Income Impact Analysis -2010

Chattisgarh

International Development Enterprises (India)

INCOME IMPACT ANALYSIS - CHATTISGARH

Methodology

IDEI carried out an Income Impact study to understand the following issues:

1. Income generated through use of the IDEI promoted technology KB Treadle Pump (KBTP)
2. Land brought under irrigation and cultivation using these technologies
3. Various crops grown and diversity
4. Plot sizes for various crops
5. Quantity sold for each of the crops and prices obtained
6. Cost of cultivation for each of the crops
7. Components of cost of cultivation were also gathered and analyzed
8. Individual crop profitability was analyzed

Present study is based on findings from a random sample of 40 smallholders which is a part of total sample of 996.

Incomes reported are exclusively agricultural earnings through use of KBTP for irrigation. Both gross income and net income after deduction of investments have been recorded for all crops. All cost of cultivation, including labour based and input based costs were gathered. Data on income, investments or any monetary transactions are in ₹. Income mentioned for the state is median value of net annual incomes.

Key Findings

- Median net annual income for smallholder TP farmers was ₹ 32,880, minimum being ₹18,590.
- Income was independent of the period of usage of TP, and cropped area as well
- 100% of the smallholders cultivated high value crops, predominantly vegetables

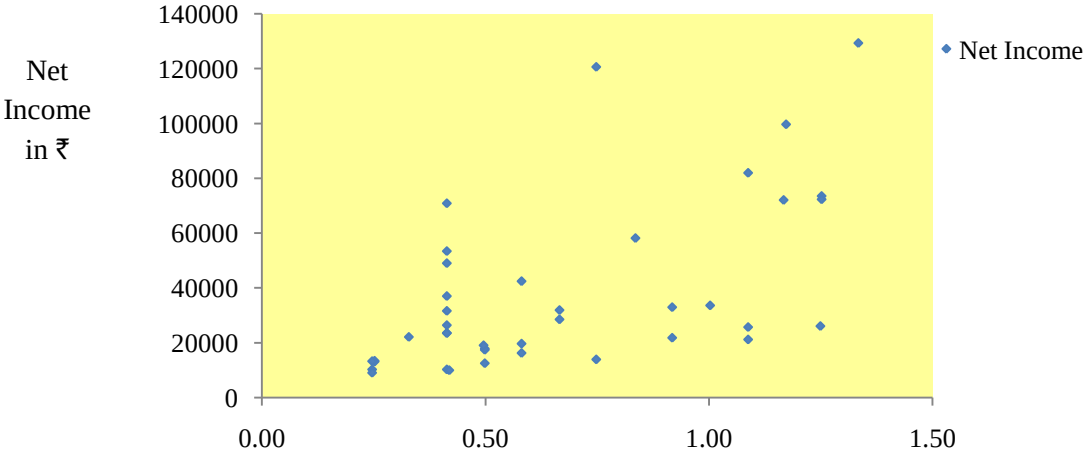
- Plant nutrients (29.11%), hiring agricultural equipments (21.63%) and seed material (20.31%) were the major cost components
- Cost of cultivation was 23% of gross returns from crops on an average
- 40% of the smallholders cultivated three or more crops for a given period of usage and 55% cultivated two crops
- 61.9% of crop plots were less than or equal to 0.15 acre and 100% less than or equal to 0.5 acre
- Crop Planning & selection were major determinants of income

Income Pattern

Income and Usage Period

With an objective to understand if period of usage of TP mattered, respondents have been categorised into four groups, i.e. users below six months, 6-12 months, 1-1.5 yr and 1.5-2 yr based on the period they have used the TP. Net income of users during the usage period was analysed to understand if income was proportionate to period of usage. Income was found to be independent of period of usage of TP. Smallholders who earned higher were from all the four categories.

Net Income & Period of Usage (Figure 1.1)



Net income figures during the usage periods were then extrapolated to estimate annual incomes of the smallholders, from their respective cropped areas. Analysis of the income estimates showed that all the customers using TP had a net annual income greater than ₹ 16,000. The lowest net annual income was of ₹ 18,590 and median net annual income for the small holders was ₹ 32,880.

Income and Cropping Area

Apart from period of cropping/usage of TP, an attempt was made to understand if the gross cropped area (GCA) was a key determinant to income. GCA here refers to the total area under all crops grown by a farmer in a given period (in which TP is used). Hence GCA as a probable factor was analysed.

GCA for the customers studied varied from as low as 0.01 to 1 acre, depending on factors such as period of cropping, no. of crops, cultivable land available, etc. Net annual incomes from respective cropped areas were extrapolated to get net annual incomes per acre for selected set of smallholders (Figure 1.2). .

Net Annual Income per Acre (Figure 1.2)

Net Annual Income Per Acre	% Customers in the Income Category
< ₹ 15,000	0%
₹ 15,000 - ₹ 30,000	5%
₹ 30,000 - ₹ 50,000	0%
> ₹ 50,000	95%

Among the smallholders who earned above ₹ 50, 000 per acre annually, more than 68.4% cultivated a gross area upto 0.5 acre. This hints at the fact that smallholders with just an acre of cropping area can earn potentially well and income is independent of area put to cultivation. Figure 1.3 further explains this.

GCA was categorized into five classes, i.e. less than 0.5 acre, 0.5 to 1 acre, 1 to 1.5 acre, 1.5 to 2 acre and greater than 2 acre. The idea was to study income variations with respect to GCA. Net annual incomes from respective cropped areas were extrapolated to obtain net annual incomes per acre for selected set of smallholders.

Net Annual Income per Acre (in ₹) and GCA (Fig 1.3)

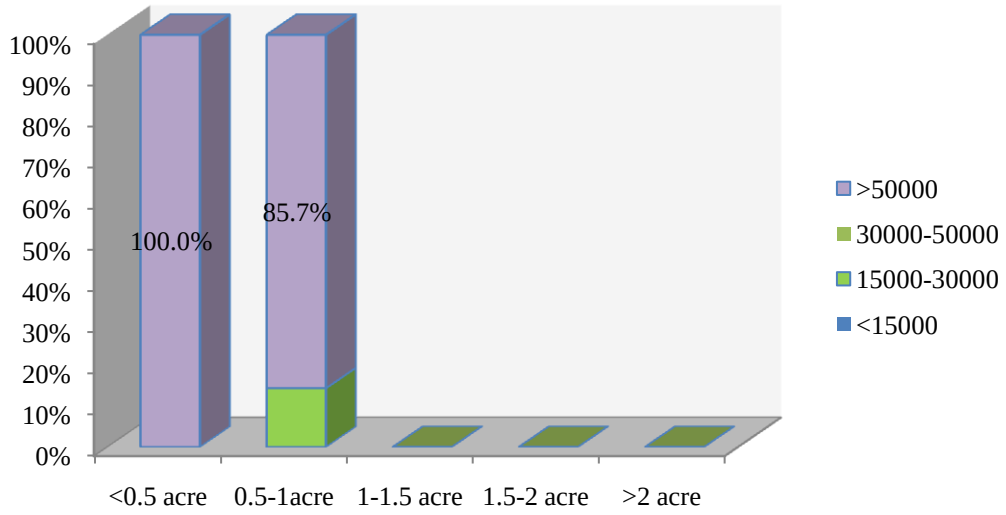


Figure 1.3 shows that all the smallholders with just 0.5 acre of GCA or even lesser, earned a minimum of ₹ 50,000 per acre annually. In case of smallholders with GCA between 0.5 to 1acre, 85.7% earned above ₹ 50, 000 and 14.3% in the range ₹ 30, 000 to ₹ 50, 000.

Smallholder farmers with smaller agricultural lands surpassed those with larger cultivable areas. They usually adopted priority cultivation, need based crop selection, etc. which fetches them higher returns.

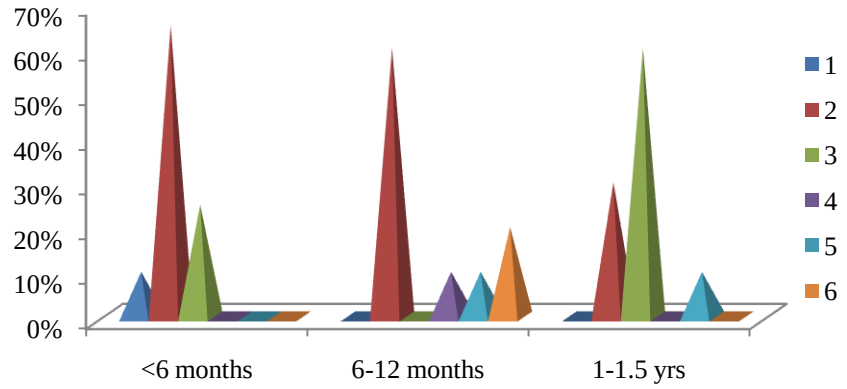
Cropping Pattern

Cropping Intensity

Prior to adoption of treadle pump the smallholders usually practiced rainfed agriculture with limited number of crops. With treadle pump irrigation was more a constraint. Hence the users cultivated crops throughout the year, which resulted in higher cropping intensity.

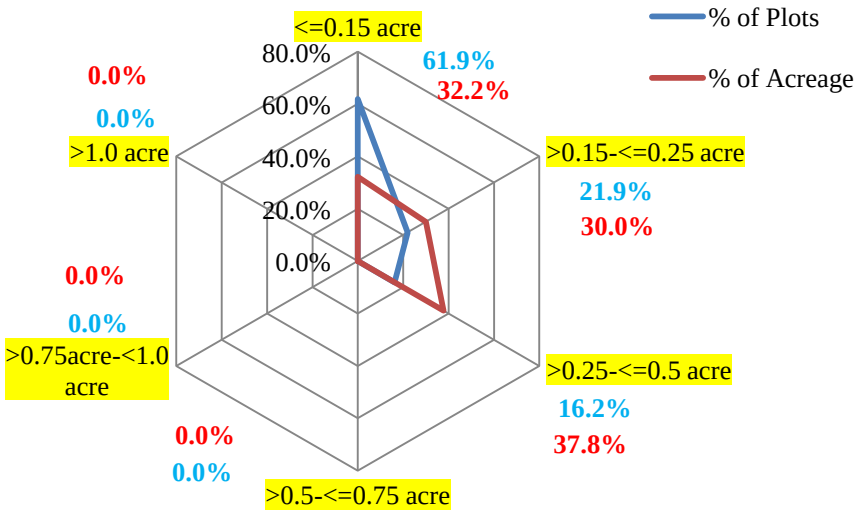
Figure 2.1 explains the total number of crops that were taken up by the smallholders who had used TP for different periods. Overall, only 5 % of the smallholders cultivated a single crop for a given period of usage. Of these all had used TP just for six months or lesser. 55% of the smallholders cultivated two crops of which 59% had used TP for six months or less, 27% had used for six to twelve months and 14% for one to one and half year. 40% cultivated three or more crops of which 68.5% had used TP for six to eighteen months.

Period of Usage and No. of Crops Grown (Fig.



Most of the smallholders, who cultivated larger number of crops, did so in smaller plots in order to take up more number of crops. Selection of different crops was a kind insurance against market fluctuations and crop failures. All the crop plots were less than or equal to 0.5 acre in size (61.9% of the crop plots were smaller than or equal to 0.15 acre, 21.9% between 0.15 to 0.25 acre and 16.2% between 0.25 to 0.5 acre) (Figure 2.2).

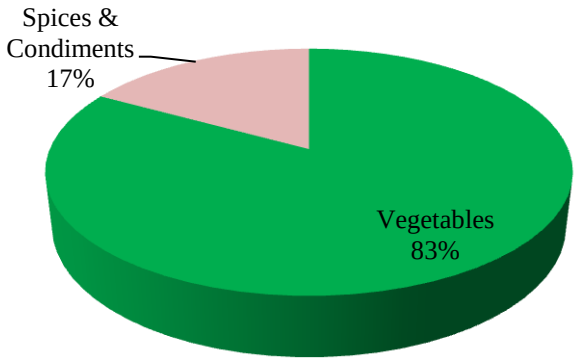
Crop Plot Sizes (Fig. 2.2)



Crop Portfolio

All the smallholders cultivated high value crops using treadle pump. Vegetable crops were predominant. Apart from vegetables, spices and condiments were taken up. Thirteen different crops were grown using TP. Figure 2.3 shows the different category of crops grown using TP.

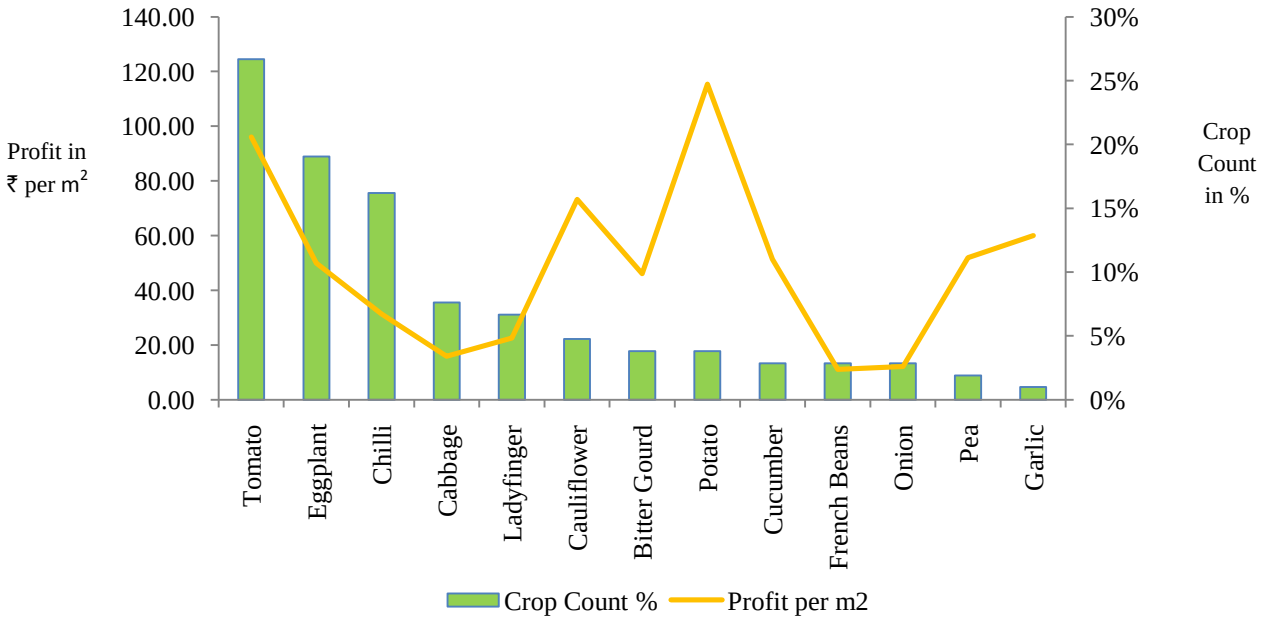
Crop Categories (Fig. 2.3)



Most popular crops in the region were tomato, eggplant and chilli. Though profitability for most of the crops was quite high, crops like potato, tomato, cauliflower and garlic proved to be exceptionally good. While potato and cauliflower were popular, garlic was rare. For crops like french bean, onion and cabbage, profitability was comparatively lower.

.

Crop Popularity and Profitability (Fig. 2.4)

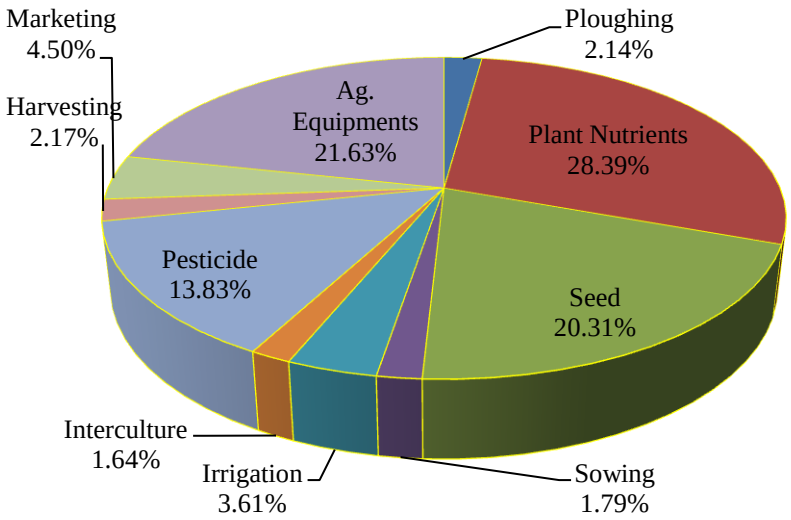


Margins

Cost of Cultivation

Cost of Cultivation of a crop is the total cost incurred by the smallholders in raising a crop and marketing it. So the costs start right from land preparation activities for any given crop. Average cost of cultivation for the region was found to be 23% of the gross returns, which indicates that the small holders made margins upto 77%. All the cost components were studied and categorised into two groups namely labour based and input based. Figure 3.1 explains the various cost components.

Cost Components in Cultivation (Fig. 3.1)

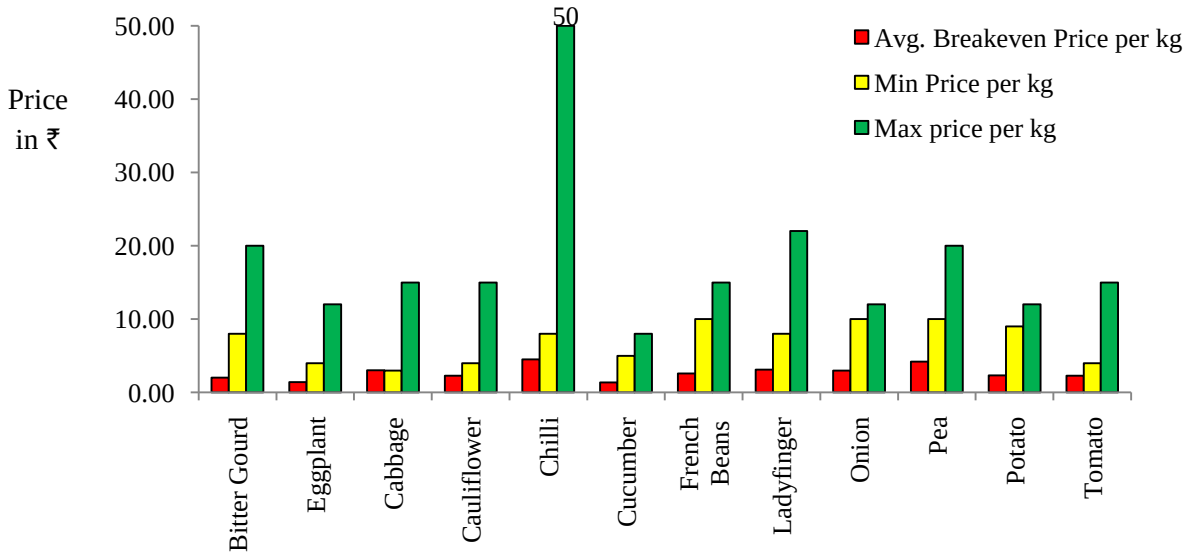


Amongst all components cost incurred on plant nutrients, which includes the cost of fertilizers and manures) was the highest (28.39%) followed by cost incurred in hiring agricultural implements (21.63%), both big and small, for operations like ploughing, sowing, interculture, harvesting, etc. Investment on planting material was also high (20.31%).

Selling Price

Prices at which the smallholders sold their produce varied from farmer to farmer for different crops. On an average maximum price obtained for any crop was twice that of minimum price. Chilli, ladyfinger, bitter gourd, cabbage cauliflower and tomato were some of the crops for which fluctuations in selling price were quite high. Maximum price was at least 1.2 times that of the minimum price.

Maximum, Minimum & Average Breakeven Prices (Fig. 3.2)



Breakeven Price

Breakeven Price (BEP) for any agricultural produce is the minimum price a farmer must get so that he recovers all the costs incurred in producing and selling the crop. So any price above BEP ensures profits to the smallholders. For the crops that were grown and sold by the smallholders, selling price was always higher than the BEP. Hence the smallholders made profits even at the minimum selling price. Figure 3.2 shows the minimum & maximum selling prices and average values of BEPs for various crops.

Conclusion

Smallholders in the region did much better in terms of crop selection, managing cost inputs, etc. Further means to enhance income could be

- Means and ways to reduce cost of cultivation for specific crops like onion and cabbage which were on lower side of profitability
- Reducing cost incurred on plant nutrients and seed material
- Information on markets and market prices so that price fluctuations for any commodity is minimum