



Research Paper

An economic analysis cauliflower production in Kolar district of Karnataka

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ABSTRACT : India is the second largest producer of vegetables in the world next to China. The cauliflower is the major vegetable crop of Karnataka. The study was conducted in Kolar district on cost of cultivation and returns on different cost concepts basis of cauliflower. The result revealed that, Production is normally considered as the function of area and yield. The decision regarding the choice of crop enterprise to be taken on the farm and the allocation of area and resources under it depends to a great extent, on level of yield, price of output and the cost of inputs used in the production of that crop. The cost of cultivation and the returns to different factors of production help in decision making about the selection of crop and hence, these measures were worked out for cauliflower. On an average, Rs.42,574 was spent on cauliflower e per hectare. Cost of cultivation of by the small size farms were high (Rs. 42661/ha) as followed by medium and large size farms (Rs.42108/ha and Rs.40164/ha). And the cost of production per quintal in different size of farms group was Rs.2000/ha, respectively. The cauliflower price per quintal in market was Rs.1700. The sample average for Cost A₁, Cost A₂, Cost B and Cost C in different farms size groups were Rs.30428/ha, Rs.33627/ha and Rs. 36628/ha and Rs.41644/ha, respectively. And farm business income and family labour income in different size of farms group were Rs.79039/h and 76039/ha. An average of net return obtained from cauliflower growers per hectare was Rs. 71022/ha.

KEY WORDS : Cauliflower, Cost returns, Cost of cultivation, Cost of production, Returns

Paper History :

Received : 20.11.2017;

Revised : 13.01.2018;

Accepted : 27.01.2018

HOW TO CITE THIS PAPER : Raghupathi, R. and Kumar, Sanjay (2018). An economic analysis cauliflower production in Kolar district of Karnataka. *Internat. Res. J. Agric. Eco. & Stat.*, **9** (1) : 77-81, DOI : 10.15740/HAS/IRJAES/9.1/77-81.

INTRODUCTION :

India is a leading vegetable producing country in the world. The country is blessed with a unique gift of nature of diverse climate and distinct seasons to make it possible to grow good number of vegetables in an area of 6.65 m.ha with the annual production of 120.35 m.t (Agriculture Today, 2013-14). Karnataka state is one of the leading vegetable producing state in the country with a production of 53,69,650 tonnes, vegetables grown over

an area of 4,93,320 ha (APEDA, 2012-13) of which, cauliflower occupies a major area of 56.9 thousand hectare with a production of 1,285.1 thousand tonnes (National Horticulture Board, 2013-14), contributing 9.4 per cent to the total major vegetable production in India. The vegetable crops have been well advocated in solving the problem of food security, since they are rich source of minerals, vitamins, fiber and contain fair amount of protein as well as carbohydrates.

Karnataka is blessed with ten agro-climatic regions

suitable for growing variety of fruits and vegetables round the year. The major districts growing horticultural crops in the state are Kolar, Hassan, Kolar, Kodagu, Bengaluru, Shimoga, Bijapur and Dharwad. The state stands at eighth position with respect to area and production of vegetables. Kolar is the major vegetable producing district in the southern Karnataka, with an area of 58,368 ha and production of 8,65,650.56 t, respectively. The total area and production of cabbage in Kolar district is 4806.70 hectares and 2,21,250.00 tonnes, respectively (Source: DDH Office, Kolar 2014-15).

In Karnataka the area under vegetables cultivation is 5,856 ha (National Horticulture Mission Report, 2013-14). According to Ministry of Agriculture, Govt. of Karnataka there are certain policies and schemes to educate farmers about vegetables cultivation and various training programmes in districts and blocks in Karnataka and is providing funds to the Non- Governmental Organizations and each organization has a target to cover 1500 farmers and for that they are paying Rs. 200 per farmer per year to the NGO's to support the farmers. The Government of Karnataka has made separate cell called 'vegetables cell' especially for the farmers.

Bala *et al.* (2011) studied the costs and returns structure for the production of major off-season vegetables in Kullu and revealed that per hectare cost A1 was highest for tomato, followed by cabbage, cauliflower and lowest for peas, among the selected vegetables. However, per quintal cost of cultivation has been found to be highest for peas, followed by cauliflower, tomato and cabbage. Costs on plant protection measures have been the major constituents of cost A1 in all the crops, followed by expenditure on seed and fertilizers. Vegetables being the labour-intensive crops, have incurred significantly high costs on human labour, Rs.13200, Rs. 15600/ha. Gross returns as well as net returns per hectare have been observed to be highest for tomato, followed by cauliflower, cabbage and peas. The present study was undertaken to study cost of cultivation and returns on different cost concepts basis of cauliflower.

MATERIALS AND METHODS :

A sample of 55 cauliflower growing farmers from different land size categories was selected by probability proportion to number of farmers in each size group. For the selection of farmers, a complete list of all the vegetable growers of selected villages was prepared and arranged

in ascending order on the basis of area under selected crop. The farmers were categorized as small, medium and large by cumulative total method on the basis of area under vegetable crop. A sample of 23, 18 and 14 farmers from each selected village was selected by probability proportion to number of farmers in each size group holding.

Describe statistics was used to study the type, pattern of input use, yield level and market price. The averages and percentages were worked out for the same. The following farm management cost concepts were used for calculating the cost per hectare of cauliflower crop. The classification of costs based on Dr. Sen's Committee report (1979) is as follows.

Cost - A₁: It included wages of hired human labour, cost of bullock, charges of hired machinery, cost of seed, value of organic manure and chemical fertilizers, value of plant, interest on working capital, depreciation farm machinery, implements, equipments, farm buildings, land revenue etc.

Cost - A₂: Cost 'A₁' plus rent paid for leased in land.

Cost - Cost 'A₁' or 'A₂' plus interest on fixed capital invested in the business excluding the value of the land.

Cost - B₂: Cost 'B₁' plus rental value of own land.

Cost - C₁: Cost 'B₁' plus imputed value of family labour.

Cost - C₂: Cost 'B₂' plus imputed value of family labour.

RESULTS AND DATA ANALYSIS :

The result and discussion of the study as like this.

Cost structure of cauliflower household cultivation:

Cost structure incurred by different size of farms total cost in depicted in Table 1. Total cost of cultivation for small farmers was higher Rs. 43611/ha) as followed by medium and large size farms (Rs.43038/ha and Rs.41074/ha). Cost of cultivation for the overall sample was Rs.42574.33/ha. The cost of human labour, fertilizers, seeds and bullock labour were the items of cost with major share in the variable costs, because most of the operations like harvesting, and weeding were human labour intensive operations and the other operations like land preparation and intercultural operation were bullock labour intensive. The distribution of pattern of operational cost under various inputs revealed that cost of human labour was the highest in the large size farms (Rs. 4689/

ha), followed by medium size farms (Rs.4388/ha) and lowest on small size farms (Rs.3796/ha). Whereas, bullock labour cost was the highest in case of small size farms (Rs. 1800/ha) as followed by medium (Rs. 1500/ha) and large farms (Rs. 1200/ha). Machinery labour cost was the highest in case of small size farms (Rs. 3325/ha) as followed by medium (Rs. 3325/ha) and large farms (Rs. 2375/ha).

The cost of seedling was the highest on small size farms (Rs. 4670/ha), small size farms (4550), and lowest in large size farms (Rs.4440/ha).The expenditure on farm yard manure ranged from Rs. 1750 (small size farms) to 1600 (large size farms). Whereas, the expenditure on fertilizers was the highest (Rs.4450/ha) for small size farms as followed by medium size farms (Rs. 4450/ha)

and large size farms (Rs. 4200/ha). It was also noticed that the highest expenditure on pesticide was seen on small size farms (Rs. 4442/ha) as followed by medium and large size farms (Rs. 3340/ha and Rs.3410/ha), respectively. Sample average for depreciation on fixed resources was Rs.1388, interest on working capital Rs.3000, interest on fixed capital was Rs. 900.

Rental value of own land was Rs.3000/ha and rent paid leased in land was Rs. 3500/ha for all different categories of farmers.

Economics of cauliflower cultivation in study area:

In Table 2 cost and returns in cauliflower cultivation for different size of farms. Among different size of farm groups, the total cost of cultivation incurred by the small

Table 1: Cost structure of cauliflower household cultivation in study area

(Rs. per ha)

Sr. No.	Particulars of farm operations	Cauliflower farm household			Sample average (n=55)
		Small (n=23)	Medium (n=18)	Large (n=14)	
1.	Hired human labour charges (Rs.)	3796.00 (8.70)	4388.00 (10.19)	4689.00 (11.41)	4046.00 (9.84)
2.	Bullock labour charges (Rs.)	1800.00 (4.12)	1500.00 (3.48)	1200.00 (2.92)	1504.00 (3.65)
3.	Machinery labour charges (Rs.)	3325.00 (7.62)	3325.00 (7.72)	2375.00 (5.78)	2996.00 (7.28)
4.	Cost of seedlings	4670.00 (10.70)	4550.00 (10.57)	4440.00 (10.80)	4410.00 (10.72)
5.	Cost of farm yard manure	1750.00 (4.01)	1695.00 (3.93)	1600.00 (3.89)	1635.00 (3.97)
6.	Cost of chemical fertilizers	4450.00 (10.20)	4450.00 (10.33)	4200.00 (10.22)	4071.00 (9.90)
7.	Cost of irrigation charges	2050.00 (4.70)	2120.00 (4.92)	1930.00 (4.69)	1972.00 (4.79)
8.	Cost of plant protection	4300.00 (9.85)	3900.00 (9.06)	3900.00 (9.49)	3925.00 (9.54)
9.	Miscellaneous charges	330.00 (0.75)	320.00 (0.74)	300.00 (0.73)	296.00 (0.72)
10.	Interest on working capital @ 6%	3150.00 (7.22)	3110.00 (7.22)	3050.00 (7.42)	3000.00 (7.29)
11.	Deprecation on fixed resources	1440.00 (3.30)	1450.00 (3.36)	1430.00 (3.48)	1388.00 (3.37)
12.	Land revenue paid to Government	100.00 (0.22)	100.00 (0.23)	100.00 (0.97)	96.00 (0.23)
13.	Rental value of leased land	3200 (7.33)	3200 (7.43)	3200 (7.79)	3084.00 (7.50)
14.	Interest on fixed capital @ 10%	950.00 (2.17)	930.00 (2.16)	910.00 (2.21)	900.00 (2.18)
15.	Rental value of own land	3000.00 (6.87)	3000.00 (6.97)	3000.00 (7.30)	2891.00 (7.03)
16.	Imputed value of family labour charges	5300.00 (12.15)	5000.00 (11.61)	4750.00 (11.56)	4888.00 (11.89)
17.	Total cost of cultivation per ha	43611.00 (100.00)	43038.00 (100.00)	41074.00 (100.00)	42574.33 (100.00)

Table 2: Economics of cauliflower cultivation in study area

(Rs. per ha)

Sr. No.	Particulars	Cauliflower farm household			Sample average (n=55)
		Small (n=23)	Medium (n=18)	Large (n=14)	
1.	Total cost of cultivation	42661.00	42108.00	40164.00	42574.33
2.	Yield in (q)	55	56	58	56.33
3.	Gross returns per hectare	110000.00	112000.00	116000.00	112666.66
4.	Net returns per hectare	67339.00	69892.00	75836.00	71022.33
5.	Cost of production per quintal	792.92	768.53	708.17	756.53
6.	Input : Output ratio	1:2.57	1:2.65	1:2.88	1:2.70
7.	Price per quintal	2000.00	2000.00	2000.00	2000.00

farms were high (Rs. 42661/ha) as followed by medium (Rs. 442108/ha) and large farms (Rs.40164/ha). Sample average for total cost of cultivation was Rs.42574.33/ha. The gross returns obtained per hectare by small size farms were high (Rs. 110000/ha) as compare to medium and large size farms (Rs. 112000/ha and Rs.116000/ha) respectively. The net returns per hectare obtained by by small size farms were high (Rs. 67339/ha) as followed by medium and large size farms (Rs. 69892/ha and Rs. 75836/ha, respectively) Chachal and Katariya (2005).

The average yield of cauliflower in different size of farms group was Rs. 53.00/qtl. The yield was highest in case of small size farms 55qtl/ha as followed by medium (56qtl/ha) and large size farms (58ha/ha). Average cost of production per quintal was Rs. 756.53/qtl. Gross Price per quintal for all categories was of farms was Rs. 1700. Input – output ratio was in highest large size farms (1:2.88) followed by medium size farms (1:2.65) in lowest small size farms group (1:2.70) (Chandrashekhar, 2007 and Gauraha *et al.*, 2007).

Cost concepts in cauliflower production in the study area (Rs. per ha):

Table 3 revealed that the cost concepts in cauliflower production for different size of farms per hectare. Cauliflower the cost A₁ was highest in small size farms (Rs. 31161/ha) followed by medium size farms (Rs.30908/ha) and lowest in large size farms (Rs. 29214/ha). Cost A₂ in small, medium and large

size of farms groups was and Rs. 34361/ha, Rs. 34108/ha and Rs. 32414/ha, respectively. Cost B was highest in small size farms (Rs. 37361/ha) as followed by medium size farms (Rs. 37108/ha) and lowest in large size of farms (Rs.35414/ha). Cost C was highest in small size farms (Rs.42661/ha) followed by the medium size farms (Rs.42108/ha) and lowest in small size farms (Rs.40164/ha). Sample average for Cost A₂, Cost B and Cost C was 323627/ha, Rs. 36628/ha, and Rs. 41644/ha (Hatai, 2007 and Patil *et al.*, 2009).

Measures of profitability in cauliflower cultivation across different farms size in study area:

Table 4 gross returns obtained per hectare by small size farms were high (Rs.110000/ha) as compare to medium size farms (Rs.112000/ha) and large size farms (Rs.116000/ha), respectively. The sample average for gross returns was 107963/ha in different size of farms group. Farm business income in small, medium and large size of farms group was Rs. 75639/ha, Rs. 77892/ha, and Rs.83586/ha, respectively. Sample average of different farm groups for farm business income was 79039/ha in different size of farms group. Farm investment income was compared in lowest in small size farms (Rs.71289/ha) as followed by medium size farms (Rs.73822/ha) and highest in large size farms (Rs.79746/ha), respectively. This makes the sample average for farm investment income was Rs.74952/ha. Sample average of family labour

Sr. No.	Cost concepts	Cauliflower farm house hold			
		Small (n=23)	Medium (n=18)	Large (n=14)	Sample average (n=55)
1.	Cost A ₁	31161	30908	29214	30428
2.	Cost A ₂	34361	34108	32414	33627
3.	Cost B	37361	37108	35414	36628
4.	Cost C	42661	42108	40164	41644

Sr. No.	Particulars	Cauliflower farm household			
		Small (n=23)	Medium (n=18)	Large (n=14)	Sample average (n=55)
1.	Gross returns	110000.00	112000.00	116000.00	112667.00
2.	Farm business income	75639.00	77892.00	83586.00	79039.00
3.	Farm investment income	71289.00	73822.00	79746.00	74952.00
4.	Net returns	67339.00	69892.00	75836.00	71022.00
5.	Family labour income	72639.00	74892.00	80586.00	76039.00
6.	Input: Output ratio	1:2.57	1:2.65	1:2.88	1:2.70

income was Rs. 76039/ha in different size of farms group (Jose and Jayashekhar, 2009; Sihgla *et al.*, 2006 and Sridhara and Hosamani, 2010).

Conclusion:

Cauliflower is the major vegetable crop of Karnataka. The study was conducted in Kolar district with the objective to analyze the socio economic characteristic of sample respondents, Input Requirement, cost and returns of the cauliflower production. The results revealed that the socio economic status of the respondents found to be moderate with primary education, well economic back ground and greater access to all the assets. Economics of cauliflower production is more profitable in large farms as compared to medium size farms and small size farms. This will be the way for making cultivation more lucrative. A major constraint in production was found that high cost of labour and less awareness about new technologies among different farms size group.

Suggestions for policy implications:

Human labour, PPC chemicals and fertilizers were the major contributors to the cauliflower input. This indicates the importance of these inputs in cauliflower production. Therefore, government need to timely supply of all these quality inputs to the cauliflower growers will be helpful. The study revealed that, pest and diseases incidences are the dominant cause for the substantial reduction in production as well as productivity and profit margin of respondents. Although many alternative pesticides are available to control the pests and diseases but they are not cost effective. Hence pest and disease resistance varieties may used as an alternative which could reduce the costs of PPC and save the farmer from particularly debt trap difficulty. Strengthening the extension system in popularizing improved seed, effective transfer of technology, frequent farmers training activities, seminars, etc. to be needed for the cabbage growers. Establishing market intelligence on forecasting future

demand and prices of the cauliflower and there by minimize the risks of price fluctuation. Government should extend crop Insurance facility for the cauliflower crop. So that, the respondents can avail the facilities and minimize their risks in production.

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LITERATURE CITED :

- Bhullar, A.S. (2005). Estimating export competitiveness of chillies from Punjab state. *Agric. Mktg.*, **36** (2) : 42-43.
- Chahal and Katariya (2005). Technology adoption and cost return aspects of maize cultivation in Punjab, *Indian Agric. Econ.*, **62** (4): 241-247.
- Chandrashekhar, S.K. (2007). Analysis of onion production and marketing behaviour of farmers in gadag district, Karnataka. M.Sc. (Ag.) Thesis, University of Agricultural Sciences, Dharwad, KARNATAKA (INDIA).
- Gauraha, A. K., Banafar, K. N. S., Choudhary, V. K., Singh, G. N. and Jain, B. C. (2007). Marketing of soybean in Sehore district of Madhya Pradesh. *Agric. Mktg.*, **22**(3):21-29.
- Hatai (2007). Economics of production and marketing of strategies of potato in Orissa. *Indian J. Mktg.*, **30**(2) : 17-21.
- Jose, C. T. and Jayashekhar, S. (2009). Growth trends in area, production and productivity of Arecanut in India. *Agric. Situ. India*, **65** (3) : 135-140.
- Patil, M. R., Borse, M. K., Patil, S. D. and Kamble, Poonam (2009). Economic aspects of production, processing and marketing of turmeric in Western Maharashtra. *Internat. J. Agril. Sci.*, **5** (1): 60-63.
- Singla, Rohit, Chahal, S. S. and Kataria, P. (2006). Economics of production of green peas (*Pisum sativum* L.) in Punjab. *Agric. Res. Rev.*, **19** (3) : 237-250.
- Sridhara, J. and Hosamani, S. B. (2010). Economics of contract farming –A case study of chilli in Bagalkot district of Karnataka. M.Sc. (Ag.) Thesis, Department of Agricultural Economics, University of Agricultural Sciences, Dharwad, KARNATAKA (INDIA).

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