

Economic Analysis of Vegetable Production in Meerut District of Uttar Pradesh

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Abstract: Vegetable production plays a pivotal role in agriculture by providing food, nutritional and economic security to the people of with higher returns per unit area to the producers. India holds the second position by contributing 15.70 and 14.50 per cent to global vegetable area and production. The present study was attempt on "Economic Analysis of Major Rabi Vegetable Crops in Meerut District of Uttar Pradesh" the specific objective of the study was to know the socio economic profile of the vegetable growers, to estimate the costs and returns and constraints related to production and marketing. The socio economic condition of medium farmers was better than to other category farmers because of resource rich condition on family structure, monthly expenditure, size of land holding and education level. The overall average per hectare cost of Brinjal crop was Rs. 119686.64 and among different categories it was Rs. 117125.98, 120640.73 and 121109.07 on marginal, small and medium size of farms respectively, indicating there by its direct relationship with the size of farms, The net returns per hectare amounted to be Rs. 147517.93, Rs. 150197.52 and Rs. 164000.02 per hectare respectively. In case of cabbage production overall average per hectare cost was Rs.80762.04 and Rs. 79904.51, 81850.14 and 80067.26 on marginal, small, and medium size of farms respectively. The net returns estimated to Rs. 126932.74, Rs.129349.86, and 134895.49, and average per hectare. Overall cost of tomato cultivation was find to be Rs.85453.36 and Rs. 79759.80, 88391.89 and 87482.38 on the respective size of holding and net returns per hectare amounted to be Rs. 246018, 252008 and 266390 rupees on marginal, small, and medium farms, respectively. Most of the vegetable growers were faced problems of Lack of storage facility, high price of plant protection chemical and high incidence of diseases/insect in HYVs with 90.00, 88.00 and 79.00 percent respectively.

INTRODUCTION

Vegetables play a pivotal role in Indian agriculture by providing food, nutritional and economic security to the people with higher returns per unit area to the producers. Besides that, vegetables have higher productivity and shorter maturity cycle, which leads to higher returns per unit area and time. Worldwide, India holds the second position by contributing 15.70 and 14.50 per cent global vegetable area and production . In the era of diversification, farmers are now shifting from traditional agriculture to commercial agriculture. Vegetable produces more biomass per unit area and fetch more prices per unit production. Significant

achievements have been obtained in terms of production, which has increased to 162.89 million tons during 2013-14 from 146.55 million tons during 2012-13 . Uttar Pradesh is the leading vegetable growing state in the country. Leading in potato production and second in tomato amongst the vegetable crops in terms of production. The other important vegetable crops grown in the state are brinjal, cabbage, onion, chilies, peas, beans, okra, cabbage, cauliflower, pumpkin, bottle gourd, cucumber, watermelon, palak, methi, carrot and radish. Vegetables are important for wellbeing of the vegetarian masses because of rich sources of vitamins and other essential nutrients and minerals

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for balanced diet and maintenance of good health. ICMR recommended 300 grams of vegetable / day / persons but the availability is only 109 grams / day / capita, therefore requires more attention towards its increasing production and productivity through the optimum resource use and minimization of risk.

Vegetable production is labour and capital intensive and cultivated under different agro climatic situations across the country. Even though the vegetable production is threatened by fragmentation of land, temperature, uneven rainfall, decreasing natural resources, highly perishability in nature, lack of Post-harvest management infrastructure, unorganized marketing system, improper techniques of packaging in vegetable and uneven growth across the country, costly and unavailability of HYV Seeds and Lack of knowledge among farmers regarding scientific cultivation practices of vegetables affect the expenditure and return of vegetable production. In a case of acceptable knowledge and farming experience the profitability is a result of the interactions among production, marketing and economic factors. Keeping in view the present study is an attempt on "Economic analysis of vegetables production in Meerut district of Uttar Pradesh".

METHODOLOGY

Present study is confined to Meerut district of Uttar Pradesh, from the purposively selected district two blocks and than four villages were selected randomly. From the selected village, list of the farmers was prepared and than 100 respondents were finally selected on the basis of probability proportion to their population for the collection of primary data on various aspects of cost and returns. Finally suitable statistical tools were employed to analysis the data.

C.A.C.P Cost Concepts

COST A₁ = ALL The variable costs excluding family labour cost and including depreciation. The items covered in cost A1 was

1. Cost of hired human labour. 2. Cost of hired bullock labour. 3. Cost of owned bullock labour. 4. Cost of owned machinery. 5. Cost of hired

machinery. 6. Cost of fertilizer. 7. Cost of manure. 8. Cost of seed (owned / purchased) 9. Cost of plant protection chemicals. 10. Irrigation charges (both owned and hired tube well, pumping sets etc.) 11. Canal water charges. 12. Land revenue, ceases and other taxes. 13. Depreciation of farm machinery, equipments and farm buildings. 14. Interest on owned working capital. 15. Interest payment on crop loan. 16. Miscellaneous expenses.

Cost A₂ = Cost A₁ + Rent paid for Leased in land

Cost B₁ = Cost A₁ + Interest on owned fixed capital assets excluding land

Cost B₂ = Cost B₁ + Rental value of own land (net of land revenue) + Rent paid for leased in land

Cost C₁ = Cost B₁ + Imputed value of family labour

Cost C₂ = Cost B₂ + Imputed value of family labour

Cost C₂* = Cost C₂ was estimated by taking into account statutory minimum or actual wage rate, whichever is higher.

Cost C₃ = Cost C₂* +10 percent of cost C₂* on account of managerial function performed by the farmer.

RESULT AND DISCUSSION

Component wise cost of cultivation of tomato crop

The component wise costs incurred in the cultivation of tomato crop is given in the table 1 indicated that the overall cost of production of tomato was estimated to be Rs. 85453.36 which consists of 34.79 percent of the operational cost and 21.41 percent of the material cost. In the operational cost, more than 24 percent expenses incurred on human labour alone and on machinery and transportation it was about 12 percent to the total cost. Within the material cost expenditure Plant protection chemical, manure and fertilizer, and irrigation was 8.74, 7.79 and 4.02 percent respectively. 29.96 percent (Rs.25000.00/ha) was the rental value of land of total cost of cultivation and the remaining was accounted by land revenue, depreciation on implements, interest on working capital and interest on fixed capital. Within the categories highest cost of cultivation was found in small category followed by medium and marginal.

Table 1
Component wise cost of cultivation of tomato crop (Rs/ha)

Variable cost (A)-Operational cost	Category of farm size			
	Marginal	Small	Medium	Over all
Family labour	14557(18.25)	18140(20.52)	17335(19.82)	16677.33(19.52)
Hired labour	1650(2.07)	4880(5.52)	7050(8.06)	4526.66(5.30)
Machinery labour	3058(3.83)	2990(3.38)	3072.8(3.51)	3040.26(3.56)
Transportation cost	5850(7.33)	5400(6.11)	5200(5.94)	5483.33(6.42)
Sub total (A)	25115(31.49)	31410(35.53)	32657.8(37.33)	29727.6(34.79)
(B)- Material cost				
Seed	736(0.92)	744(0.84)	742(0.85)	740(0.87)
Manure & fertilizer	7257(9.10)	6060(6.86)	6197(7.08)	6657(7.79)
Irrigation	3430(4.30)	3437(3.89)	3425(3.92)	3431(4.02)
Plant protection	6798(8.52)	9307(10.53)	6682(7.64)	7470(8.74)
Sub total (B)	18221(22.84)	19548(22.12)	17046(19.49)	18298(21.41)
Total variable cost (A+B)	43336(54.33)	50958(57.65)	49703.8(56.82)	48025.6(56.20)
(C) Other cost				
Interest on working capital @7%	633.75(0.79)	649.75(0.74)	615.5(0.70)	631(0.74)
Depreciation	1256.38(1.58)	1456.63(1.65)	1903.3(2.18)	1732.43(2.03)
Land revenue	11.78(0.01)	18.88(0.02)	35.84(0.04)	23.84(0.03)
Interest on fixed capital	2271(2.85)	2273(2.57)	2271(2.60)	2272(2.66)
Rental value of own land	25000.00(31.34)	25000.00(28.28)	25000.00(28.58)	25000.00(29.26)
Sub total (C)	29172.91(36.58)	29398.26(33.26)	29825.64(34.09)	29659.27(34.71)
Cost c_2^* total (A+B+C)	72508.91(90.91)	80356.26(90.91)	79529.44(90.91)	77684.87(90.91)
10% of c_2^* for managerial work	7250.89(9.09)	8035.63(9.09)	7952.94(9.09)	7768.49(9.09)
Cost $C_3=(C_2^*+C_2^*10\%)$	79759.80(100.00)	88391.89(100.00)	87482.38(100.00)	85453.36(100.00)

Figures in the parentheses indicates the percentage to the total cost.

Cost concept wise cost of tomato crop

The results related to various categories of cost as per CACP cost concepts for the tomato production on different farm sizes is presented in table 2, indicated that per hectare overall cost A_1 was Rs. 33735.53 and on marginal, small, and medium farm size groups it was Rs.30680.91, 34943.3, and 34923.4 respectively, which was 38.47, 39.53 and 39.92 per cent of "Cost C_3 " in the respective category. Cost A_1 was positively related with the size of farm. The other costs like cost A_2 , cost B_1 , cost B_2 , Cost C_1 and Cost C_2 and cost C_2^* on per hectare basis also showed the same trends with the Per hectare cost C_3 is the total cost of cultivation of tomato crop which includes the managerial cost of farmers also small farmers were found to spend more amount on

tomato cultivation i.e. Rs.88391.89 /ha, which is the average cost of cultivation on per hectare of tomato was Rs. 85453.36/ha for all the farms in the study area.

Cost of production and returns from tomato cultivation

Table3 shows the yield of tomato per hectare on marginal, small and Medium farms were found to be 301.00, 296.00, and 290.00 quintals. The prices of tomato Rs/qtl received by the farmers of the respective size groups was Rs. 1150.00. The gross return per hectare was Rs. 346150, 340400, and Rs. 333500 in the respective categories of farms and net return was found to be Rs. 276290, 261908, and 255918 .

Table 2
Cost concept wise cost of tomato crop

(Rs/ha)

Particulars	Farm size groups			
	Marginal	Small	Medium	Over all
Cost of cultivation				
Cost A ₁	30680.91 (38.47)	34943.3 (39.53)	34923.4 (39.92)	33735.53 (39.48)
Cost A ₂	30680.91 (38.47)	34943.3 (39.53)	34923.4 (39.92)	33735.53 (39.48)
Cost B ₁	32951.91 (41.31)	37216.3 (42.10)	37194.4 (42.52)	36007.53 (42.14)
Cost B ₂	57951.91 (72.66)	62216.26 (70.39)	62194.44 (71.09)	61007.54 (71.39)
Cost C ₁	47508.91 (59.56)	55356.26 (62.63)	54529.44 (62.33)	52684.87 (61.65)
Cost C ₂	72508.91 (90.91)	80356.26 (90.91)	79529.44 (90.91)	77684.87 (90.91)
Cost C ₂ *	72508.91 (90.91)	80356.26 (90.91)	79529.44 (90.91)	77684.87 (90.91)
Cost C ₃	79759.80 (100.00)	88391.89 (100.00)	87482.38 (100.00)	85453.36 (100.00)

Figures in the parentheses indicates the percentage to the total cost (Cost C₃)

Table 3
Returns from tomato crop on various farm size group

(Rs/ha.)

Particulars	Farm size groups			
	Marginal	Small	Medium	Over all
Cost of cultivation				
Yield of main product(qtl/ha)	301	296	290	295
Price of main product (Rs/qtl.)	1150	1150	1150	1150
Return of main product (Rs/ha.)	346150	340400	333500	339250
Gross return(Rs/ha.)	346150	340400	333500	339250
Return over various cost concepts				
Cost A ₁	315469.09	305457	298577	305514.46
Cost A ₂	315469.09	305457	298577	305514.46
Cost B ₁	313198.09	303184	296306	303242.46
Cost B ₂	288198.09	278184	271306	278242.46
Cost C ₁	298641.09	285044	278971	286565.13
Cost C ₂	273641.09	260044	253971	261565.13
Cost C ₂ *	273641.09	260044	253971	261565.13
Cost C ₃	266390.2	252008	246018	253796.64
Cost of production (Rs/qtl.)	264.98	298.62	301.66	289.67
Profit margin (Rs/qtl.)	885.01	851.37	848.33	860.32

The profit margin per hectare obtained by the marginal farmers was more than the other categories of farmers. The cost of production per quintal on marginal, small, and medium sized farmers were Rs. 264.98, 298.62 and 301.66 and profit margins Rs.885.00, 851.37, and 848.33 per quintal respectively.

Similar to tomato, cost of cultivation cost concept wise, returns and benefit cost ratio for brinjal and cabbage was also worked out separately category wise and in overall. The result obtained from all the crops indicated in table 4, on the basis of profit margin and benefit cost ratio tomato production was found more profitable than brinjal and cabbage.

Table 4
Economic analysis of tomato, brinjal and cabbage crop
 (Rs./ha.)

Particulars	Farm size groups		
	Tomato	Brinjal	Cabbage
Cost of cultivation			
Yield of main product (qtl/ha)	295.00	379.00	351.67
Price of main product (Rs/qtl.)	1150.00	725.00	600.00
Return of main product (Rs/ha.)	339250	274775	211000
Gross return (Rs/ha.)	339250	274775	211000
Cost of cultivation (Cost C ₃)	85453	119687	80762
Cost of production (Rs/qtl.)	289.67	315.80	229.66
Profit margin (Rs/qtl.)	860.32	409.20	370.34
Benefit cost ratio	1:3.97	1:2.30	1:2.61

References

Akter, S. Islam, M. S. and Rahman, M. S. (2011), "An economic analysis of winter vegetables production in some selected areas of Narsingdi district". Department of Agricultural Economics, Bangladesh Agricultural University, 9(2): 241-246.

Nath, D. and Biswas, P. K. (2011), Production Constraints of Vegetable Cultivation in West Tripura. *Journal of Community Mobilization and Sustainable Development* Vol. 6(2), 177-179.

Peterson, A. R. Sharma, K. R. Nakamot S. T. and Leung, P. S. (1999), Production Costs of Selected Vegetable Crops in Hawaii (Cabbage, Cucumber, Green Onion, and Lettuce). *Department of Biosystems Engineering, Department of Food Science and Human Nutrition* Ab-13

Samra, N. S. and Kataria, P. (2014), Profitability Analysis of Vegetable Growers vis-à-vis Farm Size in Punjab 38-C. *Udam Singh Nagar, Ludhiana, Punjab, India. Department of Economics and Sociology, PAU, Ludhiana 141004, India* J Agri Sci, 5(1-2): 11-17.

Sonar, K. T. R. B. Changule, B. B. M. and G.P. G. (2012), "Economics of Rabi tomato production in Latur district of Maharashtra" Department of Agricultural Economics Latur (M.S.) India.

Tsoho, B. A. and Salau. S. A. (2012), "Profitability and constraints to dry season vegetable production under fadama in Sudan savannah ecological zone of Sokoto State, Nigeria". *Journal of Development and Agricultural Economics* Vol. 4(7), pp. 214-222.