ISBN: 978-93-47303-15-9
DOI: https://doi.org/10.70381/9789347303159.2026.5

CHAPTER 5

Cost of Cultivation and Returns of Brinjal by CACP Cost Concepts in Anand District: Way of Doubling the Farmers Income

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Abstract

The doubling the income of farmers are possible by different ways, out of all strategies of markets, which has increased the income of farmers by using superior quality of seeds, high yielding varieties, use of drip irrigation, recommended dozes for fertilizer and selling their produce by proper marketing system. India is the second largest producer of vegetables in the world next to China. Brinjal is the major vegetable crop of middle Gujarat. The present investigation was carried out to study the cost of cultivation and returns of brinjal by CACP cost concepts. The study was conducted in Borasad and Anand which were selected purposively and out of that 60 Brinjal growing farmers were selected for the study. The decision regarding the choice of crop enterprise to be taken on the farm and the allocation of area and resources under it largely depends 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 Brinjal. On an average, ₹. 91672.6 were spent on brinjal per hectare.

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Among the different components of cost of cultivation, hired human labour accounted for the largest portion (21.73 per cent) followed by the hired labour (11.38 per cent), value of FYM (9.34 per cent), value of fertilizer (8.45 per cent), irrigation charges (7.85 per cent), rental value of own land (5.54 per cent), insecticide and pesticide (5.10 per cent), charges of machinery (4.91 per cent), seed (3.82 per cent) etc., for the cultivation of brinjal highest labour cost use for the picking (54.90 per cent) followed by the irrigation (13.44 per cent), weeding (12.32 per cent), transplanting (5.60 per cent), fertilizer application (4.20 per cent), manure and cake (3.36 per cent) etc., Major problem in cultivation of crop is farmers are not followed the recommended package of practices and therefore they can't get higher profit.

Keywords: *Cost of Cultivation, Brinjal, Returns on Different Cost Concepts Basis, Anand.*

Introduction

Vegetables are grown in India since thousands of years but now-a-days it has become an important enterprise at national and inter-national level. In recent years, the vegetables have become as an essential requirement of the daily human diet, because of its nutritional value. Regular use of vegetables provides us most of the essential health building and protecting substances, such as vitamins and minerals. In India where vegetarianism has been a way of life, since, the early days of recorded history, the problem of under nutrition and malnutrition can only be solved through balanced diet for which vegetables are essential component of the daily diet. Brinjal (Solanum melongena L.) or eggplant is one of the most common popular and principal vegetable crops grown in India and other parts of the world it's having economic importance throughout the world, and is mainly grown in Asian subtropical regions (94% of world production), where its popularity has earned it the title of '**the king of vegetables**'. According to the Food and Agriculture Organisation of the United Nations (FAO 2015). The brinjal is of most importance in the warm areas of Far-East, being grown extensively in India and other Asian countries like Bangladesh and Pakistan. Other major brinjal producing countries are China, Turkey, Japan, Indonesia and Spain. The cultivated brinjal is of Indian origin and has been in cultivation for long time (Thompson and Kelly, 1957). Vavilov (1928) was of the opinion that its centre of origin was in the Indo-Burman region.

Methodology

Selection of area:

In the Anand district comprise 8 talukas; out of these 2 talukas namely Anand and Borasd were purposively selected for present study. From each selected district 30 brinjal growing farmers were randomly selected. Thus, total 60 respondents were selected for present investigation.

Tabular Analysis:

Calculation of Cost and return

The cost concepts used for estimating the per hectare cost of Brinjal, Cost 'A', Cost 'B' and Cost 'C1 and C2' which are normally used in farm management studies.

The different cost items that are included under each cost concept are detailed below

Cost A: It includes –

1. Value of hired human labour
2. Value of bullock labour (owned / hired)
3. Value of seeds (owned / purchased)
4. Value of manure (owned / purchased
5. Value of fertilizer
6. Value of pesticides and insecticides
7. Irrigation charges
8. Charges for machinery (owned / hired)
9. Other expenses paid, if any
10. Depreciation on farm building and implements
11. Interest in working capital (12%)

Cost B: Rental value of owned land + Interest on fixed capital assets (excluding land) (@ 10 %).

Cost C_1: Cost B + Imputed value of family labour.

Cost C_2: Cost C_1 + 10 per cent of the Cost C1 as a managerial charges.

Income measures

The various income measures will be worked out as under.

(i) Value of Gross Output (Gross Income)

It will be calculated by considering the total production in quintal and price prevailing of product per quintal.

(ii) Farm Business Income

Gross Income minus Cost A

(iii) Family Labour Income

Gross Income minus Cost B

(iv) Farm Investment Income

Net Income + Rental value of owned land + Interest on owned fixed Capital

(v) Net Income (profit or loss)

Value of gross output minus Cost C_2

(vi) Input – Output ratio

Gross income/ Cost C2

Result and Discussion:

Table:1 shows that the details of farm structure viz., educational status, occupations, and organizational participation affect the economy of the different farming systems and also the adoption of improved technology to a considerable extent. Educational status affects the cultivator's response to change of cropping patterns and their improved technology with the combination of probable sources of income. These aspects of socio economic characteristics of sample farm for sample cultivators have, therefore, been analyzed and presented here.

The information on socio-economic characteristics of the respondents is presented in Table 1. Revealed that majority of the farmer's belonged to secondary education level (8 to 12), the proportion of secondary education level was found to be highest i.e.(55per cent). Whereas 18.33 per cent of the farmers had illiterate, 15 per cent up to primary school education and 11.67 per cent of farmers had college level education.

In all the four-farming systems majority of farmers had higher share in secondary education level. The attributed reason may be

that farmers were able to take innovative and timely decisions to adopt new technology to enhance their farm income.

Table 1. Socio economic characteristics of sample farm

Sr. No	Particular	Unit	Percentage
1.	Total Respondents (60)	Nos.	100
2.	Education level	Nos.	
	Illiterate (0)		11 (18.33)
	b. Primary (1 to 7)		9 (15)
	Secondary (8 to 12)		33 (55)
	College (>12)		7 (11.67)
	Total		60 (100)
3.	Occupation	Nos.	
	F		35 (58.33)
	F+AH		22 (36.67)
	F+AH+B		0
	F+AH+S		1 (1.67)
	Other		2 (3.33)
	Total		60 (100)
4.	Membership	Nos.	
	Village Panchayat		(13.33)
	Milk Cooperative		(21.67)
	Farmer Club		0
	Seva Sahkari		0
	ATMA		0
	No membership		39 (65)
	Total		60 (100)

Source: own survey

The results are given in Table 2. The data revealed that the cost incurred by various operations of brinjal cultivation. On an average, ₹. 30360 were spent on brinjal per hectare. Among the different components of cost of cultivation, human labour accounted for picking of brinjal was the largest portion (51.64 per cent) followed by irrigation (12.64 per cent). The other major components were weeding charges (11.59 per cent), Fertilizer and Manure accounting (7.90 and 3.95 per cent),

transplanting charges (6.58 per cent), Gap filling (2.63 per cent), land preparation (2.12 per cent) and spraying (0.92 per cent). The cultivation of brinjal requires more labour use for picking and application of irrigation and as such the share of human labour accounted for the highest share of ₹. 15680 per hectare (54.90%). On an average, 27890 were spent on brinjal operation per hectare. The other major components were highest share of fertilizer, manure and irrigation cost accounted ₹.7750 (27.29%) and ₹.7200 (25.81), PPC and herbicide ₹. 4680 (16.78), seedling with gap filling that was accounted ₹.3500 (12.54), cake ₹. 1360 (4.87) and other Miscellaneous charges ₹. 3400 (12.90). The cost for the cultivation of brinjal was highest fertilizer and manure.

Table 2. Calculation of Operation wise labour using in brinjal cultivation

Sr. No	Particular (family + Hired labour)	Quantity/ unit	Rate (₹/unit)	Amount (₹/ha)
	Land preparation	8	80	640 (2.12)
	Manure	12	200	2400 (7.90)
	Fertilizer	15	80	1200 (3.95)
	Transplanting	20	100	2000 (6.58)
	Irrigation	48	80	3840 (12.64)
	Weeding	44	80	3520 (11.59)
	Gap filling	10	80	800 (2.63)
	Spraying	4	70	280 (0.92)
	Picking	196	80	15680 (51.64)
SUB TOTAL		**357**	**850**	**30360 (100)**

1.	Manure	6 trolly / ha	1200 / trolly	7200 (25.81)
2.	Cake	4 bag/ha	340 /bag	1360 (4.87)
3.	Fertilizer			
	Urea	300 kg/ha	5.5 / kg	1650 (5.43)
	ii) SSP	200 kg/ ha	8 / kg	1600 (5.73)
	iii) MOP	250 kg/ha	18 / kg	4500 (16.13)
4.	Seeding (with gape filling)	1 2 0 0 0 + 2000 plant / ha	0.25/ plant	3500 (12.54)
5.	Irrigation	120 hr	60 / hr	7200 (25.81)
6.	PPC & Herbicide	---	----	4680 (16.78)
7.	Miscellaneous	---	----	3400 (12.90)
SUB TOTAL				27,890

Source: Own survey

The table: 3 shows that total cost of cultivation (Cost A) per hectare of brinjal amounted to ₹. 66965 (73.05%) respectively. Cost B was ₹.72898.69 (79.52%) which was highest on farms. The average of Cost C1 and Cost C2 were ₹. 83339 and ₹. 91672.6 respectively. Among, Cost C2, which includes managerial, cost ₹. 91672.6 were worked out to be per hectare on an overall basis. Per hectare cost C2 is the total cost of cultivation of brinjal crop which includes the managerial cost of farmers also.

Table 3: Cost of cultivation of brinjal on CACP cost concepts basis on (₹/ha)

Cost A		Value	Percentage
	Value of hired human labour	19920	21.73
	Value of bullock labour (own/hired)	3000	3.27
	Value of seed	3500	3.82
	Value of manure	8560	9.34

	Value of fertilizer	7750	8.45
	Value of pest. &insecticide	4680	5.10
	Irrigation charged	7200	7.85
	Charged of machinery	4500	4.91
	Other miscellaneous cost	3400	3.71
	Depreciation on farm building and implement	1880	2.05
	Interest on working capital	2575	2.81
	TOTAL	66965	73.05
Cost B			
	Cost A	66965	73.05
	Rental value on owned land	5083.38	5.54
	Interest on fixed capital	850.31	0.93
	TOTAL	72898.69	79.52
Cost C1			
	Cost B	72898.69	79.52
	Value of Family Labour	10440	11.38
	TOTAL	83339	90.91
Cost C2			
	Cost C1	83339	90.91
	10 % of cost C1	8333.869	9.09
	TOTAL	91672.6	100

Source: Own survey

Income Measures:

Income measures from brinjal cultivation in Anand district of Gujarat are given in Table 4.The table reveals that farm business income which represents returns over cost A was ₹. 9423 area. The family labour income per hectare of brinjal cultivation was worked out to be ₹. 88301.3 per hectare. Net income implies profit per hectare after deducting cost C2 from gross income. The overall net income from brinjal cultivation was ₹.69527.4 per hectare. The overall returns to farm investment from brinjal cultivation were ₹.75461 per hectare. Moreover, the input-output ratio as a whole also observed i.e. 1.75. The probable

reason might be the share of brinjal cultivation in total cost and total returns under this system. Vegetables also generate the income which was less compared to other enterprises but farmer received the regular income. Thus, there is need to suitably modify the development approach and to consider improving whole farm production with horticulture crops especially for vegetables and other mixed crops.

Table 4: Returns from cultivation of brinjal crop ₹. / hectare

Sr. No	Particular	Amount (₹/ ha)
1.	Gross income	161200
2.	Farmer Business income	9423
3.	Family Labour Income	88301.3
4.	Net income	69527.4
5.	Farm Investment Income	75461.0
6.	Input – Output Ratio	1.75

Source: Own survey

Policy Implications

The cultivators of brinjal had lack of scientific knowledge about cultivation practices and efficient use of productive resources. Therefore, it is important to impart technological knowhow at doorstep through extension workers and Agricultural Research stations organizing field days on farmer's fields. The production and productivity levels have to be improved in the study area to increase the availability as well as to reduce per unit cost of production. This can be achieved by rational allocation of scarce farm resources by the vegetable growers. If farmers have adopted the agricultural university's recommendation to get the higher profit. Below table shows that comparison between farmers using practices and recommended practices of brinjal cultivation.

Sr. No	Particular	Farmer	Recommendation
1.	Seedling	14,000 plant/ha	18,000 -20,000 plant/ha
2.	Fertilizer	138- 32-150	100 -50 -50
3.	Manure	12 t / h	15 - 17 t / h
4.	Variety	Local	Dolly 5, GOB 1, GBH 1
5.	Yield	20.8 t / ha	30 -35 t / ha

Source: Own survey

Conclusion

Cost of cultivation of brinjal showed tendency to increase with increase in the size of holding. 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 Brinjal. On an average, ₹. 91672.6 were spent on brinjal per hectare. Among the different components of cost of cultivation, hired human labour accounted for the largest portion (21.73 per cent) followed by the hired labour (11.38 per cent), value of FYM (9.34 per cent), fertilizer (8.45 per cent), irrigation charges (7.85 per cent), rental value of own land (5.54 per cent), insecticide and pesticide (5.10 per cent), charges of machinery (4.91 per cent), seed (3.82 per cent) *etc.*, for the cultivation of brinjal highest labour cost use for the picking (54.90 per cent) followed by the irrigation (13.44 per cent), weeding (12.32 per cent), transplanting (5.60 per cent), fertilizer application (4.20 per cent), manure and cake (3.36 per cent) *etc.*, Major problem in cultivation of crop is farmers are not followed the recommended package of practices and therefore they can't get higher profit.

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