

Original Research Article

<https://doi.org/10.20546/ijcmas.2020.903.044>

Economic Analysis of Vegetable Production in Nagrota Bagwan Block of Kangra District of Himachal Pradesh, India

Rashmi^{1*}, M. S. Pathania², Anwasha Deo¹ and H. P. Singh¹

¹Department of Agricultural Economics, Institute of Agricultural Sciences
BHU, Varanasi-221005, India

²Department of Agricultural Economics, Extension Education and Rural Sociology
CSKHPKV, Palampur, Himachal Pradesh-176062, India

*Corresponding author

ABSTRACT

Vegetables occupy an important place in the food basket of the people of Himachal Pradesh. There exist a high demand for these crops in the market. The present study was carried to study the cost and returns of 10 major vegetables grown in Nagrota Bagwan block of Kangra district of Himachal Pradesh. The farmers of this block grow vegetable crops on commercial scale so it was purposively selected. Three stage random sampling technique was employed for selection of panchayats, villages and ultimate respondents. Altogether, 60 vegetable cultivating farmers were selected for the study. Labour accounted for more than 50 per cent of the total cost in different vegetables. The net returns were found to be positive and varied from Rs 21027 to Rs 125992 per hectare for different vegetables. The Benefit-Cost ratio was also estimated for different vegetable crops. The ratio varied from 1.33 to 1.60 in kharif to 1.11 to 1.78 in rabi for different vegetables. B-C ratio was greater than one for all the major vegetable crops in the study area indicating that growing of vegetables is a profitable business. The findings of the study revealed that overall farmers of the study area are getting good profits from vegetable production.

Keywords

Economic analysis,
Vegetable
production,
B-C ratio

Article Info

Accepted:
05 February 2020
Available Online:
10 March 2020

Introduction

The vegetables are an important article of daily human diet and are recognized all over the world. Vegetables are the important sources of food and nutritional security. Significant achievements have been

obtained in terms of production, which has increased to 184 million tons during 2017-18 from 169 million tons during 2015-16. Agriculture occupies an important position in Himachal Pradesh. It provides direct employment to 62 per cent of the working population and contributes about 22 per cent

to gross state domestic product. The land holding size has decreased overtime due to division of family. About 88 per cent land holding are marginal and small and growing of food grain crops is not profitable. Vegetable production is labour intensive, short duration and more profitable which fits well in the marginal and small farm production systems. It provides regular work throughout the year to the vegetable growers and his family labours. It is therefore, expected that vegetable production would augment income and employment opportunities for small and marginal farmers of the state and also accelerating the growth of state domestic product. The profitability of vegetable production is dependent on the optimum use of inputs like seeds, fertilizers, plant protection chemicals, machines and labour. The cost of different input use in production and sale prices of vegetables play an important role in the profit earned from vegetables cultivation. Therefore, it is necessary to study the different economic aspects of vegetables farming. Keeping in view the present study was carried to study the economics of major vegetables grown in Nagrota Bagwan block of Kangra district of Himachal Pradesh.

Materials and Methods

The present study was conducted in Nagrota Bagwan block of Kangra district. The farmers of this block grow vegetable crops on commercial scale so it was purposively selected. Three stage random sampling technique was used for the present study. At the first stage, 3 gram panchayats growing vegetables were selected randomly from the selected block growing vegetable crops. At the second stage, 2 villages were selected at random from each gram panchayat. Ten household were selected randomly from each village. The final sample consisted of 60 households.

Cost concepts

Cost concepts defined by Commission for Agricultural Costs and Prices (CACP) in India, were used to calculate cost of vegetable cultivation.

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 11. Land revenue and other taxes. 12. Depreciation of farm machinery, equipments and farm buildings. 13. Interest on owned working capital. 14. Interest payment on crop loan. 15. Miscellaneous expenses.

Cost A₂: Cost A₁+ rent paid for leased in land.

Cost B₁: Cost A₁+ interest on value of owned capital assets (excluding land).

Cost B₂: Cost B₁+ rental value of owned land + 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 C₃: Cost C₂ + 10% of Cost C₂ on account of managerial functions performed by the farmer.

Results and Discussion

Component wise cost of cultivation of vegetable crops

The component wise costs incurred in the cultivation of kharif and rabi vegetable crops is given in the table 1 table 2 respectively.

Table.1 Component wise cost of cultivation of *kharif* vegetable crops on sample farms (Rs/ha)

| Particulars | Okra | Brinjal | Cucumber | Bottle gourd | Bitter Gourd |
|----------------------------------|----------------|----------------|----------------|---------------|----------------|
| Variable costs | | | | | |
| Seed | 19491 (13.50) | 1880(1.69) | 19613(14.59) | 9690(10.04) | 12533(11.80) |
| FYM | 5000(3.46) | 4000(3.60) | 10000(7.44) | 3636(3.77) | 4000(3.77) |
| Fertilizers | 2185(1.51) | 1713(1.54) | 1440(1.07) | 1204(1.25) | 1204(1.13) |
| Plant protection | 3818(2.65) | 3091(2.78) | 3245(2.41) | 2182(2.26) | 1909(1.80) |
| Human labour | 81,000(56.12) | 72,000(64.80) | 78,000(58.02) | 60,000(62.22) | 66,000(62.16) |
| Hired labour | 33000(22.86) | 33000(29.70) | 36000(26.78) | 21000(21.77) | 33000(31.08) |
| Family labour | 48000(33.26) | 39000(35.10) | 42000(31.24) | 39000(40.43) | 33000(31.08) |
| Tractor / power tiller | 11086(7.68) | 10500(9.45) | 2727(2.03) | 2727(2.83) | 2727(2.57) |
| Irrigation | 2182(1.51) | 2182(1.96) | 2727(2.03) | 3273(3.39) | 1909(1.80) |
| Interest on working | 3069(2.13) | 2255(2.03) | 3030(2.25) | 1748(1.81) | 2291(2.16) |
| Sub-Total | 127832(88.57) | 97620(87.87) | 120783(89.85) | 84460(87.55) | 92573(87.17) |
| Fixed costs | | | | | |
| Rental value of land | 2300(1.59) | 1955(1.76) | 2864(2.13) | 1391(1.44) | 2100(1.98) |
| Land revenue | 47(0.03) | 36(0.03) | 26(0.02) | 11(0.01) | 14(0.01) |
| Depreciation | 10764(7.46) | 8678(7.81) | 7920(5.89) | 8291(8.59) | 8460(7.97) |
| Interest on fixed capital | 3391(2.35) | 2809(2.53) | 2829(2.10) | 2315(2.40) | 3047(2.87) |
| Sub-Total | 16502(11.43) | 13478(12.13) | 13639(10.15) | 12007(12.45) | 13621(12.83) |
| Total Cost | 144334(100.00) | 111098(100.00) | 134422(100.00) | 96467(100.00) | 106194(100.00) |
| Cost of production/kg | 12.00 | 5.34 | 7.86 | 4.57 | 5.96 |

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

Table.2 Component wise cost of cultivation of *rabi* vegetable crops on sample farms (Rs/ha)

| Particulars | Cauliflower | Cabbage | Potato | Radish | Onion |
|----------------------------------|-----------------|----------------|-----------------|----------------|----------------|
| Variable costs | | | | | |
| Seed | 17746 (11.99) | 10025 (7.85) | 61028 (30.85) | 3260 (3.25) | 7481 (5.99) |
| FYM | 7500 (5.07) | 7500 (5.87) | 3918 (1.98) | 4000 (3.99) | 4000 (3.20) |
| Fertilizers | 2836 (1.92) | 2127 (1.67) | 1829 (0.92) | 1512 (1.51) | 1527 (1.22) |
| Plant protection | 2182 (1.47) | 1364 (1.07) | 2882 (1.45) | 2182 (2.18) | 2182 (1.75) |
| Human labour | 87,000 (58.78) | 81,000 (63.43) | 1,01,000 | 66,000 (65.86) | 84,000 (67.22) |
| Hired labour | 39000 (26.35) | 36000 (28.19) | (48.53) | 24000 (23.95) | 36000 (28.81) |
| Family labour | 48000 (32.43) | 45000 (35.24) | 45000 (22.75) | 42000 (41.91) | 48000 (38.41) |
| | | | 56000 (25.78) | | |
| Tractor / power tiller | 11086 (7.49) | 7500 (5.87) | 11250 (5.69) | 7500 (7.48) | 11250 (9.00) |
| Irrigation | 3273 (2.21) | 2727 (2.14) | 1400(0.70) | 2727(2.72) | 1091(0.87) |
| Interest on working | 3345(2.26) | 2690(2.11) | 5092(2.57) | 1807(1.80) | 2541(2.03) |
| Sub-Total | 134968(91.19) | 114933(90.00) | 183399(92.71) | 88988(88.81) | 114072(91.28) |
| Fixed costs | | | | | |
| Rental value of land | 2445(1.65) | 2369(1.86) | 3242(1.64) | 2240(2.24) | 2058(1.65) |
| Land revenue | 47(0.03) | 47(0.04) | 21(0.01) | 15(0.01) | 13(0.01) |
| Depreciation | 7704(5.20) | 7685(6.02) | 7040(3.56) | 6458(6.45) | 6124(4.90) |
| Interest on fixed capital | 2844(1.92) | 2664(2.09) | 4122(2.08) | 2502(2.50) | 2704(2.16) |
| Sub-Total | 13039(8.81) | 12765(10.00) | 14424(7.29) | 11215(11.19) | 10898(8.72) |
| Total Cost | 148008 (100.00) | 127698(100.00) | 197824 (100.00) | 100203(100.00) | 124970(100.00) |
| Cost of production/kg | 8.18 | 7.98 | 6.63 | 6.34 | 7.31 |

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

Table.3 Costs and returns of *kharif* vegetables (Rs/ha)

| Particulars | Okra | Brinjal | Cucumber | Bottle gourd | Bitter gourd |
|-------------------------|--------|---------|----------|--------------|--------------|
| Cost A ₁ | 90643 | 67334 | 86729 | 53762 | 68047 |
| Cost A ₂ | 90634 | 67334 | 86729 | 53762 | 68047 |
| Cost B ₁ | 94034 | 70143 | 89558 | 56076 | 71094 |
| Cost B ₂ | 96334 | 72098 | 92422 | 57467 | 73194 |
| Cost C ₁ | 142034 | 109143 | 131558 | 95076 | 104094 |
| Cost C ₂ | 144334 | 111098 | 134422 | 96467 | 106194 |
| Cost C ₃ | 158976 | 122456 | 147864 | 106114 | 116813 |
| Gross returns | 215280 | 177370 | 217500 | 168800 | 155750 |
| Net returns over | | | | | |
| Cost A ₁ | 124637 | 110035 | 130771 | 115038 | 87703 |
| Cost A ₂ | 124637 | 110035 | 130771 | 115038 | 87703 |
| Cost B ₁ | 121246 | 107226 | 127942 | 112724 | 84656 |
| Cost B ₂ | 118946 | 105272 | 125078 | 111333 | 82556 |
| Cost C ₁ | 73246 | 68226 | 85942 | 73724 | 51656 |
| Cost C ₂ | 70946 | 66272 | 83078 | 72333 | 49556 |
| Cost C ₃ | 56304 | 54913 | 69636 | 62686 | 38937 |
| B-C ratio | 1.35 | 1.45 | 1.50 | 1.60 | 1.33 |

Table.4 Costs and returns of *rabi* vegetables (Rs/ha)

| Particulars | Cauliflower | Cabbage | Potato | Radish | Onion |
|-------------------------|-------------|---------|--------|--------|--------|
| Cost A ₁ | 94719 | 77665 | 139460 | 53461 | 72209 |
| Cost A ₂ | 94719 | 77665 | 139460 | 53461 | 72209 |
| Cost B ₁ | 97562 | 80329 | 143582 | 55963 | 74912 |
| Cost B ₂ | 100008 | 82698 | 146824 | 58203 | 76970 |
| Cost C ₁ | 145562 | 125329 | 194582 | 97963 | 122912 |
| Cost C ₂ | 148008 | 127698 | 197824 | 100203 | 124970 |
| Cost C ₃ | 162808 | 140468 | 217606 | 110223 | 137467 |
| Gross returns | 288800 | 200000 | 242350 | 131250 | 196150 |
| Net returns over | | | | | |
| Cost A ₁ | 194081 | 122335 | 102890 | 77789 | 123941 |
| Cost A ₂ | 194081 | 122335 | 102890 | 77789 | 123941 |
| Cost B ₁ | 191238 | 119671 | 98768 | 75287 | 121238 |
| Cost B ₂ | 188792 | 117302 | 95526 | 73047 | 119179 |
| Cost C ₁ | 143238 | 125329 | 47768 | 33287 | 73238 |
| Cost C ₂ | 140792 | 72302 | 44526 | 31047 | 71179 |
| Cost C ₃ | 125992 | 59532 | 24744 | 21027 | 58682 |
| B-C ratio | 1.78 | 1.40 | 1.11 | 1.19 | 1.43 |

It is evident from table 1 that the total variable cost per hectare was highest in okra (Rs 1,27,832), followed by cucumber (Rs 1,20,783), brinjal (Rs 97,620), bitter gourd (Rs 92,573) and bottle gourd (Rs 84,460). The proportion of labour cost to the total cost accounted for more than 50 per cent in different kharif vegetables followed by seed, tractor and FYM. In case of material cost, seed was the major component of the cost which accounted for more than 10 per cent of the total cost except in brinjal (1.63 %). The expenditure on FYM, fertilizers, plant protection and irrigation was to the extent of 1 to 7 per cent of total cost for different kharif vegetables. Among the material cost, the proportion of cost was noted highest in FYM and lowest in irrigation in almost all the vegetables. The cost of production was highest in case of cucumber (Rs 7.86/kg) and lowest in bitter gourd (Rs 5.96/kg).

Costs and returns estimation of vegetable crops

The cost and returns on CACP concepts for *kharif* and rabi vegetables is presented in Table 3 & 4 respectively. It was observed from the table that among major vegetable crops grown on hectare basis, okra (Rs 158976) and potato (Rs.217606) showed the highest Cost (C_3) in kharif and rabi season respectively. The net returns were positive for different kharif and rabi crops even when the cost of family labour was included. The net returns obtained from different kharif vegetables revealed that highest net returns over cost C_3 were from cucumber (Rs 69636) followed by bottle gourd (Rs 68686), okra (Rs 56304), brinjal (Rs 54913) and bitter gourd (Rs 38937). Among rabi vegetable crops, cauliflower (Rs 125992) showed the highest Cost C_3 per hectare followed by cabbage (Rs 59532), onion (Rs 58682), potato (Rs 24744) and radish (Rs 21027). The B-C ratio was also

estimated for different vegetable crops. The ratio varied from 1.33 to 1.60 in kharif to 1.11 to 1.78 in rabi for different vegetables. The output-input ratio was greater than one for all the major vegetable crops in the study area indicating that growing of vegetables is a profitable business and farmers are earning good profit from vegetable farming.

From the above cost and return analysis, it can be concluded that vegetable cultivation is a profitable business for the farmers of the study area as it gives higher returns in shorter period. Amongst the expenditure incurred on different inputs, human labour accounted for more than 50 per cent of the total cost. In the material cost, seed was the major component in general, followed by FYM and fertiliser. The different costs were also estimated as per the CACP cost concepts. The net returns were positive for different kharif and rabi crops even when the cost of family labour was included. The B-C ratio for all the vegetable crops was greater than one indicating that vegetable growing is a profitable.

References

- Bezbaruah M.P. and Roy N. 2002. Factors affecting cropping intensity and use of fertilizers and high yielding variety seeds in Barak Valley. *Indian Journal of Agricultural Economics* 57(2): 169-179
- Chowdhuri NY, Haque S, Shammi SA, Jannat A, Sannyashi PR. 2014. Profitability analysis of winter vegetables production in a selected area of Narshingdi district in Bangladesh. *Progressive Agriculture* 25: 47-53
- Singla R, Chahal SS and Kataria P. 2006. Economics of production of green peas in Punjab. *Agricultural Economics Research Review* 19:237-250.

How to cite this article:

Rashmi, M. S. Pathania, Anwasha Deo and Singh, H. P. 2020. Economic Analysis of Vegetable Production in Nagrota Bagwan Block of Kangra District of Himachal Pradesh. *Int.J.Curr.Microbiol.App.Sci.* 9(03): 376-382. doi: <https://doi.org/10.20546/ijcmas.2020.903.044>