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An economic analysis of tomato in shade net cultivation in Durg district of Chhattisgarh

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Abstract

An evaluation is presented of a study an economic analysis of shade net cultivation in durg district of Chhattisgarh the specific objectives of the study were (i) To work out the cost and return of major crops grown in shade net cultivation, (ii) To examine marketing pattern of major crops grown in Shade net cultivation, (iii) To identified the constraints of Shade net cultivation and suggest measures for improvement of the same. The present study was conducted in durg district of Chhattisgarh. Seven shade net owners / farmers were selected for the study. The data valuate to the year 2015- 16.

The cost of cultivation of tomato was found to be Rs. 119899.8 per hectare. The input – output ratio was 1:0.51. Tomato crop was is not profitable in the selected shade net cultivation due to lower price and yield. The major constraints were quality of net is not appropriate, lack of knowledge about appropriate technology, high temperature and high labour requirement. Study suggested that the extensive demonstration of improved and high yielding varieties of vegetable crops should be given, definite provisions should be made for timely supply of crucial inputs at reasonable price and inadequate quality to sustain vegetable production on profitable basis.

Keywords: economic, tomato, shade net cultivation

Introduction

Protected cultivation of vegetables provides the best way to increase the productivity and quality of vegetable especially cucurbits. The yield of some cucurbits like cucumber can be increased manifold compared to open field cultivation. Normally the economics of protected cultivation directly depends upon the initial cost of fabrication of the protected structure, its running cost and the variable market for the high quality produce. Therefore, low cost protected structure, which can generally be fabricated just like naturally ventilated green houses, walk in tunnels and plastic low tunnels are very suitable for off- season cultivation of vegetables and highly economical for peri-urban areas of northern plains of India.

A shade net house can modify environmental conditions with reduced labour. In northern India particularly at semi-arid region the summer season is from April to July and the rainy season is from July to October.

Materials and methods

The study required primary as well as secondary data; primary data from the farmers were collected through personal interview method with the help of well prepared pre-tested schedule and questionnaire for the year 2015-16. Secondary data were collected from different sources such as Directorate of Horticulture, Durg and Sub Directorate of Horticulture office, KVK's and National Horticulture Mission office Raipur and Durg.

To work out the cost of cultivation standard method of will be adopted. Which includes cost A cost B and cost C.”

Cost A1: Consist of following 16 items of costs:-

1. Value of hired human labour (permanent & casual).
2. Value of owned bullock labour
3. Value of hired bullock labour
4. Value of owned machinery
5. Hired machinery charged
6. Value of fertilizers
7. Value of manure (produced on farm and purchased)
8. Value of seed (both farm-produced and purchased)
9. Value of insecticides and fungicides.
10. Irrigation charges (both of the owned & owned and hired tube wells, pumping sets etc).
11. Canal-water charges

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12. Land revenue, cesses and other taxes
13. Depreciation on farm implements (both bullock drawn & worked with human labour)
14. Depreciation on farm building, farm machinery.
15. Interest on the working capital.
16. Miscellaneous expenses (wages of artisans, and repairs to small farm implements)

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 (Net of land revenue) and 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 + value of management input at 10% of cost C₂.

Results and discussion

Economics of Tomato crop

The economics of Tomato crop is presented in table 4.16 It clearly shows that the cost of cultivation per hectare Tomato was higher on Shade net. Over all, on an average the cost of cultivation per hectare of Tomato was found to be Rs 117526 per hectare. The cost of cultivation is a average of shade net cultivation.

Among different input operation on an overall, the per hectare cost was observed highest for total human labour Rs. 44325 followed by manures and fertilizer Rs. 12750, seed Rs. 2750, plant protection Rs. 13625, irrigation Rs. 4000, Machine power Rs. 12250, Depreciation Rs. 2125, and land revenue Rs. 12.

Table 1: Costs of Tomato on different farm size (Rs./ha)

Particular	F1	F2	Avg	%
A. Material cost				
Seed	3000	2500	2750	2.29
Manures and fertilizer	13500	12000	12750	10.63
Plant protection	14250	13000	13625	11.36
Irrigation charges	4000	4000	4000	3.34
Total material cost	34750	31500	33125	27.63
B. Human labour cost				
Family labour	16200	14400	15300	12.76
Hired labour	27450	30600	29025	24.21
Total human labour cost	43650	45000	44325	36.97
C. Power use cost				
Bullock labour				
Machine power	12500	12000	12250	10.22
Total power use cost	12500	12000	12250	10.22
Interest on working capital @4%	3636	3540	3588	2.99
(I). Total variable cost	94536	92040	93288	77.80
D. Fixed cost				
Depreciation	2500	1750	2125	1.77
Land revenue	12	12	12	0.01
Rental value of land	25000	20000	22500	18.77
Interest fixed working capital @8%	2204.8	1744.8	1974.8	1.65
(II). Total fixed Cost	29716.8	23506.8	26611.8	22.20
Total cost(A+B+C+D)	124252.8	115546.8	119899.8	100.00

Yield and cost of production per quintal

The yield, value of output per hectare and cost of production per quintal of tomato on the sample farms have been worked out in table 2.

An overall yield per hectare of tomato came to 245.00 quintals on the Average of sample farms per hectare. The per quintal cost of production, on an overall, is worked out as Rs.

489.39 The per quintal cost of production of tomato is average farms.

It decreased with the increased in the size of farms due to higher yield in return to the cost of cultivation on the large farms. The overall values of output per hectare come to the overall value of output per hectare Rs 61250 the value of output per hectare come to Rs. 119899.80 farms respectively.

Table 2: Per hectare yield, value of output and cost of production per quintal of Tomato

Particular	F1	F2	Average
Yield (qtl/ha)	250	240	245.00
Price (Rs./qtl)	200	300	250.00
Gross returns	50000	72000	61250
Cost of cultivation(Rs./ha)	124252.80	115546.80	119899.80
Net returns (Rs./ha)	-74252.80	-43546.80	-58649.80
Cost of production (Rs./qtl.)	497.01	481.45	489.39
Input output ratio	1:0.40	1:0.62	1:0.51

Measures of farm profit

The overall gross return is observed as Rs. 61250 per hectare in the study area. The gross return depends upon variety, productivity and price received by the farmers. The overall net return is observed as Rs. -58649.80 per hectare. farms respectively. The overall input-output ratio is observed as 1:0.51.

Cost and returns on the basis of different cost concept

The cost and returns on the basis of cost concept in the production of Tomato have been presented in the table 3.

Table 3: Break-up of total cost, and income obtained over different cost of Tomato cultivation (Rs/ha)

Particular	Average
Break-up of costs	
Cost A ₁	66400.00
Cost A ₂	66400
Cost B ₁	68374.80
Cost B ₂	90874.80
Cost C ₁	83674.80
Cost C ₂	106174.80
Cost C ₃	116792.28
Return obtained over different costs	
Return over cost A ₁	-5150
Return over cost A ₂	-5150
Return over cost B ₁	-7124.80
Return over cost B ₂	-29624.80
Return over cost C ₁	-22424.80
Return over cost C ₂	-44924.80
Return over cost C ₃	-55542.28

It is envisaged that Cost A₁, as designated the variable cost, depreciation and land revenue of own land was found to be Rs. 66400.00 per hectare on average basis, which was added of rent paid for lease in land and dignified with Cost A₂, found to be Rs. 66400.00 per hectare, indicates the interest on fixed capital imputed with cost B₁ Rs 68374.80 rental value of own land Rs. 22500 per hectare prevailed in the study. Normally, farmers are cultivating the crop in their own land but it has imputed value of land of Rs. 22500 notified Cost B₂ was Rs. 90874.80 per hectare. The Cost C₁, found to be Rs. 83674.80 per hectare, includes the value of cost B₁ and imputed value of family labour was found to be Rs. 15300 per hectare, The cost C₂, found to be Rs. 106174.80 per hectare, includes the value of Cost B₂ and imputed value of family labour and The Cost C₃, found to be Rs. 116792.28 per hectare

imputed value of managerial allowances at 10 percent of cost C₂ return over the Cost A₁, Cost A₂, Cost B₁, Cost B₂, Cost C₁, Cost C₂, and Cost C₃ was obtained to be Rs. -5150, Rs. -5150, Rs.-7124.80, Rs.-29624.80, Rs.-22424, Rs. -44924.80 and Rs -55542.28 per hectare, respectively.

Marketable surplus

Table 4 clearly reveals that the estimated marketable surplus. Tomato, is highly perishable commodity. Being highly perishable in nature they cannot be stored at household level for a longer period without losses. Lack of infrastructural facility is another reason that forces farmers to sell their produce in the market immediately after their harvest.

Table 4: Marketable surplus of Tomato of sampled households (Quintal per farm)

S.N.	Particulars	Average
1.	Total quantity produced (qty)	245.00
2.	Quantity paid for wages	0.38
3.	Quantity used for home	0.46
4.	Quantity used for seed	0.00
5.	Total quantity utilized	0.84
6.	Marketable surplus	244.16(99.65)

Note: Figure in parentheses indicate percentage to total quantity produced

Conclusions

1. The finding of the study reveal that the average size of holding of the selected house holds was 9 hectares.
2. On an Average family size was 4.857.
3. The literacy percent of the selected house holds were 97.1 percent.
4. Majority of the selected house hold belongs to schedule tribes.
5. On an average the total cultivated area was 8.5 hectare perfarm.
6. Tube well was the major source of irrigation.
7. Paddy, tomato and shimla mirch were the major crops in the kharif season.
8. Paddy, wheat and vegetables were the major crops in the rabi season.
9. On an average cropping intensity was 184.61 present.
10. The cost of cultivation of tomato was found to be Rs. 119899.8 per hectare. The input - output ratio was 1:0.51. Tomato crop was is not profitable in the selected shade net cultivation due to lower price and yield.
11. Study suggested that the extensive demonstration of improved and high yielding varieties of vegetable crops should be given, definite provisions should be made for timely supply of crucial inputs at reasonable price and inadequate quality to sustain vegetable production on profitable basis.

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