA results are presented for all sample farms together, instead of individual size group. Such an aggregate picture, it was thought, would be more useful rather size group wise results. Another reason for such an aggregation was the marginal difference in the levels of various inputs and the output realized across size groups. The differences across size groups as far as the various input use levels is concerned, was largely one of the relative importance of owned and purchased inputs, including human labour. Since, the owned inputs used in the production process are also valued appropriately the difference across size groups in the level of costs remained only marginal. The returns are presented by individual crops and for all crops together.

Concept of cost is necessary to be developed first for calculation of production cost of a crop. The profitability of farming could be affected by many factors, that directly affect farm profit are total revenue and total cost. The total revenue is dependent upon yield level and production price. Yield level is influenced by technology adoption i.e., the use of tobacco variety, fertilizers, pesticides etc. and agro-ecological condition i.e., soil and

climatic condition. Technology adoption is affected by agro-ecology, input prices such as seeds, fertilizers, pesticides, labour etc. and capital availability from bank and money lender. Input price, to some extent is determined by Government policies e.g. fertilizer subsidy. The following values for revenue, costs and returns were estimated.

**Revenue:** Revenue which is measured by the Total Revenue (TR) is the total value of output produced. TR will be computed by multiplying average yield by average price at farm level. TR includes output produced during the year, which may be sold, used for household consumption, used on the farm for seed, used for payments in kind; or kept in the store for future sale. Non market transactions are valued at their opportunity cost as per average market price.

**Costs:** Costs are measured by;

- v) **Operating costs (Cost A):** These refer to the sum of input costs, traction contract costs and hired labour costs. Input costs consists of value of expenses incurred on seeds, fertilizers, insecticides, fungicides and herbicides while traction costs consists of opportunity costs for using tractors or oxen for primary land tillage. Non-purchased seeds are valued at their opportunity costs i.e. market price.
- vi) **Opportunity cost of operating capital (Cost B):** This is estimated at 12% of cash/operating cost.
- vii) **Opportunity cost of family labour (Cost C):** This is the value of family labour used, which was valued at local wage rate (this study has used the average of the cost paid for hired labour by operation).
- viii) **Total Enterprise Costs (Cost D):** This refers to values of all inputs used in production. It was the sum of operating costs, opportunity cost of equity capital, and opportunity cost of family labour. Total costs are generally divided into total variable costs and total fixed costs.

**Farmers' Profit:** Following analytical tool used for gross and net profitability of tobacco compare to alternative crops.

Comparison of farm profitability aims to understand whether or not tobacco farm is more profitable than alternative crops. To assess the costs and returns of the target commodities is used for each data set as an analytical tool. Using a simple formula  $\pi = TR - TOC$ ,

where  $\pi$ = Gross profit,  $TR$ = total revenue and  $TOC$ = total operating cost. Farmer net profitability can be easily estimated using the following simple algebraic equation:

$$\pi = Q_Y P_Y - \sum_{i=1}^n (Q_i P_i) - \sum_{j=1}^k (c_j)$$

$\pi$  = Net Profit (Rs/ Hectare)

$Q_Y$ =Yield (kg/ hectare)

$P_Y$  =Output price

$Q_i$ = Variable input quantity (unit/hectare)

$P_i$ = Variable input price (unit/hectare)

$c_j$  = Fixed cost (Rs/ Hectare)

$i$ = Variable input (tillage, seed, fertilizer, pesticides, labour, other materials)

$j$ = Fixed input (family labour, depreciation, interest etc.)

**Rates of returns:** Rates of returns were measured by;

- iii) **Return to operating cost:** This is computed by deducting total operating cost (Cost A) from TR, then divided by Cost A.
- iv) **Return to total cost:** This is the difference between TR and TEC (Cost D), which includes the opportunity cost of family labour and equity capital as part of cost and then divided by Cost D.

**Labour:** In addition to the estimated number of days of family and hired labour required for each cultivation, the following measure is also provided.

- iii) **Gross profit per day family labour, land, management:** This is measured by dividing gross profit by family labour days. It measures the reward to the family for farmers' labour, management and land.
- iv) **Gross profit per day family labour, land, management:** This is computed by dividing gross profit by total family and hired labour days. It measures the reward to the family for farmers' management and land.

**Procedure for imputation of values of farm inventory and inputs**

**Seeds:** Purchase seeds are valued at actual price paid plus transportation costs, and farm produced seeds were evaluated at prevailing market rates at the time of sowing.

**Farmyard Manure:** It was valued at the actual purchase price and self-produced FYM was valued at market prices.

**Fertilizers:** Cost incurred in the purchase of fertilizers actual prices plus transport and other incidental charges.

**Plant Protection Chemicals:** The actual purchase price of plant protection chemicals, purchased by the respondents.

**Irrigation charges:** This include repair charges, working expenses such as oil, lubricants etc. and hire charges paid for using water from other sources. Irrigation charges paid to the concerned Government department for each crop are also include.

**Human Labour:** Hired human labour was accounted for at the actual wages paid by the farmers. Family human labour was imputed at the prevailing wage rates in the study area. Woman labour is taken as equivalent to 0.75 of male labour. One child labour is taken as equivalent to half of one adult male labour. One man day means eight hours work of one adult man.

**Bullock labour:** Hired bullock labour cost was calculated at the prevailing market rate for the services of a pair of bullocks in the study area. Owned bullock labour was evaluated at the same rate with hired bullock labour. One bullock labour day means 8 hours of services rendered by one pair of bullocks.

Tractor power has also been converted into bullock pair day on the basis of average time required by tractor power in performing a given job done by a pair of bullock.

**Marketing Costs:** These were the costs incurred by the farmers in cleaning, grading, packing, transporting and selling their products.

**Miscellaneous Costs:** These were the other incidental costs incurred in the operation of enterprises. These included cost on perishable implements like ropes, baskets, repairs and maintenance of implements used, etc.

**Interest on Working Capital:** Interest on working capital is charged at the time rate of 12% per annum for a period of three months for individual crop. The following were the item including under working capital such as (i) hired human labour, (ii) hired bullock labour, (iii) machine labour (both owned and hired), (iv) seeds (owned and purchased), (v) manures, fertilizer and plant protection chemicals, (vi) insecticides, pesticides and (viii) irrigation charges.

### **Fixed Costs**

**Depreciation:** The depreciation rates, life span and junk value for various agricultural implements and machinery were decided in consultation with the respondents.

Consequently, the depreciation was calculated using the straight line method as shown below

$$\text{Depreciation} := \frac{\text{Purchase value} - \text{Junk value}}{\text{Life Span}}$$

**Electricity Costs:** These were levied on horsepower basis and were included under fixed costs.

In this study, other fixed costs such as land revenue, land rent, interest on fixed capital were excluded. The study will focus on evaluating the farm's profitability on a short term basis because in the short run, a firm's output level is determined by variable factor inputs. Since in the short term fixed costs are ignored, net returns is defined as gross income per unit of activity.

### 6.1 Cost-benefit analysis of jati tobacco of the study area

Dinhata subdivision is famous for jati tobacco production, but cultivation is restricted only in some patches of Dinhata-I and Sitai block. There are no reported jati tobacco cultivation in Dinhata-II block. The cost-benefit of production details of jati tobacco has been furnished in table 6.1. The average total operating cost (cost A) of cultivation of jati tobacco on the sample farms in Dinhata subdivision was ₹ 61983 per hectare. Operating cost and opportunity cost of family labour (cost C) is worked out to 66.01 percent and 30.99 percent respectively of the total enterprise cost. The total operating cost of jati tobacco of sample farms in Sitai block was observed higher than Dinhata-I block. The average enterprise cost (cost D) of jati tobacco on the selected farms of the study area was ₹ 93904 per hectare. Out of the different components, the cost of human labour including family labour occupied major share. It accounted for 50.01 percent of the total enterprise cost which ranges between 50.54% for Dinhata-I block, and 49.53 % for Sitai block. The total enterprise cost per hectare of jati tobacco was also recorded higher in Sitai block than Dinhata-I block. There is a definite proportion between cost and benefit in sample farm of Dinhata-I and Sitai block. Farmers' gross profit in terms of Cost A is found higher in Sitai block (₹ 70456 per hectare) than Dinhata-I block (₹ 57023 per hectare). The net profit from jati tobacco were ₹ 27970 per hectare and ₹ 35668 per hectare in Dinhata-I and Sitai block respectively. The data also indicate that the average rates of return over cost A and cost D from jati tobacco was ₹ 1.03 and ₹ 0.34

respectively, over one rupee spent on cultivation. The average gross profit per day per hectare family labour, land, management over cost C was ₹ 811, whereas average gross profit per day per hectare total labour (including hired and family labour), land, and management was ₹ 502.

**Table: 6.1 Cost-benefit Analysis of Jati tobacco**

| Item  | Dinhata-I<br>(₹/hectare) | Dinhata-II<br>(₹/hectare) | Sitai<br>(₹/hectare ) | Average<br>(₹/hectare) |
|---|--------------------------|---------------------------|-----------------------|------------------------|
| <b>i. Operating cost (Cost A)</b>                         |                          |                           |                       |                        |
| Input Cost  | 41485<br>(46.41)         | -                         | 46758<br>(47.51)      | 44121<br>(46.99)       |
| Cost of hired labour                                      | 18859<br>(21.10)         | -                         | 16863<br>(17.14)      | 17861<br>(19.02)       |
| Total operating cost                                      | 60344<br>(67.50)         | -                         | 63621<br>(64.65)      | 61983<br>(66.01)       |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> |                          |                           |                       |                        |
|   | 1809<br>(2.02)           | -                         | 1908<br>(1.94)        | 1858<br>(1.98)         |
| <b>iii. Opportunity cost of family labour (Cost C)</b>    |                          |                           |                       |                        |
| Number of family labour day                               | 175                      | -                         | 213                   | 195                    |
| Total family labour cost                                  | 26317<br>(29.44)         | -                         | 31877<br>(32.39)      | 29097<br>(30.99)       |
| <b>iv. Total enterprise cost (Cost D)</b>                 |                          |                           |                       |                        |
| Depreciation cost   | 927<br>(1.04)            | -                         | 1003<br>(1.02)        | 966<br>(1.03)          |
| Total enterprise cost                                     | 89397<br>(100)           | -                         | 98409<br>(100)        | 93904<br>(100)         |
| <b>v. Farmer Profit</b>                                   |                          |                           |                       |                        |
| Total Revenue   | 117367                   | -                         | 134077                | 125722                 |
| Gross profit  | 57023                    | -                         | 70456                 | 63740                  |
| Net Profit  | 27970                    | -                         | 35668                 | 31820                  |

|  |      |   |      |      |
|--|------|---|------|------|
| <b>vi. Rates of return</b>                           |      |   |      |      |
| Return to operating cost                             | 0.94 | - | 1.11 | 1.03 |
| Return to total cost                                 | 0.31 | - | 0.36 | 0.34 |
| <b>vii. Labour</b>                                   |      |   |      |      |
| Gross profit per day family labour, land, management | 803  | - | 818  | 811  |
| Gross profit per day total labour, land, management  | 467  | - | 539  | 502  |

*Note: Figure in the parenthesis indicate percentage of average cost*

*Source: Field Survey, 2012*

## 6.2 Cost-benefit analysis of motihari tobacco of the study area

The cost and return of motihari tobacco have been presented in table 6.2. The total operating cost of motihari tobacco excluding the opportunity cost of operating capital and family labour averaged ₹ 37180 per hectare, which accounted 65.43% of the total enterprise cost. The total enterprise cost (cost D) averaged ₹ 56823 per hectare. The average gross and net income per hectare after deducting from cost A and cost D in the study area were ₹34610 and ₹14967 respectively. The financial rates of return over cost A and Cost D were calculated ₹0.92 and ₹0.25 respectively, over one rupee spent on motihari tobacco cultivation. On average, farmers use a total of 158 human labour days per hectare per crop season. Converting the labour man days into monetary term would show that the total labour cost in motihari tobacco cultivation in a crop season was ₹ 23556. With respect to family labour, data shows that daily gross return per hectare was ₹ 736, whereas in terms of total labour gross return was ₹541 per working day per hectare.

**Table: 6.2 Cost-benefit Analysis of Motihari tobacco**

| Item                              | Dinhata-I<br>(₹/hectare) | Dinhata-II<br>(₹/hectare) | Sitai<br>(₹/hectare) | Average<br>(₹/hectare) |
|-----------------------------------|--------------------------|---------------------------|----------------------|------------------------|
| <b>i. Operating cost (Cost A)</b> |                          |                           |                      |                        |
| Input Cost                        | 33345<br>(58.42)         | 19203<br>(46.50)          | 40185<br>(55.74)     | 30911<br>(54.40)       |

|   |                  |                  |                  |                  |
|---|------------------|------------------|------------------|------------------|
| Cost of hired labour                                      | 4809<br>(8.43)   | 6667<br>(16.15)  | 7329<br>(10.17)  | 6269<br>(11.03)  |
| Total operating cost                                      | 38154<br>(66.85) | 25870<br>(62.65) | 47514<br>(65.90) | 37180<br>(65.43) |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> | 1144<br>(2.00)   | 776<br>(1.88)    | 1426<br>(1.98)   | 1114<br>(1.96)   |
| <b>iii. opportunity cost of family labour (Cost C)</b>    |                  |                  |                  |                  |
| Number of family labour day                               | 106              | 94               | 146              | 116              |
| Total family labour cost                                  | 15939<br>(27.93) | 14085<br>(34.11) | 21869<br>(30.33) | 17298<br>(30.44) |
| <b>iv. Total enterprise cost (Cost D)</b>                 |                  |                  |                  |                  |
| Depreciation cost   | 1838<br>(3.22)   | 563<br>(1.36)    | 1287<br>(1.79)   | 1231<br>(2.17)   |
| Total enterprise cost                                     | 57075<br>(100)   | 41295<br>(100)   | 72097<br>(100)   | 56823<br>(100)   |
| <b>v. Farmer Profit</b>                                   |                  |                  |                  |                  |
| Total Revenue   | 75294            | 48377            | 91700            | 71790            |
| Gross profit  | 37140            | 22507            | 44186            | 34610            |
| Net Profit  | 18219            | 7082             | 19603            | 14967            |
| <b>vi. Rates of return</b>                                |                  |                  |                  |                  |
| Return to operating cost                                  | 0.97             | 0.87             | 0.93             | 0.92             |
| Return to total cost                                      | 0.31             | 0.17             | 0.27             | 0.25             |
| <b>vii. Labour</b>  |                  |                  |                  |                  |
| Gross profit per day family labour, land, management      | 865              | 593              | 749              | 736              |
| Gross profit per day total labour, land, management       | 662              | 395              | 559              | 541              |

*Note: Figure in the parenthesis indicate percentage of average cost*

*Source: Field Survey, 2012*



**Tobacco field-1**



**Tobacco field-2**



**Tobacco field-3**



**Tobacco field-4**



**Tobacco field-5**



**Tobacco field-6**

**Plate 6.1 Motihari tobacco field**



**Plate 6.2 Potato cultivation and end product**

### 6.3 Cost-benefit analysis of potato of the study area

The table 6.3 explains cost, profit and rates of return of potato crop in the study area. The average operating cost (Cost A) of cultivation of potato was ₹77449 per hectare, which accounted 85.08 % of total enterprise cost in the study area. This high costs of production for potato, therefore, are a disincentive to most cash-poor farmers and an important factor limiting the area cultivated and choice of crop selection. The total enterprise cost (cost D) per hectare averaged ₹91028. The average gross and net profit of the sample farms from potato was ₹ 55424 and ₹ 41846 per hectare, respectively. The data indicates that average rates of return over cost A and cost D from potato was ₹ 0.73 and ₹ 0.46 respectively over a rupee spent on cultivation. The average daily return per hectare to family labour and total labour was ₹ 2422 and ₹ 702 respectively, the result reveals that cultivating potato require much hired workers. In interpreting these results, however, it should be noted that the daily return to family labour are higher than for any other crop.

**Table: 6.3 Cost-benefit Analysis of Potato**

| Item  | Dinhata-I<br>(₹/hectare) | Dinhata-II<br>(₹/hectare) | Sitai<br>(₹/hectare) | Average<br>(₹/hectare) |
|---|--------------------------|---------------------------|----------------------|------------------------|
| <b>i. Operating cost (Cost A)</b>                         |                          |                           |                      |                        |
| Input Cost  | 69134<br>(69.87)         | 54898<br>(65.49)          | 47156<br>(52.21)     | 57063<br>(62.69)       |
| Cost of hired labour                                      | 18904<br>(19.11)         | 16680<br>(19.90)          | 25576<br>(28.32)     | 20387<br>(22.40)       |
| Total operating cost                                      | 88038<br>(88.98)         | 71578<br>(85.39)          | 72732<br>(80.53)     | 77449<br>(85.08)       |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> |                          |                           |                      |                        |
|   | 2642<br>(2.67)           | 2147<br>(2.56)            | 2182<br>(2.42)       | 2323<br>(2.55)         |
| <b>iii. opportunity cost of family labour (Cost C)</b>    |                          |                           |                      |                        |
| Number of family labour day                               | 35                       | 54                        | 89                   | 59                     |
| Total family labour cost                                  | 5189<br>(5.24)           | 8155<br>(9.73)            | 13344<br>(14.77)     | 8896<br>(9.77)         |

|   |                |                |                |                |
|---|----------------|----------------|----------------|----------------|
| <b>iv. Total enterprise cost (Cost D)</b>               |                |                |                |                |
| Depreciation cost                                       | 3072<br>(3.10) | 1945<br>(2.32) | 2058<br>(2.28) | 1779<br>(1.95) |
| Total enterprise cost                                   | 98940<br>(100) | 83825<br>(100) | 90316<br>(100) | 91028<br>(100) |
| <b>v. Farmer Profit</b>                                 |                |                |                |                |
| Total Revenue   | 132011         | 22278          | 153826         | 132874         |
| Gross profit  | 43973          | 41203          | 81094          | 55424          |
| Net Profit  | 33071          | 28956          | 63510          | 41846          |
| <b>vi. Rates of return</b>                              |                |                |                |                |
| Return to operating cost                                | 0.5            | 0.58           | 1.11           | 0.73           |
| Return to total cost                                    | 0.33           | 0.35           | 0.7            | 0.46           |
| <b>vii. Labour</b>                                      |                |                |                |                |
| Gross profit per day family labour,<br>land, management | 3141           | 1873           | 2251           | 2422           |
| Gross profit per day total labour,<br>land, management  | 677            | 615            | 773            | 702            |

Note: Figure in the parenthesis indicate percentage of average cost

Source: Field Survey, 2012

#### 6.4 Cost-benefit analysis of maize of the study area

The block wise average cost of production of maize has been furnished in the table 6.4. The data indicate that average operating cost (Cost A) of maize cultivation was ₹30904 per hectare, which account 78.63% of total enterprise cost in the study area. The proportion of total input cost was 38.19% in case of Dinhat-I block, 31.88% for Dinhat-II and 34.85% for Sitai block. The average total revenue earned from maize ₹ 71220 per hectare. The average gross and net profit from maize was ₹40316 and ₹31917 respectively. Average rates of return ₹ 1.37 and ₹ 0.84, over a rupee investment of maize cultivation. The data on cost and net returns reveals that maize cultivation giving more benefits at a low cost of cultivation than motihari tobacco and hence lucrative. The average daily gross return per hectare to family labour and total labour was ₹ 2293 and ₹ 630 respectively.



**Maize Field-1**



**Maize Field-2**



**Maize Field-3**



**Maize Field-4**



**Corn**



**Potato-Maize alongside**

**Plate 6.3 Maize cultivation and end product**

**Table: 6.4 Cost-benefit Analysis of Maize**

| <b>Item</b>   | <b>Dinhata-I<br/>(₹/hectare)</b> | <b>Dinhata-II<br/>(₹/hectare)</b> | <b>Sitai<br/>(₹/hectare)</b> | <b>Average<br/>(₹/hectare)</b> |
|---|----------------------------------|-----------------------------------|------------------------------|--------------------------------|
| <b>i. Operating cost (Cost A)</b>                         |                                  |                                   |                              |                                |
| Input Cost  | 16613<br>(38.19)                 | 13223<br>(31.88)                  | 11476<br>(34.85)             | 13771<br>(35.04)               |
| Cost of hired labour                                      | 19917<br>(45.78)                 | 18319<br>(44.14)                  | 13171<br>(40.00)             | 17132<br>(43.59)               |
| Total operating cost                                      | 36530<br>(83.97)                 | 31534<br>(76.02)                  | 24647<br>(74.86)             | 30904<br>(78.63)               |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> |                                  |                                   |                              |                                |
|   | 1095<br>(2.52)                   | 946<br>(2.28)                     | 739<br>(2.24)                | 927<br>(2.36)                  |
| <b>iii. opportunity cost of family labour (Cost C)</b>    |                                  |                                   |                              |                                |
| Number of family labour day                               | 32                               | 54                                | 44                           | 44                             |
| Total family labour cost                                  | 4819<br>(11.08)                  | 8155<br>(19.66)                   | 6672<br>(20.26)              | 6672<br>(16.98)                |
| <b>iv. Total enterprise cost (Cost D)</b>                 |                                  |                                   |                              |                                |
| Depreciation cost   | 1060<br>(2.44)                   | 845<br>(2.04)                     | 867<br>(2.63)                | 924<br>(2.35)                  |
| Total enterprise cost                                     | 43504<br>(100)                   | 41480<br>(100)                    | 32925<br>(100)               | 39303<br>(100)                 |
| <b>v. Farmer Profit</b>                                   |                                  |                                   |                              |                                |
| Total Revenue   | 65662                            | 77412                             | 70584                        | 71220                          |
| Gross profit  | 29132                            | 45878                             | 45938                        | 40316                          |
| Net Profit  | 22158                            | 35932                             | 37660                        | 31917                          |
| <b>vi. Rates of return</b>                                |                                  |                                   |                              |                                |
| Return to operating cost                                  | 0.8                              | 1.45                              | 1.86                         | 1.37                           |
| Return to total cost                                      | 0.51                             | 0.87                              | 1.14                         | 0.84                           |
| <b>vii. Labour</b>  |                                  |                                   |                              |                                |

|  |      |      |      |      |
|--|------|------|------|------|
| Gross profit per day family labour, land, management | 2241 | 2086 | 2553 | 2293 |
| Gross profit per day total labour, land, management  | 435  | 645  | 850  | 630  |

Note: Figure in the parenthesis indicate percentage of average cost

Source: Field Survey, 2012

### 6.5 Cost-benefit analysis of boro paddy of the study area

The cost and profit and rate of return of boro paddy have been presented in table 6.5. The total operating cost of boro paddy averaged ₹ 26154 per hectare, which accounting 74.95% of total enterprise cost. The average total enterprise cost per hectare of boro paddy incurred was about ₹ 34894. The average gross profit per hectare realized from boro paddy was ₹ 38851. The estimated net income from cultivating boro paddy crop per hectare was ₹ 30110 in average sample farm of Dinhata subdivision. The financial rates of return from boro paddy was ₹ 1.5 over a cost A, and ₹ 0.87 over a cost D. The gross profit per day family labour, land, management over a cost C was ₹ 2083 per hectare and ₹ 996 per hectare in respect of total labour. Boro paddy generally grown in lower land and where irrigation facilities are available. This crop grown primarily for family consumption, with only small surpluses sold for cash in most cases in the study area.

**Table: 6.5 Cost-benefit Analysis of Boro Paddy**

| Item  | Dinhata-I<br>(₹/hectare) | Dinhata-II<br>(₹/hectare) | Sitai<br>(₹/hectare) | Average<br>(₹/hectare) |
|---|--------------------------|---------------------------|----------------------|------------------------|
| <b>i. Operating cost (Cost A)</b>                         |                          |                           |                      |                        |
| Input Cost  | 18877<br>(54.84)         | 16690<br>(51.48)          | 20888<br>(49.72)     | 18817<br>(53.93)       |
| Cost of hired labour                                      | 8006<br>(23.26)          | 6294<br>(19.41)           | 7710<br>(20.37)      | 7337<br>(21.03)        |
| Total operating cost                                      | 26883<br>(78.10)         | 23006<br>(70.90)          | 28598<br>(75.56)     | 26154<br>(74.95)       |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> | 806<br>(2.34)            | 689<br>(2.13)             | 857<br>(2.27)        | 783<br>(2.24)          |

|  |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|
| <b>iii. opportunity cost of family labour (Cost C)</b> |                 |                 |                 |                 |
| Number of family labour day                            | 39              | 52              | 47              | 47              |
| Total family labour cost                               | 5931<br>(17.23) | 7784<br>(24.01) | 7043<br>(18.61) | 6919<br>(19.83) |
| <b>iv. Total enterprise cost (Cost D)</b>              |                 |                 |                 |                 |
| Depreciation cost                                      | 801<br>(2.33)   | 961<br>(2.97)   | 1349<br>(3.56)  | 1038<br>(2.97)  |
| Total enterprise cost                                  | 34420<br>(100)  | 32418<br>(100)  | 37847<br>(100)  | 34894<br>(100)  |
| <b>v. Farmer Profit</b>                                |                 |                 |                 |                 |
| Total Revenue  | 60080           | 65118           | 69821           | 65007           |
| Gross profit   | 33197           | 42135           | 41223           | 38851           |
| Net Profit   | 25660           | 32700           | 31974           | 30110           |
| <b>vi. Rates of return</b>                             |                 |                 |                 |                 |
| Return to operating cost                               | 1.23            | 1.83            | 1.44            | 1.5             |
| Return to total cost                                   | 0.75            | 1.01            | 0.84            | 0.87            |
| <b>vii. Labour</b>                                     |                 |                 |                 |                 |
| Gross profit per day family labour, land, management   | 2076            | 2004            | 2170            | 2083            |
| Gross profit per day total labour, land, management    | 875             | 1110            | 1030            | 996             |

Note: Figure in the parenthesis indicate percentage of average cost

Source: Field Survey, 2012



**Sowing**



**Seedling**



**Land Preparation**



**Implant**



**Paddy field 1**



**Paddy field 2**



**Paddy field 3**



**Paddy field 4**

**Plate 6.4 Paddy field**

## 6.6 Cost-benefit analysis of wheat of the study area

The table 6.6 demonstrates block wise the per hectare cost structures of wheat crop of the sample farms. From the table it could be seen that the average total operating cost of cultivation in Dinhata subdivision was found to be ₹25877 per hectare. In terms of percentage it accounted for 72.99 percent of total enterprise cost. The family labour cost constituted ₹ 8402 per hectare. The average total enterprise cost per hectare for wheat cultivation by the sample farmers was ₹35455. The average gross and net return per hectare after deducting cost A and cost D from the total revenue was ₹ 13001 and ₹ 3422 respectively. The net return per hectare was found ₹5807 and ₹4764 in Dinhata-II and Sitai block respectively whereas, the net return per hectare from wheat was negative, in Dinhata-I block. The financial rates of return from wheat cultivation was very low. The gross daily return per hectare to family labour and total labour were ₹554 and ₹259 respectively.

**Table: 6.6 Cost-benefit Analysis of Wheat**

| <b>Item</b>   | <b>Dinhata-I<br/>(₹/hectare)</b> | <b>Dinhata-II<br/>(₹/hectare)</b> | <b>Sitai<br/>(₹/hectare)</b> | <b>Average<br/>(₹/hectare)</b> |
|---|----------------------------------|-----------------------------------|------------------------------|--------------------------------|
| <b>i. Operating cost (Cost A)</b>                         |                                  |                                   |                              |                                |
| Input Cost  | 15946<br>(45.16)                 | 18313<br>(47.60)                  | 13631<br>(42.40)             | 15963<br>(45.02)               |
| Cost of hired labour                                      | 12207<br>(34.57)                 | 8540 (21.95)                      | 8995<br>(27.98)              | 9914<br>(27.96)                |
| Total operating cost                                      | 28153<br>(79.73)                 | 26853<br>(69.01)                  | 22625<br>(70.39)             | 25877<br>(72.99)               |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> | 845<br>(2.39)                    | 806<br>(2.07)                     | 680<br>(2.11)                | 776<br>(2.19)                  |
| <b>iii. opportunity cost of family labour (Cost C)</b>    |                                  |                                   |                              |                                |
| Number of family labour day                               | 40                               | 72                                | 57                           | 57                             |
| Total family labour cost                                  | 5931<br>(16.80)                  | 10749<br>(27.62)                  | 8525<br>(26.52)              | 8402<br>(23.70)                |

|  |                |                |                |                |
|--|----------------|----------------|----------------|----------------|
| <b>iv. Total enterprise cost (Cost D)</b>            |                |                |                |                |
| Depreciation cost                                    | 381<br>(1.08)  | 507<br>(1.30)  | 314<br>(0.98)  | 400<br>(1.13)  |
| Total enterprise cost                                | 35310<br>(100) | 38915<br>(100) | 32144<br>(100) | 35455<br>(100) |
| <b>v. Farmer Profit</b>                              |                |                |                |                |
| Total Revenue  | 35006          | 44722          | 36908          | 38878          |
| Gross profit   | 6853           | 17869          | 14283          | 13001          |
| Net Profit   | -304           | 5807           | 4764           | 3422           |
| <b>vi. Rates of return</b>                           |                |                |                |                |
| Return to operating cost                             | 0.24           | 0.67           | 0.63           | 0.51           |
| Return to total cost                                 | -0.01          | 0.15           | 0.15           | 0.10           |
| <b>vii. Labour</b>                                   |                |                |                |                |
| Gross profit per day family labour, land, management | 427            | 615            | 620            | 554            |
| Gross profit per day total labour, land, management  | 141            | 343            | 304            | 259            |

*Note: Figure in the parenthesis indicate percentage of average cost*

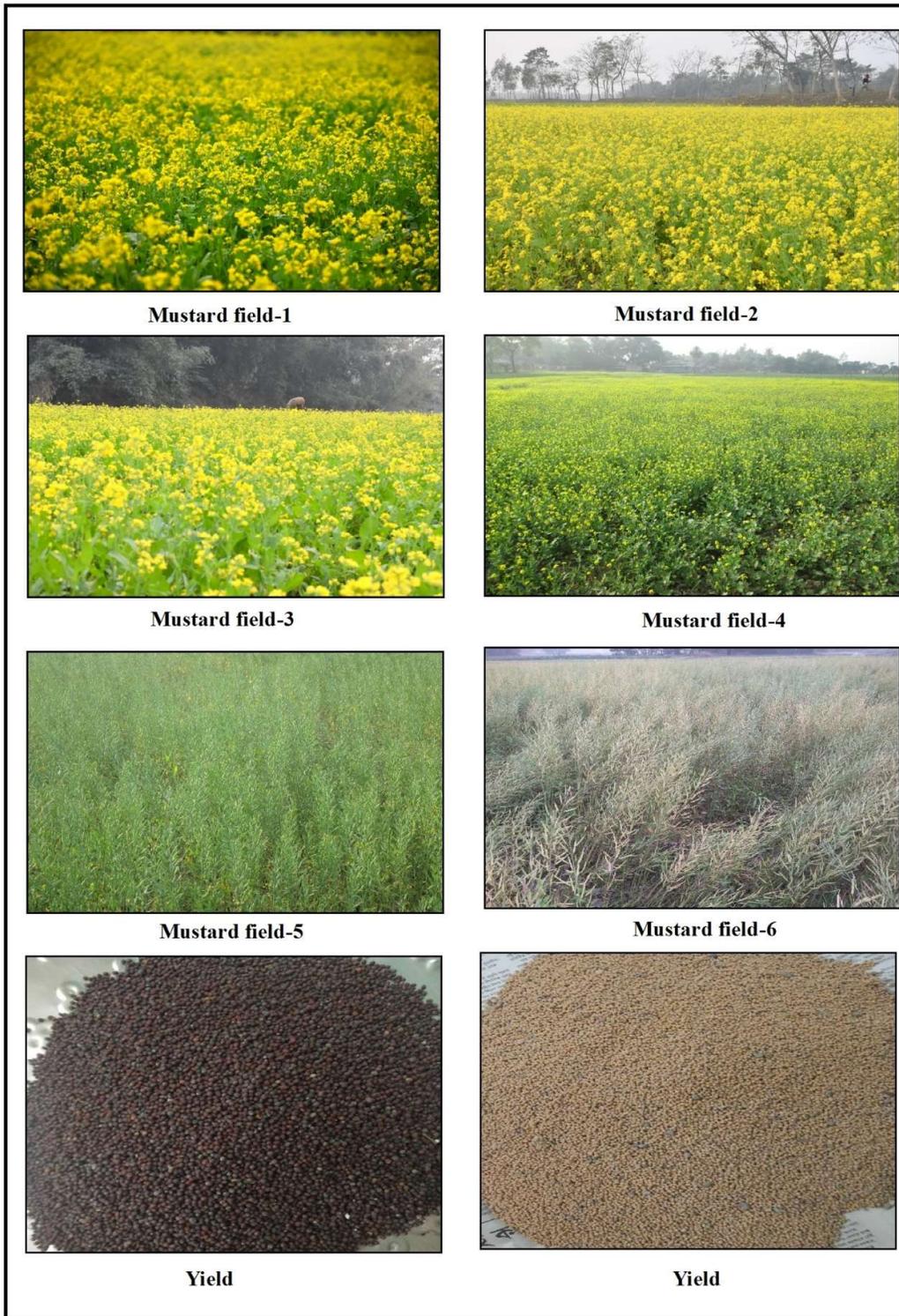
*Source: Field Survey, 2012*

### 6.7 Cost-benefit analysis of mustard of the study area

The table 6.7 demonstrates that the average operating cost was ₹ 18686 per hectare, which accounted 76.63 percent to total enterprise cost. The average total enterprise cost per hectare from mustard incurred was about ₹ 24385. The average gross profit per hectare worked out from mustard was ₹ 11612. The estimated net income from cultivating mustard crop was ₹ 5913 per hectare in average sample farm of Dinhata subdivision. The rates of return in terms of Cost A and cost D were ₹ 0.62 and ₹ 0.24 respectively, over a rupee spent on mustard crop cultivation. The gross profit per day family labour, land, management per hectare is found ₹687 for Dinhata-I, ₹1161 for Dinhata-II, ₹1006 for Sitai and ₹951 for average. Whereas gross profit per day total labour, land, management per hectare was higher in Sitai (₹672) followed by Dinhata-II



**Plate 6.5 Wheat field**



**Plate 6.6 Mustard cultivation and yield**

(₹388) and Dinhat-I (₹329). The human labour cost including family labour component ranges between 40.98% for Dinhat-I block, 40.11 for Dinhat-II block and 35.43 % for Sitai block.

**Table: 6.7 Cost-benefit Analysis of Mustard**

| <b>Item</b>   | <b>Dinhata-I<br/>(₹/hectare)</b> | <b>Dinhata-II<br/>(₹/hectare)</b> | <b>Sitai<br/>(₹/hectare)</b> | <b>Average<br/>(₹/hectare)</b> |
|---|----------------------------------|-----------------------------------|------------------------------|--------------------------------|
| <b>i. Operating cost (Cost A)</b>                         |                                  |                                   |                              |                                |
| Input Cost  | 12296<br>(54.34)                 | 13967<br>(55.48)                  | 15160<br>(59.80)             | 13808<br>(56.63)               |
| Cost of hired labour                                      | 4826<br>(21.33)                  | 6761<br>(26.86)                   | 3052<br>(12.04)              | 4880<br>(20.01)                |
| Total operating cost                                      | 17122<br>(75.66)                 | 20728<br>(82.33)                  | 18212<br>(71.84)             | 18686<br>(76.63)               |
| <b>ii. Opportunity cost of operating capital (Cost B)</b> | 514<br>(2.27)                    | 623<br>(2.47)                     | 546<br>(2.15)                | 561<br>(2.30)                  |
| <b>iii. opportunity cost of family labour (Cost C)</b>    |                                  |                                   |                              |                                |
| Number of family labour day                               | 30                               | 22                                | 40                           | 30                             |
| Total family labour cost                                  | 4448<br>(19.65)                  | 3336<br>(13.25)                   | 5931<br>(23.39)              | 4572<br>(18.75)                |
| <b>iv. Total enterprise cost (Cost D)</b>                 |                                  |                                   |                              |                                |
| Depreciation cost   | 546<br>(2.41)                    | 489<br>(1.94)                     | 662<br>(2.61)                | 566<br>(2.32)                  |
| Total enterprise cost                                     | 22630<br>(100)                   | 25176<br>(100)                    | 25351<br>(100)               | 24385<br>(100)                 |
| <b>v. Farmer Profit</b>                                   |                                  |                                   |                              |                                |
| Total Revenue   | 25368                            | 31190                             | 34341                        | 30301                          |
| Gross profit  | 8246                             | 10463                             | 16129                        | 11612                          |
| Net Profit  | 2738                             | 6015                              | 8990                         | 5913                           |
| <b>vi. Rates of return</b>                                |                                  |                                   |                              |                                |

|  |      |      |      |      |
|--|------|------|------|------|
| Return to operating cost                             | 0.48 | 0.5  | 0.89 | 0.62 |
| Return to total cost                                 | 0.12 | 0.24 | 0.35 | 0.24 |
| <b>vii. Labour</b>                                   |      |      |      |      |
| Gross profit per day family labour, land, management | 687  | 1161 | 1006 | 951  |
| Gross profit per day total labour, land, management  | 329  | 388  | 672  | 465  |

*Note: Figure in the parenthesis indicate percentage of average cost*

*Source: Field Survey, 2012*

### **6.8 Comparison of total operating costs of selected crops cultivated in the study area**

A comparison of total operating cost for tobacco and alternative crops is given in Table 6.8. A wide variability for operating cost of cultivation was observed between different crops. Of these cultivation potato (₹77449/hectare) and jati tobacco (₹61983/ hectare) are the most expensive compared with mustard (₹18686/ hectare), wheat (₹25877/ hectare), boro paddy (₹26154/ hectare) and maize (₹30904/ hectare). Very high production cost for potato are a serious constraints for most farmers, these data suggest that poor farmers can earn more income by cultivating only a small area of potato than an entire land of most other crops.

**Table:6.8 Comparison of Total Operating Cost of tobacco and substitute crops in the study area**

| <b>Major Rabi Crops</b>      | <b>Dinhata-I</b> | <b>Dinhata-II</b> | <b>Sitai</b> | <b>Average</b> |
|------------------------------|------------------|-------------------|--------------|----------------|
| Jati Tobacco (₹/hectare)     | 60344            | -                 | 63621        | 61983          |
| Motihari Tobacco (₹/hectare) | 38154            | 25870             | 47514        | 37180          |
| Potato (₹/hectare)           | 88038            | 71578             | 72732        | 77449          |
| Maize (₹/hectare)            | 36530            | 31534             | 24647        | 30904          |
| Wheat (₹/hectare)            | 28153            | 26853             | 22625        | 25877          |
| Mustard (₹/hectare)          | 17122            | 20728             | 18212        | 18686          |
| Boro Paddy (₹/hectare)       | 26883            | 23006             | 28598        | 26154          |

*Source: Field Survey, 2012*

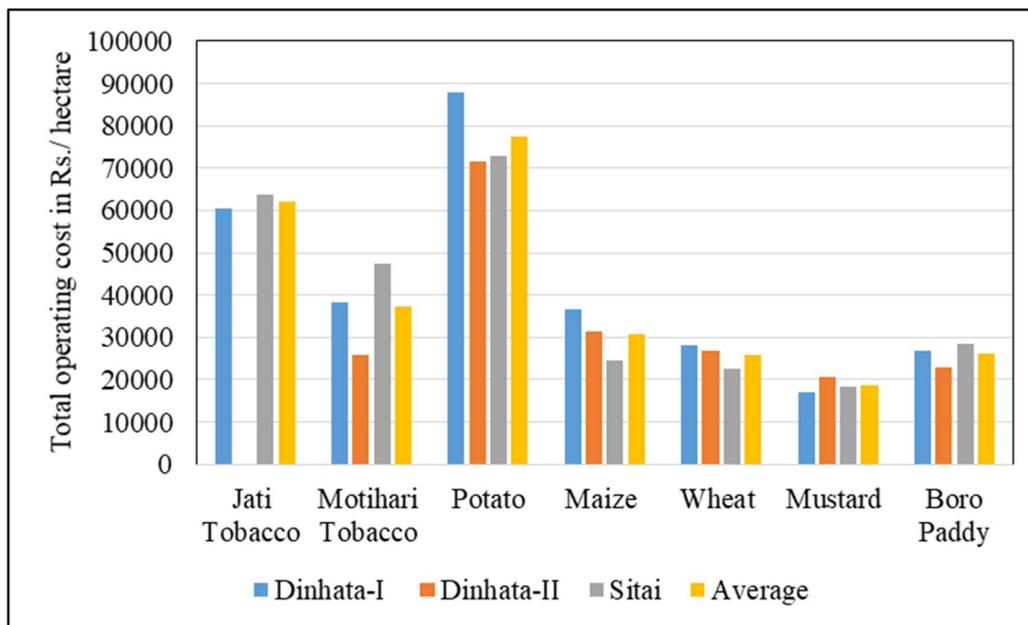


Figure: 6.1 Comparison of total operating cost of tobacco and substitute crops

### 6.9 Comparison of total Enterprise costs of selected crops cultivated in the study area

The next summary table compares total enterprise cost of five rabi crops with those for jati and motihari tobacco in Dinhata subdivision. The total enterprise cost including cost c was much higher for jati tobacco cultivation. Cultivating jati tobacco was most expensive due to additional family labour requirement.

**Table: 6.9 Comparison of Total Enterprise Cost of tobacco and substitute crops in the study area**

| Major Rabi Crops             | Dinhata-I | Dinhata-II | Sitai    | Average  |
|------------------------------|-----------|------------|----------|----------|
| Jati Tobacco (₹/hectare)     | 89397     | -          | 98409.09 | 93904.27 |
| Motihari Tobacco (₹/hectare) | 57075     | 41295      | 72096.81 | 56822.94 |
| Potato (₹/hectare)           | 98940     | 83825      | 90316.23 | 91027.91 |
| Maize (₹/hectare)            | 43504     | 41480      | 32924.94 | 39302.85 |
| Wheat (₹/hectare)            | 35310     | 38915      | 32144.07 | 35455.34 |
| Mustard (₹/hectare)          | 22630     | 25176      | 25351.01 | 24384.81 |
| Boro Paddy (₹/hectare)       | 34420     | 32418      | 37847.37 | 34894.4  |

Source: Field Survey, 2012

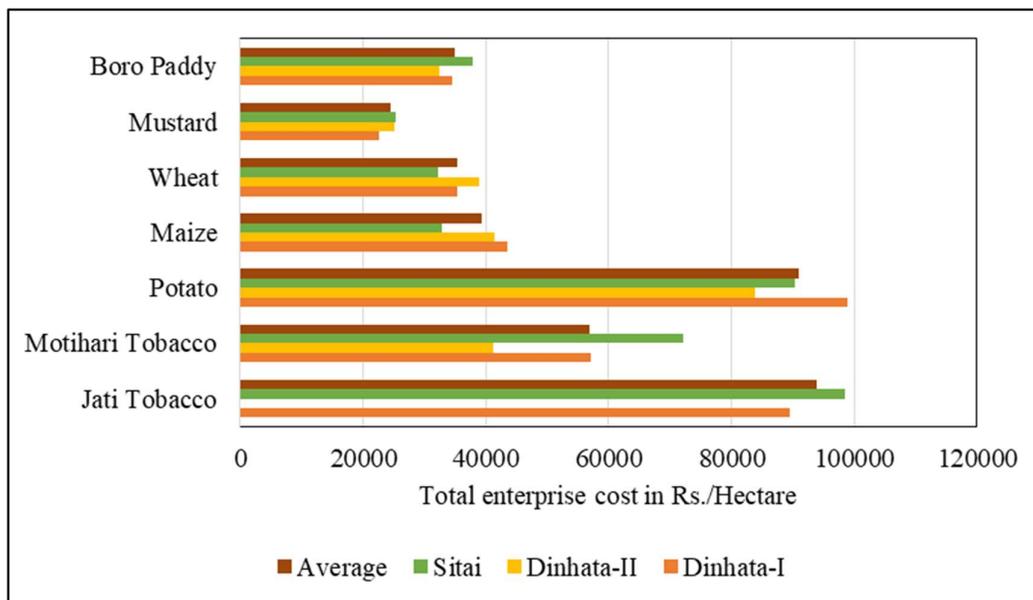


Figure: 6.2 Comparison of total enterprise cost of tobacco and substitute crops

### 6.10 Comparison of labour requirement of selected crops cultivated in the study area

Table 6.10 looks at the labour requirements for tobacco and its alternative crops. These data clearly shows that jati tobacco and potato was the most labour intensive crop, which create significantly more jobs than other rabi crops. Mustard, boro paddy and wheat, on the other hand use considerably less labour with few jobs created for hired labour. It further reveals that the absorption of family labour was also very high in case of tobacco cultivation.

**Table: 6.10 Comparison of Total labour requirement of tobacco and substitute crops in the study area**

| Major Rabi Crops             | Dinhata-I        | Dinhata-II       | Sitai            | Average          |
|------------------------------|------------------|------------------|------------------|------------------|
| Jati Tobacco (₹/hectare)     | 45177<br>(26317) | -                | 48740<br>(31877) | 46958<br>(29097) |
| Motihari Tobacco (₹/hectare) | 20747<br>(15939) | 20752<br>(14085) | 29198<br>(21869) | 23567<br>(17298) |
| Potato (₹/hectare)           | 24093<br>(5189)  | 24835<br>(8155)  | 38920<br>(13344) | 29282<br>(8896)  |
| Maize (₹/hectare)            | 24736            | 26465            | 19843            | 23681            |

|                        |                 |                  |                 |                 |
|------------------------|-----------------|------------------|-----------------|-----------------|
|                        | (4819)          | (8155)           | (6672)          | (6670)          |
| Wheat (₹/hectare)      | 18138<br>(5931) | 19289<br>(10749) | 17520<br>(8525) | 18316<br>(8402) |
| Mustard (₹/hectare)    | 9274<br>(4448)  | 10097<br>(3336)  | 8982<br>(5931)  | 9452<br>(4572)  |
| Boro Paddy (₹/hectare) | 13690<br>(5931) | 14078<br>(7784)  | 14752<br>(7043) | 14174<br>(6919) |

Note: Figure in the parenthesis indicate average opportunity cost of family labour

Source: Field Survey, 2012

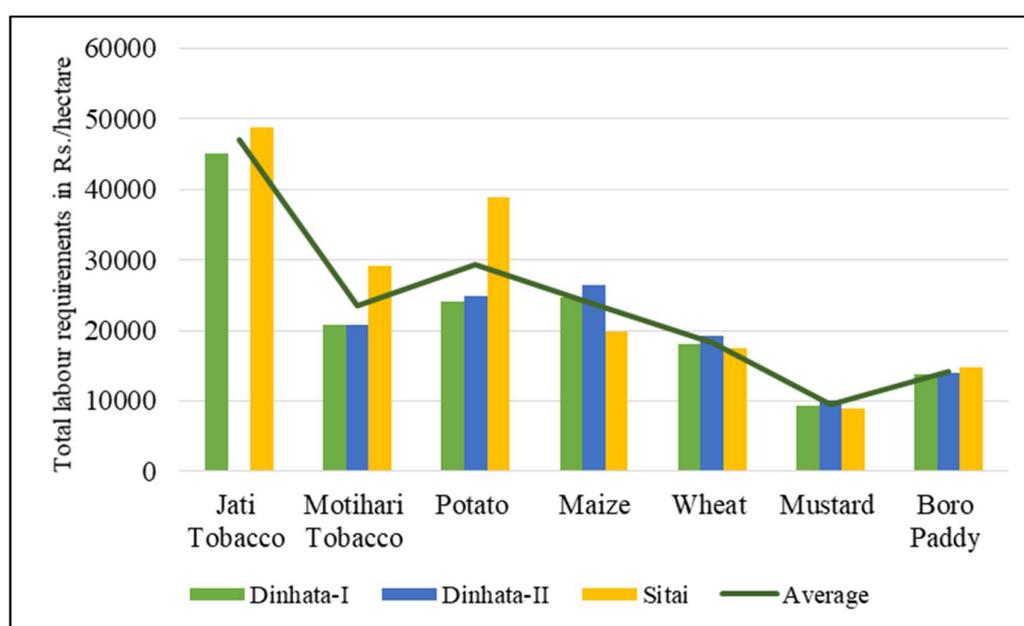


Figure: 6.3 Comparison of total labour requirement of tobacco and substitute crops

### 6.11 Comparison of farmer incomes of selected crops cultivated in the study area

Table 6.11 compares gross profits from tobacco with the income that can be earned from other five alternative crops. Result indicate that jati tobacco has higher average gross return per hectare than other crops in Dinhata subdivision. From this analysis this is evident that mustard has the least averaged gross return, followed by wheat. The gross profit was highest form jati tobacco cultivation, followed by Potato in Dinhata-I block. Potato is noted to have highest gross profit in Sitai block. In Dinhata-II block maize have highest gross profit.

**Table: 6.11 Comparison of Farmer Gross profit of tobacco and substitute crops in the study area**

| Major Rabi Crops             | Dinhata-I | Dinhata-II | Sitai | Average |
|------------------------------|-----------|------------|-------|---------|
| Jati Tobacco (₹/hectare)     | 57023     | -          | 70456 | 63740   |
| Motihari Tobacco (₹/hectare) | 37140     | 22507      | 44186 | 34610   |
| Potato (₹/hectare)           | 43973     | 41203      | 81094 | 55424   |
| Maize (₹/hectare)            | 29132     | 45878      | 45938 | 40316   |
| Wheat (₹/hectare)            | 6853      | 17869      | 14283 | 13001   |
| Mustard (₹/hectare)          | 8246      | 10463      | 16129 | 11612   |
| Boro Paddy (₹/hectare)       | 33197     | 42135      | 41223 | 38851   |

Source: Field Survey, 2012

The net return are concerned sample farmer are getting more profit from potato over cost D (₹41846/ hectare), followed by Maize (₹31917/ hectare), Jati tobacco (₹31820/ hectare), boro paddy (₹30110/ hectare), motihari tobacco (₹14967/ hectare), mustard (₹5913/ hectare) and wheat (₹3422/ hectare) respectively. The net income per hectare was highest from potato cultivation in Dinhata-I and Sitai block followed by Jati tobacco in Dinhata-I and maize in Sitai. Whereas net income per hectare was highest from maize followed by boro paddy in Dinhata-II block.

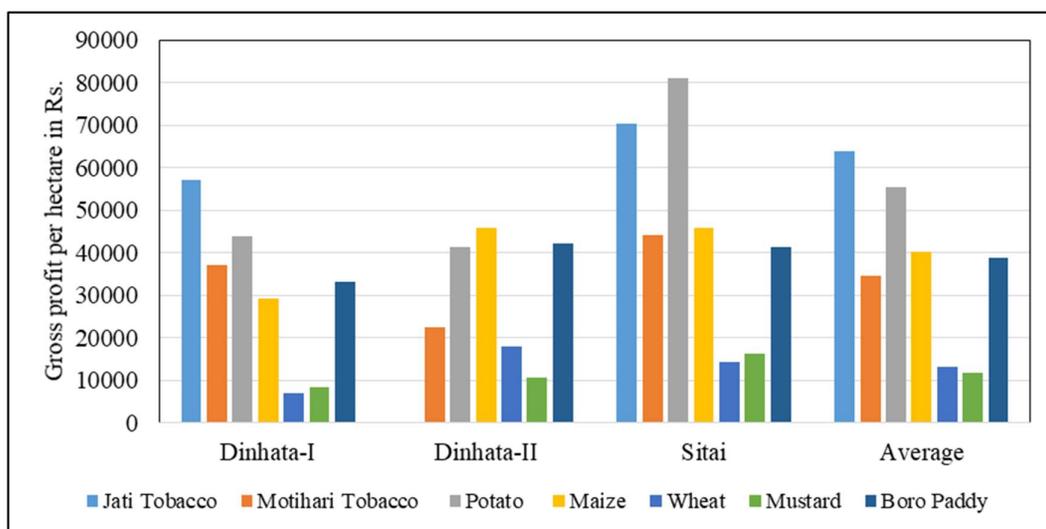


Figure: 6.4 Comparison of farmers' gross profit of tobacco and substitute crops

**Table: 6.12 Comparison of Farmer Net profit of tobacco and substitute crops in the study area**

| Major Rabi Crops             | Dinhata-I | Dinhata-II | Sitai | Average |
|------------------------------|-----------|------------|-------|---------|
| Jati Tobacco (₹/hectare)     | 27970     | -          | 35668 | 31820   |
| Motihari Tobacco (₹/hectare) | 18219     | 7082       | 19603 | 14967   |
| Potato (₹/hectare)           | 33071     | 28956      | 63510 | 41846   |
| Maize (₹/hectare)            | 22158     | 35932      | 37660 | 31917   |
| Wheat (₹/hectare)            | -304      | 5807       | 4764  | 3422    |
| Mustard (₹/hectare)          | 2738      | 6015       | 8990  | 5913    |
| Boro Paddy (₹/hectare)       | 25660     | 32700      | 31974 | 30110   |

Source: Field Survey, 2012

### 6.12 Comparison of rates of return of selected crops cultivated in the study area

The table 6.13 reveals that financial rates of return in terms of operating cost (cost A) in different crop was highest in boro paddy (1.5 ) followed by maize (1.37), jati tobacco (1.03), motihari tobacco (0.92), potato (0.73), mustard (0.63) and wheat (0.51) over one rupee spent on cultivation.

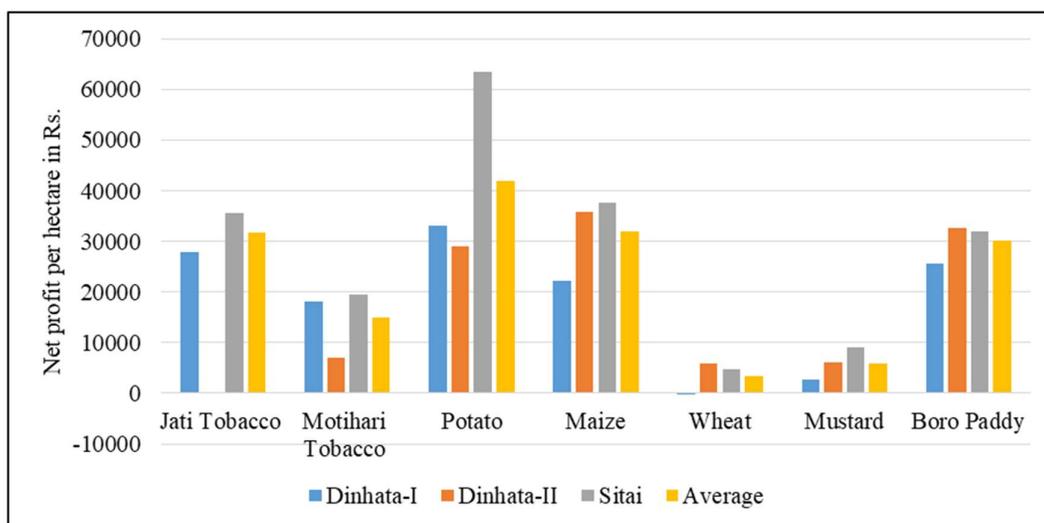


Figure: 6.5 Comparison of farmers' net profit of tobacco and substitute crops

The data clearly shows that the rates of return in terms of total enterprise cost (cost D) were far higher in boro paddy (0.87), maize (0.84), and potato (0.46), than jati tobacco (0.34), motihari tobacco (0.25), whereas mustard (0.24) and wheat (0.10) were

experience lower rates of return. “This approach, while would give the economic profitability per unit of investment, apparently does not take into account the magnitude of income generated per unit area, which would be the guiding factor as far the farmers are concerned”.

**Table: 6.13 Comparison of Profitability of tobacco and alternative crops in the study area**

| <b>Crops</b>            | <b>Block</b>      | <b>Return to operating cost</b> | <b>Return to total cost</b> |
|-------------------------|-------------------|---------------------------------|-----------------------------|
| <b>Jati Tobacco</b>     | <b>Dinhata-I</b>  | <b>0.94</b>                     | <b>0.31</b>                 |
|                         | <b>Dinhata-II</b> | <b>-</b>                        | <b>-</b>                    |
|                         | <b>Sitai</b>      | <b>1.11</b>                     | <b>0.36</b>                 |
|                         | <b>Average</b>    | <b>1.03</b>                     | <b>0.34</b>                 |
| <b>Motihari Tobacco</b> | <b>Dinhata-I</b>  | <b>0.97</b>                     | <b>0.31</b>                 |
|                         | <b>Dinhata-II</b> | <b>0.87</b>                     | <b>0.17</b>                 |
|                         | <b>Sitai</b>      | <b>0.93</b>                     | <b>0.27</b>                 |
|                         | <b>Average</b>    | <b>0.92</b>                     | <b>0.25</b>                 |
| <b>Potato</b>           | <b>Dinhata-I</b>  | <b>0.5</b>                      | <b>0.33</b>                 |
|                         | <b>Dinhata-II</b> | <b>0.58</b>                     | <b>0.35</b>                 |
|                         | <b>Sitai</b>      | <b>1.11</b>                     | <b>0.7</b>                  |
|                         | <b>Average</b>    | <b>0.73</b>                     | <b>0.46</b>                 |
| <b>Maize</b>            | <b>Dinhata-I</b>  | <b>0.8</b>                      | <b>0.51</b>                 |
|                         | <b>Dinhata-II</b> | <b>1.45</b>                     | <b>0.87</b>                 |
|                         | <b>Sitai</b>      | <b>1.86</b>                     | <b>1.14</b>                 |
|                         | <b>Average</b>    | <b>1.37</b>                     | <b>0.84</b>                 |
| <b>Wheat</b>            | <b>Dinhata-I</b>  | <b>0.24</b>                     | <b>-0.01</b>                |
|                         | <b>Dinhata-II</b> | <b>0.67</b>                     | <b>0.15</b>                 |
|                         | <b>Sitai</b>      | <b>0.63</b>                     | <b>0.15</b>                 |
|                         | <b>Average</b>    | <b>0.51</b>                     | <b>0.1</b>                  |
|                         | <b>Dinhata-I</b>  | <b>0.48</b>                     | <b>0.12</b>                 |

|                   |                   |             |             |
|-------------------|-------------------|-------------|-------------|
| <b>Mustard</b>    | <b>Dinhata-II</b> | <b>0.5</b>  | <b>0.24</b> |
|                   | <b>Sitai</b>      | <b>0.89</b> | <b>0.35</b> |
|                   | <b>Average</b>    | <b>0.63</b> | <b>0.24</b> |
| <b>Boro Paddy</b> | <b>Dinhata-I</b>  | <b>1.23</b> | <b>0.75</b> |
|                   | <b>Dinhata-II</b> | <b>1.83</b> | <b>1.01</b> |
|                   | <b>Sitai</b>      | <b>1.44</b> | <b>0.84</b> |
|                   | <b>Average</b>    | <b>1.5</b>  | <b>0.87</b> |

Source: Field Survey, 2012

The data presented in the table 6.14 indicate that daily return in respect of family labour used was far higher in potato (₹2422), maize (₹2293) and boro paddy (₹2083) than jati (₹811) and motihari tobacco (₹736).

The data also incurred that daily return in respect of total labour used was far higher in boro paddy (₹996), potato (₹702) and maize (₹630) than motihari tobacco (₹541) and jati tobacco (₹502).

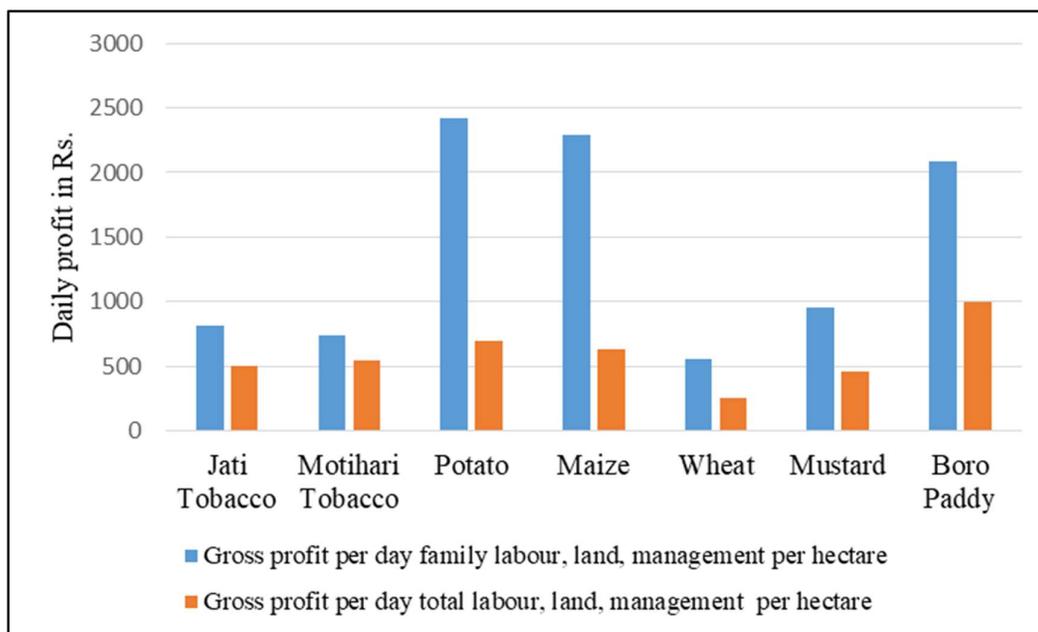


Figure: 6.6 Comparison of gross profit per day

**Table: 6.14 Comparison of Gross profit per day labour, land, management of tobacco and alternative crops in the study area**

| <b>Crops</b>            | <b>Block</b>      | Gross profit per day family labour, land, management per hectare | Gross profit per day total labour, land, management per hectare |
|-------------------------|-------------------|--|---|
| <b>Jati Tobacco</b>     | <b>Dinhata-I</b>  | <b>803</b>   | <b>467</b>  |
|                         | <b>Dinhata-II</b> | <b>-</b>   | <b>-</b>  |
|                         | <b>Sitai</b>      | <b>818</b>   | <b>539</b>  |
|                         | <b>Average</b>    | <b>811</b>   | <b>502</b>  |
| <b>Motihari Tobacco</b> | <b>Dinhata-I</b>  | <b>865</b>   | <b>662</b>  |
|                         | <b>Dinhata-II</b> | <b>593</b>   | <b>395</b>  |
|                         | <b>Sitai</b>      | <b>749</b>   | <b>559</b>  |
|                         | <b>Average</b>    | <b>736</b>   | <b>541</b>  |
| <b>Potato</b>           | <b>Dinhata-I</b>  | <b>3140</b>  | <b>677</b>  |
|                         | <b>Dinhata-II</b> | <b>1873</b>  | <b>615</b>  |
|                         | <b>Sitai</b>      | <b>2251</b>  | <b>773</b>  |
|                         | <b>Average</b>    | <b>2422</b>  | <b>702</b>  |
| <b>Maize</b>            | <b>Dinhata-I</b>  | <b>2241</b>  | <b>435</b>  |
|                         | <b>Dinhata-II</b> | <b>2086</b>  | <b>645</b>  |
|                         | <b>Sitai</b>      | <b>2553</b>  | <b>850</b>  |
|                         | <b>Average</b>    | <b>2293</b>  | <b>630</b>  |
| <b>Wheat</b>            | <b>Dinhata-I</b>  | <b>427</b>   | <b>141</b>  |
|                         | <b>Dinhata-II</b> | <b>615</b>   | <b>343</b>  |
|                         | <b>Sitai</b>      | <b>620</b>   | <b>304</b>  |
|                         | <b>Average</b>    | <b>554</b>   | <b>259</b>  |
| <b>Mustard</b>          | <b>Dinhata-I</b>  | <b>687</b>   | <b>329</b>  |
|                         | <b>Dinhata-II</b> | <b>1161</b>  | <b>388</b>  |
|                         | <b>Sitai</b>      | <b>1006</b>  | <b>672</b>  |
|                         | <b>Average</b>    | <b>951</b>   | <b>465</b>  |

|                       |                   |             |             |
|-----------------------|-------------------|-------------|-------------|
| <b>Boro<br/>Paddy</b> | <b>Dinhata-I</b>  | <b>2076</b> | <b>875</b>  |
|                       | <b>Dinhata-II</b> | <b>2004</b> | <b>1110</b> |
|                       | <b>Sitai</b>      | <b>2170</b> | <b>1030</b> |
|                       | <b>Average</b>    | <b>2083</b> | <b>996</b>  |

Source: Field Survey, 2012

### Conclusion

Profitability of jati tobacco emerged from the fact that most sample farmers economize on the cost of labour required for producing this highly labour intensive crop by using their family labour especially of women and children. The study shows that maize and potato can be economically viable alternative cash crops to tobacco and boro paddy can also be profitable alternative food crop to tobacco for the farmers of Dinhata subdivision. This, therefore confirms the assertion that the contribution of tobacco to the farm family income is not only the best but other crops could be contributing factor in a significant manner for the farm family income in the tobacco growing region. So introduction of alternative crops like maize, potato and boro paddy to substantiate the healthy farm family income in the study area is possible, however such a shift requires substantial support in terms of inputs, technical support and commodity marketing and campaigning harmful effects of tobacco and long term benefits of alternative crops.

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