Environment & Ecology 31 (2B) : 984—987, April—June 2013
Website: environmentandecology.com ISSN 0970-0420

Income Generation Through Potato Cultivation in Rewa District of Madhya Pradesh

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Received 13 February 2013; Accepted 26 February 2013; Published online 8 March 2013

Abstract Diversification helps in increasing income and reducing risk associated with the farming. Due to returns potato cultivation is gaining importance in the Rewa district. The study shows that the average yield of potato in the study area was 11.11 tons per hectare. The maximum yield (11.46 tonns per hectare) was obtained on large size of farm's due to efficient use of inputs. Farm business income was higher in case of small farmers and decreased with the increase of size of holding. This shows the efficiency of smaller farmers to scale up potato production. The cost benefit ratio of potato production to the tune of 1.52 was found to be satisfactory and will be helpful in promoting nature for potato production in the area. However, cold storage facilities may help in increasing returns at farmers' level.

Keywords Potato, Income generation, Potato production.

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Introduction

Potato is one of the most important cash crops of the country and occupies a place of pride in the vegetable kingdom. It consistently produces higher average yield of not only calories,but also of superior quality minerals (1—5). In Madhya Pradesh there has been a steady and continuous increase in the area and production of potato. The acreage has gone up from 48,572 hectares during 2006-07 to 50,029 hectares during 2007-08. The total production of potato duing 2006-07 was 648,436 tonnes compared to 667,887 tonnes during 2007-08 in the state. Technological changes in potato cultivation in the form of high yielding varieties, more use of fertilizer, plant protection measure, irrigation facilities and mechanical changes for performing improved farm practices and operations may be expected to have an impact on input intensities, grass, production, farm returns and family income through greater employment availabilities. The potato growers of Rewa district in Madhya Pradesh have partially adopted the improved potato production practices as recommended to get economic potential yield. Studies directed at examining the effect of improved potato production practices on income and labor employment generation of potato growers. The specific objectives of the study were to study the quantity of output and various returns obtained from potato cultivation, and to assess the proportion of income generation through potato production in unit area.

Materials and Methods

The present study was carried out in Rewa district of Madhya Pradesh. The multi stage sampling techniques were used for draw a sample. The Rewa block also has highest area and production of potato amongst all other blocks in the district hence chosen as study area. Eight villages were selected randomly based on the area under potato crop. (The names of village are Kothi, Atriya, Sawn, Silpari, Rausor, Khajua, Kariya and Vishar). A list of potato growing cultivators of each village was prepared in ascending order of their size of holding and grouped them into small (up to 2 hectare land), medium (2-5 hectare land) and large (5 and above hectare land) categories. From this list 10 farmers were selected from each village using equal proportional method and finally 80 farmers were selected for the study propose. The primary data were recorded regarding general information of the respondents, cropping pattern, farm resource structure and resource use pattern in potato cultivation. The specific and detail information on cost incurred and returns obtained in the cultivation of potato were also collected from the sample respondent. The data on different aspects were collected through pre-tested interview schedule. Each of the selected sample potato growers was approached personally for recording relevant data.

Analytical tools

Cost concept, A_1 to C_3 and profitability concept i.e. gross return, net return, BC ratio were calculated to find out the profitability from production potato with the use of improved package of practices. For the estimation of profitability from potato, the following efficiency measures were used:

Net farm income=Gross income – Cost C_3
Farm business income=Gross income – Cost A_1
Family labor income=Gross income – Cost B_2

Results and Discussion

Cost of potato cultivation

A study on the economics of potato cultivation, as important cash crop, is pertinent to find out their profitability to choose best alternative resources, cultivation practices and scale of production. Secondly, it gives an estimate of the amount, the farmers require for cultivating as per size of crop area with different level of technological adoption. It is well known fact that profitability of crop production depends upon the cost of production, yield per unit of area and their relative prices.

Table 1. Costs involved in potato cultivation and their break-up.

Cost particulars	Size of holdings Small	Medium	Large	Average
Total cost (C_3) (Rs/ha)	48453.92	46063.39	47775.03	47640.55
Labor cost (Rs)	10441.16	8590.37	8535.32	9189.11
Percentage to total cost	21.55	18.65	17.87	19.29
Material cost (Rs)	29841.28	28879.1	29211.22	29443.86
Percentage to total cost	61.59	62.69	61.14	61.80
Other costs (Rs)	8171.48	8593.92	10028.49	9007.58
Percentage to total cost	16.86	18.66	20.99	18.91

The data show the distribution pattern of total cost of cultivation of potato on per hectare basis in the form of various input factors i.e. labor input cost, material input cost and other overhead and variable cost and their share on total cost C_3 (Table 1). On overall average component wise investment pattern on total cost showed that the investment on other cost was found to minimum (18.91% of total cost) followed by investment on labor and material cost i.e. (19.29% and 61.80%) respectively. The 18.91% involvement of other cost on total cost of cultivation was high and should be minimize to economizing the cost of cultivation because it is not the real cost incurred in the production process. Against this material cost which is the true and a real resource for production was found to highest, it shows the level of technology used in the production process and it is found to quite satisfactory in study area. The investment on labor cost also on an average (19.29) of total cost found very high. This should be minimizing with the increasing of efficiency of labor.

Table 2. Profitability of potato crop in different size of group.

Size of holding	Yield (tonnes/ha)	Cost C_3 (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)
Small	10.86	48453.92	71806.52	23352.6
Medium	11.02	46063.39	71485.51	25422.12
Large	11.46	47775.03	74660.34	26885.31
Average	11.11	47640.55	72650.79	25010.24

The percentage expenditure on labor to total cost found to higher identical on different size of holding and highest was found to small size group (21.55% of total cost) while, it was lowest on large farm size group (17.87% of total cost). This shows the labor cost found to decrease with the increase of size of holding. In same way, the percentage expenditure on material cost was also higher identical on different size of holding and it was lowest on large size of holding (61.14% of total cost) followed by small size group (61.59%) and medium farmers (62.69% of total cost) respectively. Similarly, the percentage expenditure on other cost was found to increases with increase in size of holding. This was due to the higher expenditure on fixed capital with larger size of group.

The average productivity of potato on sample holding was found to 11.11 tonnes per hectare and it was more or less identical in each size of group (Table 2). It can be say that there found no any specific differences in yield as per the different size of holding but it found to higher in case of large farmers. The overall gross income per hectare of this crop was found to Rs 72,650.79. This found to differentiate with size of holding and found Rs 74,660.34 in case of large farmers followed by Rs 71,806.52 for small farmers and Rs 17,485.51 for medium farmer respectively. The data indicated that the total gross income found to higher with large farmers and lowest with medium farmers. The average per hectare net return from potato production found to (Rs 25,010.24). The highest net income from this crop was on large size group (Rs 26,885.31) per hectare followed by Rs 25,422.12 on medium size group and Rs 23,352.60 on small size group respectively. The data show that the net farm return on per hectare basis was found to increase with the increase of size of holding. This shows the efficiency and best management on farm by large farmers and economic of size of holding.

Table 3. Various returns from potato production on different size of holding (Rs/ha).

Size of holding	Farm business income	Farm investment income	Family labor income	BC ratio
Small	37017.72	26138.30	34232.02	1:1.48
Medium	36164.41	28562.34	33024.21	1:1.55
Large	35792.24	30346.37	32331.24	1:1.56
Average	36147.89	28153.03	33005.09	1:1.52

Various return obtained by potato cultivation (income generation of potato cultivation)

Cultivation of potato had a positive impact on the overall economics and income generation from potato production in study area (Table 3). This is evident from higher gross income, net income, family labor income, farm business income, farm investment income and benefit cost return on these farm. An overall evident from the data that the potato growers realized greater farm business income i.e. (Rs 36,147.89), farm investment income (Rs 28,153.03), family labor (Rs 33,005.09) and benefit cost return (1.52 on gross income) per hectare respectively. Farm business income was higher in case of small farmers and decreased with the increase of size of holding. This shows the efficiency of smaller farmers to scale of potato production.

Constraints analysis in potato production

The constraints analysis was reported based on the opinion survey of the sample farmers. Thus, the generalizations of result are the feedback of the farmers engaged in potato growing in the region. It is evident from the table (Input utilization and level of yield according to different size group) that farmers of different size group were using different quantity of inputs in cultivation of unit area. Thus, utilization of different level of inputs might be caused in yield difference in respective size group. Several constraints confronting the sustainable production of the traditional or local practices of potato crop in the area; these are related to resources management faults and stresses of abiotic and biotic nature. The farmers' opinion was obtained regarding the factors affecting the adoption of various improved technology and practices.

Table 4. Production constraints identified by the sample farmers in potato production.

Type of constraints	Number of respondents				Rank obtained
	Small	Medium	Large	Overall	
Seed and seed treatment	17	22	14	52	II
Water management	15	20	13	48	V
Fertilizer and manurial management	16	22	13	50	IV
Weed control	18	22	13	53	I
Disease and pest control	17	22	11	51	III
Earthing and digging	16	18	12	47	VI
Pertaining to institutional infrastructure	15	20	12	47	VI
Marketing constraints	14	18	14	46	VII
Lack of extension	17	21	15	53	I
Total (N)	27	34	19	80	

The highest majority of the farmers reported the weed control (Rank 1st) and lack of extension activities also got (Rank 1st). The second and important constraints found to seed and seed treatment (Rank IInd) followed by Disease and pest control (Rank IIIth), fertilizer and manorial management (Rank IVth). These constraints are manly related to high yielding attributing inputs. The result of the study showed that adoption of new agricultural technology has lagged far behind. The potato productivity could be increased in the area through the increased use of improved inputs and practices for that purpose, required amount should be financed by the financing agencies on lower rate of interest because the cultivation of potato was found to profitable in the study area and their were still chances to increasing profit through adoption of yield increasing inputs like fertilizer and plant protection chemicals. Other important constraints were water management (Rank Vth) followed by earthing and digging (Rank VIth) institutional infrastructure (Rank VIth) and marketing (Rank VIIth) respectively.

References

1. Grewal JS, Sharma RC (1993) Potato based cropping system can be profitable. Ind J Agric Sci 42 : 35.
2. Durgavati W, Rajput AM, Saraf GP (2005) Economic analysis of potato and onion in Malwa region of Madhya Pradesh. Res link-38 3 : 77—79.
3. Kumar S, Kumar Sandeep (2004) Resource use efficiency and returns from selected foodgrain crops of Himachal Pradesh. Agric Situation in India Oct, pp. 475—785.
4. Tiwari ND, Bhagat DV (2002) An economic analysis of the production of vegetable crop in Rewa district of Madhya Pradesh. J Soils and Crops 12 : 157—159.
5. Sharma TR, Goydani BM (1999) Production potential of potato based cropping system and its fertilizer economy. J Ind Potato Assoc 26 : 107—110.