



ECONOMICS OF TOBACCO NURSERIES UNDER SHADE NETS IN VINUKONDA REGION OF GUNTUR DISTRICT, ANDHRA PRADESH

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ABSTRACT

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Guntur district is one of the leading districts in growing tobacco nurseries (White Burley). The average size of the farm was 0.36 ha under shade nets. On an average 846.18 and 780.15 man days were utilized per hectare by shade net farmers during cycle- 1 and 2 respectively. The total cost of cultivation per hectare of tobacco nursery under shade nets was Rs. 3,27,600.06 and Rs. 3,07,413.22 during cycle- 1 and 2 respectively. The shade net nurseries realized a gross income of Rs. 17,27,748 and Rs. 17,37,748 during cycle- 1 and 2.

KEY WORDS: Shade nets, tobacco nursery

INTRODUCTION

The present Indian agricultural scenario is a mix of outstanding achievements and missed opportunities. To emerge as an economic power in the world, our agricultural productivity needs to be equal on par with economic powers of the world. Hence, India is in need of new and effective technologies which can continuously improve the productivity, profitability and sustainability of our farming systems. In this context, one of the most important segments is Controlled Environment Agriculture (CEA) *i.e.* protected cultivation technologies such as greenhouse, net house (shade nets), poly house and glass house *etc.*

In fact, the concept of Controlled Environment Agriculture (CEA) was not a novel idea and has been in use since, in some of the regions where the climatic conditions are extremely adverse for crops, man has developed various methods for growing some specific high value crops termed as Protected Cultivation Technology (PCT). It is used to protect the plants from the adverse climatic conditions such as wind, cold, precipitation, excessive radiation, extreme temperature, insects and diseases *etc.* by creating an ideal micro climate to the Crop yield can be several times higher than those under open -

field conditions, quantity of produce is superior, higher input use efficiencies are achieved. Protected cultivation of tobacco nurseries offers distinct advantages of quality, productivity and favorable market price to the growers. Insect proof shade nets can be used for virus-free cultivation of tobacco seedlings. These low cost structures are also suitable for growing pesticide-free tender seedlings. White Burley is produced in around 55 countries all over the world and accounts for 11 per cent of global tobacco production. The main producers and trades are United States of America (U.S.A), Italy, Korea, Brazil, and Mexico. In U.S.A, production is in Kentucky, Tennessee, Ohio, Virginia, North Carolina, West Virginia and Missouri. In India, tobacco is predominantly cultivated in Andhra Pradesh, Gujarat, Karnataka, Uttar Pradesh and Bihar.

Tobacco seeds are very small and egg-shaped with thick seed coat. The emerging seedlings are tiny and delicate and therefore, the seeds are unsuitable for sowing directly in the field. Hence they are sown in small areas called nurseries or seed beds and tended carefully till the seedlings attain a particular size before transplanting in the main field. Generally, tobacco nurseries are grown on sandy or sandy loam soils.

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MATERIAL AND METHODS

The present study was conducted in Andhra Pradesh state. Purposive sampling technique was employed for the selection of sample in the present study. Guntur district is one of the leading districts in growing tobacco nurseries (White Burley). The list of the mandals growing tobacco nurseries under shade nets was prepared. Five mandals from Guntur district with maximum area under cultivation of tobacco nurseries was selected. Based on this criterion, Vinukonda, Nujendla, Bollapalli, Mundlamuru and Ipuru were purposively selected. The list of villages growing tobacco nurseries under shade nets was prepared and eleven villages were purposively selected for the study. There were 16 farmers under shade net cultivation in the selected villages, therefore all the farmers under shade net cultivation were purposively selected.

TOOLS AND TECHNIQUES OF ANALYSIS

Simple arithmetic averages and percentages were worked out to arrive at costs, returns and farm efficiency measures.

Standard formulae were applied for computation of economic feasibility of tobacco nurseries under shadenet condition. All these formulae were used by previous workers for economic feasibility studies of tomato, cabbage and Capsicum under open and polyhouse conditions (Kumar *et al.*, 2016; Purushotham *et al.*, 2017 and Sreedhara *et al.*, 2013).

Cost concepts

Cost A₁: It includes: Value of hired human labour, value of hired and owned animal labour, value of hired and owned machine labour, value of seed (both farm seed and purchased), value of manures (owned and purchased) and fertilizers, depreciation on fixed assets, irrigation charges, land revenue, interest on working capital and miscellaneous expenses.

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

Cost B₁: Cost A₁ + interest of fixed capital (excluding - land)

Cost B₂: Cost B₁ + rental value of owned land + rent 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 per cent of cost C₂ as management cost.

Farm efficiency measures

Farm business income = Gross income – Cost A₁

Family labour income = Gross income - Cost B₂

Net income = Gross income - Cost C₃

Farm investment income = Farm business income - imputed value of family labour

(or)

Net income + imputed rental value of owned land + interest on owned fixed capital invested

RESULTS AND DISCUSSIONS

It is observed from Table 1, that the average family size was 4.79 under shade nets. On an average 1.45 male members were available for farm work under shade nets. The number of females participating on the farm was 1.0 under shade nets. There was no participation of children on the farms.

A perusal Table 2 shows that the total cost of cultivation per hectare of tobacco nursery under shade nets was Rs. 3,27,600.06 and Rs. 3,07,413.22 during cycle- 1 and 2 respectively. The break-up of total costs into variable costs and fixed costs indicated that the variable costs were Rs. 2,64,708.57 (80.8 per cent) and Rs. 2,44,521.73 (79.54 per cent) during cycle- 1 and 2, while the fixed costs were Rs. 62,891.49 in each cycle respectively. Human labour is required to perform various cultural practices *viz.*, seed bed preparation, formation of ridges and furrows, application of manures and fertilizers and plant protection chemicals, sowing, drip system installation, clipping, weeding, uprooting the seedlings, removal of stubbles, irrigation, mulching. Of the total costs, human labour was the highest costing input service in the nursery cultivation. The expenditure incurred towards this resource service was Rs. 1,69,236 (51.65 per cent) and Rs. 1,56,030 (50.75 per cent) during cycle- 1 and 2 respectively. Of the total costs, machine power input service expenditure was Rs. 6618 (2.02 per cent) and Rs. 336 (0.1 per cent) during cycle- 1 and 2. Seed cost was Rs. 10,150 (3.09 per cent) and Rs. 10,330 (3.36 per cent) during cycle-1 and 2. On manures and fertilizers farmers incurred Rs. 13,423.8 (4.09 per cent) and Rs. 13,502.4 (4.37 per cent) during cycle- 1 and 2 respectively. Shade net farmers incurred Rs. 1475 (0.45 per cent) and Rs. 550 (0.17 per cent) during cycle- 1 and 2 with regard to plant protection chemicals to keep the nursery free from pests. Irrigation charges amounted to -

Economics of tobacco nurseries under shade nets in vinukonda region of Guntur district, Andhra Pradesh

Rs. 1126.41 (0.34 per cent) and Rs. 1214.62 (0.39 per cent) during cycle- 1 and 2. On coco peat and red soil shade net farmers incurred Rs. 56,000 and Rs. 5000 for each cycle respectively. Among the fixed costs, depreciation and interest on fixed capital were the major items under shade nets. Interest on fixed capital was Rs. 28,355.54 accounting for 8.65 and 9.22 per cent and depreciation was Rs. 25,535.95 accounting for 7.79 and 8.30 per cent in each cycle. The other fixed costs were land revenue Rs. 250 accounting for 0.07 and 0.08 per cent and rental value of owned land Rs. 8750 accounting for 2.67 and 2.84 per cent in each cycle respectively.

The analysis of cost structure of tobacco nursery cultivation revealed that it was more for shade net farmers. This was due to distinctly higher use of human labour, application of exclusive inputs like coco peat and red soil.

It is clear that from Table.3 there was no leasing in activity among the selected farmers and hence the cost A_1 and cost A_2 were the same. On an average, the total cost of cultivation (cost C_2) was higher with Rs. 3,27,600.06 and Rs. 3,07,413.22 during cycle- 1 and 2.

The details of physical output and gross returns per hectare of tobacco nurseries are presented in Table .4. On an average, the yield of main product per hectare was 34,55,496 and 34,75,496 seedlings during cycle- 1 and 2 respectively. The shade net nurseries realized a gross income of Rs. 17,27,748 and Rs. 17,37,748 during cycle- 1 and 2. The net income was higher under shade net nurseries with Rs. 14,00,147.94 and Rs. 14,30,334.78 during cycle- 1 and 2.

From Table. 5 it can be inferred that farm business income which indicates returns to owned resources like land, capital and labour was Rs. 14,46,493.48 and Rs. 14,76,260.32. Family labour income was another measure of farm efficiency which represents returns to farmers own labour and family labour. Shade net nurseries derived more family labour income of Rs. 14,09,387.94 and Rs. 14,39,154.78 during cycle- 1 and 2. It was noticed that the shade net nurseries were efficient in utilization of resources in the cultivation of tobacco seedlings. Farm investment income was a measure that indicated returns to fixed capital. It was Rs. 14,37,253.48 and Rs. 14,67,440.32 during cycle- 1 and 2. Shade net nurseries were able to secure Rs. 5.27 and Rs. 5.65 during cycle- 1 and 2 per every rupee spent.

Conclusions

The average size of the farm was 2.37 ha. On an average 846.18 and 780.15 man days were utilized per hectare by shade net farmers during cycle- 1 and 2 respectively. The total cost of cultivation per hectare of tobacco nursery under shade nets was Rs. 3,27,600.06 and Rs.3,07,413.22 during cycle- I and 2 respectively. The shade net nurseries realized a gross income of Rs. 17,27,748 and Rs. 17,37,748 during cycle- 1 and 2.

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Table.1 Family composition and family labour contribution under shade nets (in number)

S. No	Particulars	Shade nets
1	Family Composition	
	a. Male	1.89 (39.45)
	b. Female	1.69 (35.28)
	c. Children	1.21 (25.26)
	Total	4.79 (100)
2	Farm Family Workers	
	a. Male	1.45 (59.18)
	b. Female	1.0 (40.81)
	c. Children	-
	Total	2.45 (100.00)

Note: Figures in parentheses indicate percentages to the total

Economics of tobacco nurseries under shade nets in vinukonda region of Guntur district, Andhra Pradesh

Table.2. Cost of cultivation of tobacco seedlings component wise under shade nets
(in Rupees per ha)

S. No.	Particulars	Shade net	
		Cycle-1	Cycle- 2
1.	Variable costs		
a.	Human labour	169236 (51.65)	156030 (50.75)
	Owned	9240 (2.82)	8820 (2.86)
	Hired	159996 (48.83)	147210 (47.89)
b.	Bullock labour	-	-
	Owned	-	-
	Hired	-	-
c.	Tractor power	6618 (2.02)	336 (0.10)
	Owned	1884 (0.57)	336 (0.10)
	Hired	4734 (1.45)	-
d.	Seeds	10150 (3.09)	10330 (3.36)
e.	Manures and fertilizers	13423.8 (4.09)	13502.4 (4.37)
	Manures	6875 (2.09)	6875 (2.22)
	Fertilizers	6548 (2.00)	6627.4 (2.15)
f.	Plant protection Chemicals	1475 (0.45)	550 (0.17)
g-	Irrigation charges	1126.41 (0.34)	1214.62 (0.39)
h.	Mulching material	-	-
i.	Coco peat	56000 (17.09)	56000 (18.21)
J.	Red soil	5000 (1.52)	5000 (1.62)
k.	Interest on working Capital	1679.36 (0.51)	1558.71 (0.50)
	Total variable costs	264708.57 (80.8)	244521.73 (79.54)
2.	Fixed costs		
a.	Land revenue	250 (0.07)	250 (0.08)
b.	Depreciation	25535.95 (7.79)	25535.95 (8.30)
c.	Rental value of owned land	8750 (2.67)	8750 (2.84)
d.	Interest on fixed capital	28355.54 (8.65)	28835.54 (9.22)
	Total fixed costs	62891.49 (19.2)	62891.49 (20.46)
3.	Total costs	327600.06 (100.00)	307413.22 (100.00)

Note: Figures in parentheses indicate percentages to the total.

Table 3 Cost concepts in tobacco seedlings production under shade nets
(Rs. per ha)

S. No	Particulars	Shade net	
		Cycle- 1	Cycle- 2
1	Cost A1/A2	281254.52	261487.68
2	Cost B1	309610.06	289843.22
3	Cost B2	318360.06	298593.22
4	Cost C1	318850.06	298663.22
5	Cost C2	327600.06	307413.22
6	Cost C3	360360.06	338154.54

Table 4 Output and returns per hectare of shade net tobacco nurseries
(Rs. per ha)

S. No.	Particulars	Units	Shade net	
			Cycle-1	Cycle- 2
1	Yield in physical units			
a.	Main product	seedlings	3455496	3475496
b.	Byproduct	-	-	-
2	Yield in monetary units			
a.	Main product	Rupees	1727748	1737748
b.	By product	-	-	
3	Gross returns	Rupees	1727748	1737748
4	Cost of cultivation	Rupees	327600.06	307413.22
5	Net returns	Rupees	1400147.94	1430334.78

Economics of tobacco nurseries under shade nets in vinukonda region of Guntur district, Andhra Pradesh

Table 5 Measures of farm income in production of tobacco seedlings under shade nets
(Rs. per ha)

S. No.	Particulars	Shade net	
		Cycle-1	Cycle- 2
1	Gross income	1727748	1737748
2	Net income	1400147.94	1430334.78
3	Farm business income	1446493.48	1476260.32
4	Family labour income	1409387.94	1439154.78
5	Farm investment income	1437253.48	1467440.32
6	Returns per rupee of expenditure	5.27	5.65