

HOW PROFITABLE IS THE CULTIVATION OF REGULATED CASH CROP? SOME INSIGHTS FROM COST OF CULTIVATION IN FCV TOBACCO IN NORTHERN LIGHT SOILS OF ANDHRA PRADESH

K. VISWANATHA REDDY, K. SANDEEP, M. SHESHU MADHAV AND L. K. PRASAD

ICAR-Central Tobacco Research Institute, Rajahmundry-533105, Andhra Pradesh, India

Corresponding Author: vishwanatha.reddy@icar.gov.in

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FCV tobacco is a regulated commercial crop, valued for its high farm income, provides livelihood to a sizeable population, and contributes significant export revenue (Rs 9740 Cr, 2022-23) to the national economy. It is believed that FCV tobacco, a commercial crop, with regulated production and marketing, generates more profit than other commercial crops cultivated in the country. The cost of cultivation studies is highly significant for policy formation, and planning price support measures in commercial crops. This paper has studied the economics of FCV tobacco in NLS (Northern Light Soils) of Andhra Pradesh. A multistage random sampling technique was used to provide a representation of all the registered FCV tobacco growers. The study revealed that with a productivity of 1078 kg/acre, and an average price of Rs245/kg, the gross income was Rs 2,64,110/acre, the cost of cultivation recorded was Rs 1,46,203/acre, arriving at a net income of Rs 1,17,907/acre. The cost of production was Rs 136/kg and profitability was Rs 109/kg during the year 2022-23. However, in the NLS region, the breakdown of total cost into major cost components revealed that the share of curing cost was 43%, the share of labour cost was 31% whereas the remaining 26% was incurred on material cost. Thus, the policy implications suggest that to sustain the profitability of FCV tobacco farming, there is a need for fuel-saving and labour-saving technological interventions to reduce the cost of cultivation. Further, the cost of cultivation needs to be factored into price determination to ensure remunerative prices and augment farmers' income.

INTRODUCTION

FCV tobacco is a regulated commercial crop that is highly valued for its potential to generate substantial farm income. It supports the livelihoods of a significant population and contributes considerably to export revenue, amounting to Rs 9,740 crores in 2022-23, for the national economy.

It is believed that regulated production and marketing of FCV tobacco led to higher profits compared to other commercial crops grown in the country. FCV tobacco cultivation in Andhra Pradesh is unique, with distinct production domains Northern Light Soil (NLS), Southern Light Soil (SLS), and Southern Black Soil (SBS) each characterized by varying climatic conditions, resource availability, crop varieties, land holdings, and socioeconomic factors. These variations lead to significant differences in cultivation costs per unit area across domains. Tobacco growers across the soil regions could realize high prices and reap the benefits of a technology-driven e-auction system. Due to the increase in small and tenant farmers, there is a declining viability of tobacco cultivation in Andhra Pradesh. Hence, one should find ways of reducing the cost of production and increasing productivity to improve the returns per hectare. Thus, this study aims to assess the cost of cultivation of FCV tobacco in the NLS region of Andhra Pradesh, providing essential insights for sustaining profitability and supporting farmers' livelihoods. To analyze the region-wise cost of cultivation for FCV tobacco in Andhra Pradesh, considering factors like soil, climate, and farm size in the NLS region of Andhra Pradesh to estimate production costs by providing standardized guidelines for farmers, allowing them to track expenses such as labour, fertilizers, irrigation, and machinery.

Data and Methodology

Sample size and selection of farmers in a soil region

For the computation of the cost of production of FCV tobacco for the different soil regions of Andhra Pradesh, a sample list of FCV tobacco farmers for the cost of production survey was taken

Soil Region	Area (ha)	No. of Registered growers	Sample farmers/ APF	No/ of AFPs	Total sample farmers
NLS	20751	12952	40	5	200

based on the number of barns, categorized into four classes within the region. Further, in each auction platform of the region, a sample of 10 farmers was selected under each category.

Data Collection: The cost of cultivation data is collected by Field Investigators. Project scientific staff i.e. Co-Principal Investigators have monitored and supervised the data collection by the field investigator under the overall guidance of the Principal Investigator.

Methodology for Estimation of Cost of Cultivation

The farm costs concepts classified by the Commission for Agricultural Costs and Prices (CACP), Ministry of Agriculture and Farmers' Welfare, Govt. of India, will be employed to estimate the cost of cultivation of FCV tobacco in different soil regions of Andhra Pradesh.

Cost Concepts

- Cost A_1** = All the actual expenses in cash and kind incurred in production by the farmer
- Cost A_2** = Cost- A_1 + rent paid for leased-in land
- Cost B_1** = Cost A_1 + interest on the value of owned fixed capital (excluding land)
- Cost B_2** = Cost B_1 + rental value of owned land
- Cost C_1** = Cost B_1 + imputed value of family labour
- Cost C_2** = Cost B_2 + imputed value of family labour

In addition to the details of costs, the following analytical indicators will be investigated in the project.

Farm Income Measures

Net income over Cost C_1 = Gross income – Cost C_1

Net income over Cost C_2 = Gross income – Cost C_2

RESULTS AND DISCUSSION

Unlike other commercial crops, the FCV tobacco production system is very unique in India. FCV tobacco is cultivated in the distinctive production domains (NLS, SLS, and SBS) in Andhra Pradesh. The climatic conditions, resource availability, varieties cultivated, size of land holding, and socio-economic conditions vary across each production domain. As a result of variation in these factors, the cost of cultivation per unit area significantly differs in each production domain. Keeping this aspect in view, the present study is proposed to assess the cost of cultivation in FCV tobacco with special reference to Northern Light Soil (NLS) of Andhra Pradesh.

Estimation of Cost of cultivation in FCV Tobacco in the NLS region

Material inputs in FCV Tobacco cultivation

FCV tobacco grown in the NLS region of Andhra Pradesh involves intense and regular use of fertilizers, pesticides, and weedicides. The fertilizers, and chemicals in the NLS region of Andhra Pradesh are Calcium ammonium nitrate (CAN), Sulphate of Potash (SOP), Urea, Di-ammonium phosphate (DAP), 20.20.0.13, and Ammonium Sulphate. Overall, NLS region tobacco growers are applying high amounts of CAN, DAP, and SOP fertilizers. The plant protection chemicals used by the growers are Confidor, Super Confidor, Corogen, Takomi, Proclaim, Fame, Actara, Beam, Rogar, and biological like Neem leaf, cow milk, vermicompost, and neem oil. Thus, farmers in the NLS region are using large amounts of chemical fertilizers and pesticides. The average material input cost per acre in the NLS region ranged from Rs. 31400/acre to Rs. 37329/acre.

Material input cost in FCV Tobacco in the NLS region

Material inputs	1 Barn	2 Barn	3 Barn	4 Barn	Avg.
Seedling	6883	6664	6858	6852	6814
Fertilizer	18681	18982	20591	22939	20298
Insecticides	6535	5754	5812	7539	6410
Total	32099	31400	33261	37329	33522

Curing costs in FCV Tobacco in the NLS region

Curing Costs					
	1 Barn	2 Barn	3 Barn	4 Barn	Average
Avg. curing cost	55044	53006	56006	55983	55009

Labour Cost for different farm operations

FCV tobacco is a labour-intensive crop, and more labours are needed in the cultivation, harvesting, and post-harvest operations. The total field labour is classified into human labour, bullock labour, and machine labour, and calculated the costs are based on local market wages. The details of the average number of labours per acre and wage rates for different operations in tobacco farming in NLS, SLS, and SBS regions respectively. In the Northern Light Soil region, maximum human labour is employed for irrigation followed by removing soil from leaves, and inter-cultivation operations. Tractor labour is highly employed for green leaf transportation to the barn, land preparation, marking, and inter-cultivation operations while bullock labour is for inter-cultivation and marking operations. The labour cost per acre in different auction platforms in the NLS region ranged from Rs. 35114 to Rs. 47171.

Labour input cost in FCV Tobacco in the NLS region

Labour input cost				
1 Barn	2 Barn	3 Barn	4 Barn	Avg.
39809	40951	39371	40173	40076

Curing costs in the NLS region

The curing cost per acre in different auction platforms in the NLS region ranged from Rs. 53006

to Rs. 56006. Among the curing costs, fuel and labour costs are the two major costs. The average curing cost was nearly Rs. 55009/ acre for the NLS region.

Average share of the total cost of cultivation/acre of FCV tobacco crop in the NLS region

From the analysis, the breakdown of the total cost of the three major variable components; material cost, labour cost, and curing cost in the NLS region, the average share of the material cost was 26%, the average labour cost was 31% whereas the remaining 43% was incurred on curing costs.

Cost of cultivation of FCV tobacco in NLS region of Andhra Pradesh, (Rs. /acre)

The operation-wise cost of cultivation of owner farmers in three regions of Andhra Pradesh is presented in Table 24. It can be observed that the average cost of cultivation of FCV tobacco in the Northern Light Soil region in 2022-23 is Rs. 260203.

Costs of cultivation (Rs/acre)		NLS
A	Cultivation costs	
i	Material inputs	33522
ii	Labour Cost	40471
iii	Curing Cost	55009
iv	Depreciation and maintenance of implements and farm buildings	8970
v	Interest on working capital	2400

B Cost -A1 (i+ii+iii+iv+v)	140373
C Rental value	
i Rental Value of leased in land	40000
ii Rental Value of leased in barn	20000
D Cost - A2 (Cost - A1+rental values of leased in land and leased in barn)	200373
i Interest on the value of owned capital assets (excluding land)	2050
E Cost-B1 (Cost A1 + interest on value of owned fixed capital excluding land)	142423
F Cost-B2 (Cost-B1+ rental value of land+ barn)	202423
i Imputed value of family labour	3780
G Cost-C1 (Cost-B1+Imputed value of family labour)	146203
H Cost-C2 (Cost-B2+Imputed value of family labour)	206203

FCV Tobacco Productivity and Average Prices across the Soil Regions of Andhra Pradesh during 2022-23

Farmers in different soil regions realize different grades of FCV tobacco like Grade I, Grade II, Madu, and Green. The yield performance of tobacco in the Northern Light Soil region is more per acre (1078kg/ha) compared to the state average (812kg/ha).

Particulars	NLS	Andhra Pradesh
Productivity (kg/ acre)	1078	812
Price (Rs/kg)	245	226
Gross income (Rs/ acre)	264110	183707

Cost of cultivation in FCV tobacco in the NLS region during 2022-23 for own farmers (Rs./acre)

In the NLS region, the gross income realized by the farmers was Rs 2, 64,110/acre, the cost of cultivation was Rs. 1, 46,203/acre and the net

income realized was Rs. 1, 17,907/acre during 2022-23.

Particulars	NLS	Andhra Pradesh
Gross income (Rs/ acre)	264110	183707
Cost of cultivation* (Rs/acre)	146203	139574
Net Income (Rs/acre)	117907	44133
Cost of production (Rs/kg)	136	152
Profitability (Rs/Kg)	109	74

*Excluding the rental value of land and barn

Cost of cultivation of FCV tobacco in the NLS region during 2022-23 for Leased Farmers (Rs./acre)

In NLS region, the gross income realized by the farmers was Rs 2, 64,110/acre, the cost of cultivation was Rs. 2, 6,203/acre and the net income realized was Rs. 57,907/acre during 2022-23.

Particulars	NLS	Andhra Pradesh
Gross income (Rs/ acre)	264110	183707
Cost of cultivation\$ (Rs/ acre)	206203	160364
Net Income (Rs/acre)	57907	23343
Price (Rs/kg)	245	226
Cost of production (Rs/kg)	191	198
Profitability (Rs/kg)	54	27

\$- Including the rental value of land and barn

Income realized in FCV tobacco cultivation in the NLS region during 2022-23

Income realized by own farmers in the NLS region was around Rs. 1, 17,907/acre) and Income

realized by lease farmers in the NLS region was around Rs. 57,907/acre during 2022-23.

Particulars	NLS	Andhra Pradesh
Net income-own farmers (Rs./acre)	117907	44133
Net Income-tenant farmers (Rs./acre)	57907	23343
Profit- own farmers (Rs./kg)	109	74
Profit-lease farmers (Rs./kg)	54	27

Conclusion and Policy Implications

The primary cost components in the cultivation of Flue-Cured Virginia (FCV) tobacco include material input costs, labour costs, and curing costs. In the NLS region of Andhra Pradesh, these costs have been estimated as follows: curing costs account for 43% of the total, labour costs represent 31%, and the remaining 26% are attributed to material costs. Estimating the cost of cultivation for FCV tobacco production is crucial for policymakers as it helps in formulating supportive agricultural policies aimed at the overall development of the tobacco sector. The findings

indicate that to maintain the profitability of FCV tobacco farming, there is a pressing need for technological interventions that save fuel and labour. This would help reduce the expenses associated with curing and labour in FCV tobacco farming, thereby enhancing farmers' incomes and contributing to the prosperity of the rural economy. Moreover, it is essential to consider the cost of cultivation when determining prices, alongside demand and supply factors in the FCV tobacco market. This approach would ensure that farmers receive remunerative prices, improve their incomes, and facilitate the sustainability of FCV tobacco farming in the region.

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