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Economic Management and Analysis of Potato Cultivation: A case study of Agra district (U.P), India

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A B S T R A C T

Economic study of potato production of 44 growers grouped into small (20), medium (14) and large (10) from Agra district showed the overall cost of cultivation to be Rs. 140303.7 per farm and Rs. 78657.98 per hectare. Among all the inputs, per hectare value of potato seed was 25%, the human labour was 14%, the total variable cost was 78%, the total fixed cost was 22% per ha and the overall total cost C_3 of potato was Rs. 154334.07 per farm and Rs. 86523.78 per hectare. The gross income received by farms with the overall average of Rs. 188370. The analysis of efficiency of potato production under different categories of farms showed the overall cost of production of potato was Rs. 292.3 per quintal. The overall output/input ratio was 1:2.39, being 1:3.42, 1:2.61 and 1:2.21 on the small, medium and large farms, respectively. Thus, it could be concluded that with an investment of one rupee in potato cultivation the small, medium and large farmers earned Rs. 3.42, Rs. 2.61 and Rs. 2.21, *respectively*.

Introduction

India is the 2nd largest Potato producer of the world, production 45.95 mt during 2014-15 (Directorate of Economics and Statistics, 2016) and productivity 16-19 t/ha. In Uttar Pradesh, Agra as the major Potato market offers excellent opportunity for producing quality Potato of 58103 hectares from area of 15 development blocks with production of 1310700 tonnes (Dept. of Agriculture and Cooperation, Agra). The high value cash crops in the state is gaining momentum as it provides higher returns and promote value added agribusiness enterprises.

Materials and Methods

The present study is based on primary and secondary data information collected by the survey method of 44 Potato growers (20 small, 14 medium and 10 large farmers) of the Sonari village from the Bichpuri block. The final data was examined for resource endorsement and relationship between cost and returns of the Potato cultivation based on

farm size groups, standard cost and income measurements to work out profitability of potato cultivation. The concepts used in costs and returns of potato cultivation were as follows.

Cost concepts

Cost A_1: Material cost + bullock/ tractor charges + interest over working capital. Cost A_2: Cost A_1+ rent paid for leased land.

Cost B: Cost A_2 + interest on the fixed capital + rental value of owned land.

Cost C: Cost B + imputed value of family Labour.

The interest on working capital at 12 per cent rate for half of the crop period and on fixed capital was computed as per prevailing lending rates.

Farm efficiency measures

Gross farm income (GFI): The gross value of output including by-product priced at farm harvest rates.

GFI= value of the main product + value of by product.

Net farm income (NFI): remuneration for the farmer's management

NFI = GFI – Cost C_2 (farm expenses)

Farm family labour income (FLI): Returns to family labour

FLI = GFI – Cost B.

Farm business income (FBI): return to labour, owned land, owned fixed capital and management.

FBI = GFI – Cost A

Farm investment income: The sum total of net farm income, interest on owned fixed capital and rental value of land.

Results and Discussion

Cost of cultivation

The computation of the cost of cultivation is necessary to determine the relative profitability of various crops over different crops. The detailed cost structure of the Potato cultivation (Table 1) shows overall per farm total cost of potato cultivation (Rs.140303.7) varies directly with the farm size. The percent share of seed cost to the total cost was as high as 30.2% on medium farms and as low as 27.54% on small farm size group. The total variable cost also varies with the farm size. The proportionate share of variable cost to the total cost was found lowest on the large farm size group and highest in the small farm size group.

Table 2 reveals that the per hectare items wise total cost of cultivation (Rs.78657.98) of potato. Among all the inputs, per hectare value of seeds of potato alone occupied about 25% to the total cost. Potato being labour intensive crop, human labour occupies 14% to the total cost that varies directly with farm size because of more hired labour employed on larger farms. The total variable cost accounted for 78% on overall farms, showing decreasing trends (80, 80 and 83% to the total cost on the small, medium and large farm, respectively) with the farm size. The per hectare total fixed cost increases as the farm size increases and was found 22% to the total cost on overall farms. Expenditure on plant protection was about 2% of total cost clearly indicating the least risk taken for crop damage by insects.

In nutshell, it can be concluded from the table that the potato growing farmers invest as much as they can depending upon the resources available to them.

Costs and returns

Table 3 indicates that per farm overall total cost C_3 of potato was Rs.154334.07 and Rs.101846.22 per hectare. Per hectare gross income received by small, medium and large farms was Rs.174461.00, Rs.188209.00 and Rs.192395.00, *respectively* with an overall average of Rs.188370. Overall cost of production of potato was estimated Rs.292.30 per quintal being Rs.204.14, Rs.267.30 and Rs.316.44 on small, medium and large farms, respectively. Gross income, farm business income and family labour income and net income over cost C_1, C_2 and C_3 vary directly with the farm size. The cost C_3 includes cost C_2 and marginal cost, which is given to the farmer for managing the entire production process. All the costs in cost concept vary directly with the farm size. In all the cases cost A_1 and A_2 were the same because no case of lease-in land was found in the sample. The overall per hectare total cost C_3 of potato came to the gross income received by Rs.174461 (small), Rs.188209 (medium) and Rs.192395 (large) farms with the overall average of Rs.188370.

Table.1 Per farm item-wise cost of cultivation (in Rs.)

Item	Small		Medium		Large		Overall	
	Value	%	Value	%	Value	%	Value	%
Family Labour	1521.34	2.79	2086.27	1.6	3134.07	1.04	1878.57	1.33
Casual	5952.42	11.58	12465.11	9.56	31864.74	10.62	11424.9	8.14
Machine Labour	9766.53	19	22014.24	16.89	33037.1	11	19851.7	14.14
Seed	14157.14	27.54	39363.64	30.2	99680	33.21	42162.12	30.05
Fertilizer & Manure	8532.64	16.6	21831.82	16.75	38225.1	12.73	23921.42	17.04
Plant Protection	716.63	1.39	1698.64	1.3	3575.25	1.19	2065.6	1.47
Operational Cost	40646.09	79.08	99459.12	76.32	218547.2	72.81	101304.7	72.2
Interest on Working Capital	1219.38	2.37	2983.78	2.28	6556.41	2.18	3039.14	2.16
Variable Cost	41865.37	81.45	102442.9	78.61	225103.6	75	104343.8	74.33
Depreciation on Fixed Capital	410.5	0.07	4132.4	3.17	12993.5	4.32	4635.54	3.3
Interest on Fixed Capital	953.83	1.85	5270.1	4.04	14545.81	4.84	5628.55	4.01
Land Revenue	45.42	0.08	150	0.11	350	0.11	275.72	0.19
Rental Value	8120	15.79	18312	14.05	47140.5	1570	25420.1	18.11
Fixed Cost	9529.75	18.54	27864.5	21.38	75029.81	24.99	35959.91	25.63
Total cost	51395.12	100	130307.4	100	300133.4	100	140303.7	100

Table.2 Per hectare item wise cost of cultivation (Rs.)

Item	Small		Medium		Large		Overall	
	Value	%	Value	%	Value	%	Value	%
Family Labour	1673.65	3.28	2198.38	3.05	2459	2.82	1991.76	2.53
Casual	5462.8	10.73	8656.22	12.04	11331.65	13.02	9507.99	12.08
Machine Labour	8961.21	17.6	10971	15.26	13471.14	15.48	11430.61	14.53
Seed	14877.6	29.23	18962.12	23.6	22000	25.3	19000	24.15
Fertilizer & Manure	8000	15.71	14000.12	19.48	17936	20.62	16000	20.34
Plant Protection	550.8	1.08	1180.2	1.61	1560.12	1.79	1301.42	1.65
Operational Cost	39526.26	77.66	55967.78	77.87	70068.13	80.56	59581.9	75.75
Interest on Working Capital	1185.78	2.32	1679.03	2.75	2102.04	2.41	1787.45	2.27
Variable cost	40711.84	79.99	57646.81	80.21	72170.17	82.97	61369.36	78.02
Depreciation on Fixed Capital	390.18	0.76	2402.2	3.34	2752.1	3.16	2210.8	2.81
Interest on Fixed Capital	880.12	1.72	2787.12	3.87	2987.1	3.43	2773.71	3.53
Land Revenue	40	0.07	42.4	0.05	66.77	0.07	304.11	0.39
Rental Value	8870	17.42	8990	12.5	9000	10.34	12000	15.25
Fixed Cost	10180.3	20	14221.72	19.78	14805.97	17.02	17288.62	21.98
Total Cost	50892.14	100	71868.53	100	86976.14	100	78657.98	100

Table.3 Cost of cultivation (in Rs.)

	Per Farm Cost Concept				Per Hectare Cost Concept			
Cost Concept	**Small**	**Medium**	**Large**	**Overall**	**Small**	**Medium**	**Large**	**Overall**
Cost A_1	40800	104639	235313	107376	39468.4	57893	72530	61892.5
Cost A_2	40800	104639	235313	107376	39468.4	57863	72530	61892.5
Cost B_1	41753.8	109909	249859	113005	40348.5	60680.2	75517.1	64666.2
Cost B_2	49873.8	128221	296999	138425	49218.5	69670.2	84517.1	76666.2
Cost d	43275.1	111995	252993	114884	42022.1	62878.5	77976.1	66658
Cost C_2	51395.1	130307	300133	140304	50892.1	71868.5	86976.1	78658
Cost C_3	56534.6	143338	330147	154334	55981.4	79055.4	95673.8	86523.8

Table.4 Farm business analysis (in Rs.)

Income concept	Per Farm				Per Hectare			
Gross Income	**Small**	**Medium**	**Large**	**Overall**	**Small**	**Medium**	**Large**	**Overall**
Farm Business Income	178003	487452	1285704	550032	174461.00	188209	192395	188370
Family Labour Income	137203.05	383812.97	1050390.98	395697.93	134992.63	130316	119875	126477
Net Income Over C_1	128129.22	359230.87	988704.67	411606.87	125242.51	118539	107878	111704
Net Income Over C_2	137727.88	375456.6	1032711.1	435148.4	132438.86	125330	844419	121712
Net Income Over C_3	126607.88	344114.15	985570.6	409728.3	123568.86	116340	105419	109712
Farm investment Income	121468.37	380726.70	95557.26	395697.93	118479.65	109154	96721.3	101846
Cost of Production	135681.71	187.12	1047256.91	393819.36	133318.98	128118	117415	124486
Output-input Ratio	202.11	169.09	163.4	178.55	204.14	267.3	316..44	292.3
Gross Income	3.46	3.74	4.28	3.89	3.42	2.61.	2.21	2.39

Analysis of costs and returns is of vital importance both the point of view of evolving sound production plans and for the formulation of price policy. The costs and returns study of a particular crop enterprise also provides very useful information for improving the farm efficiency.

Farm efficiency

Table 4 reveals that the overall cost of production of potato was Rs.292.3 per quintal being Rs.204.14, Rs.267.3 and Rs.316.44 on small, medium and large farms, respectively. Net income over cost C_2 and C_3 was less than net income over cost C_1 in case of all the sample farmers, which indicates that the farm family members were not getting their dues share as laborers and manage Rs. So far as family labour income and farm business income are concerned potato provides positive returns to the farmers of all farm size groups. The output/input ratio was 1:2.39, being 1:3.42, 1:2.61 and 1:2.21 on small, medium and large farms, *respectively*.

Based on the above study it can be concluded that with the investment of one rupee in potato cultivation small, medium and large farmers earned Rs.3.42, Rs.2.61 and Rs.2.21, *respectively*.

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References

Sharma, B., and Tripathi, B.N., 2005. Economics of potato cultivation in Allahabad district of Uttar Pradesh. New Agriculturist 16: 75-79

Sinha, R.P., Singh, U.K. 1996. Economic analysis of potato cultivation: a case study of Nalanda district (Bihar). Journal of Applied Biology 6(1/2): 121-123

Tripathi, R.S., 1991. Economics of potato cultivation in the high hills of Uttar Pradesh. Journal of the Indian Potato Association 18: 142-146.

Vikalp Sharma, Harbans Lal, Utpalendu Debnath and Vinay Hatte. 2017. Economics of Potato Production in Kangra District of Himachal Pradesh, India. Int.J.Curr.Microbiol.App.Sci. 6(10): 123-129.

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