

## ECONOMICS OF TOBACCO AND ITS ALTERNATIVE CROPS IN NELLORE AND PRAKASAM DISTRICTS OF ANDHRA PRADESH

L.KRISHNA TEJA<sup>1</sup>, S. RAJESWARI<sup>2</sup>, I. BHAVANI DEVI<sup>3</sup> & B. RAVINDRA REDDY<sup>4</sup>

<sup>1</sup>Research Scholar, Department of Agricultural Economics, S.V. Agricultural College, Andhra Pradesh, India

<sup>2</sup>Assistant Professor & Head, Department of Agricultural Economics, S. V. Agricultural College, ANGRAU, Andhra Pradesh, India

<sup>3</sup>Professor and Special officer, Institute of Agri-Business Management, ANGRAU, Andhra Pradesh, India

<sup>4</sup>Assistant Professor, Department of Statistics and Mathematics, S. V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

### ABSTRACT

Present study investigates the economics of FCV tobacco and its alternative crops in southern light and southern black soils of Andhra Pradesh. Nellore and Prakasam districts were purposively selected for the study, where it was grown extensively in almost 958 villages across 13 Tobacco Auction Platforms (TAPs). 156 tobacco farmers and 78 non-tobacco farmers, a total of 234 farmers were surveyed across 13 TAPs in both districts using a pre-tested schedule adopting a multistage random sampling. Primary data collected was pertained to agricultural year 2013-14. Cost of cultivation aspects for tobacco and its alternative crops viz., bengalgram, redgram and paddy were worked out per hectare and presented in tables. Cost of cultivation per hectare of FCV tobacco was ₹ 1,16,918, which was highest, followed by paddy (₹ 63,992), bengalgram (₹ 53,942) and redgram (₹ 41,672). When gross returns per hectare were compared FCV tobacco earns ₹ 1,47,000, which was highest, when compared with paddy (₹ 78,000), bengalgram (₹ 60,112) and red gram (₹ 52,146). Net returns from FCV tobacco (₹ 30,081) was highest and followed by paddy, redgram and bengalgram i.e., ₹ 14,007, ₹ 10,473 and ₹ 6,170 respectively. Return per rupee expenditure was noticed to be highest in FCV tobacco (1.26) followed by redgram (1.25) paddy (1.22) and bengalgram (1.11). FCV tobacco was observed as more profitable, as it earned more net returns. The next best alternate crop is redgram in un-irrigated conditions and paddy in irrigated conditions

**KEYWORDS:** FCV Tobacco, Alternative crops to Tobacco, Economics of Tobacco, Southern Black Cotton Soils, Nellore and Prakasam, Andhra Pradesh

### INTRODUCTION

In Indian Agriculture scenario tobacco occupies a unique position, though the area under this crop is relatively small i.e., 0.45 million ha with annual production of 815 million kg of cured leaf, out of which 300 million kg is Flue cured Virginia (FCV) tobacco. Tobacco crop provides employment to about 40 million people directly or indirectly including 6 million farmers in the country. India ranks fifth largest exporter of tobacco in the world after Brazil, USA, Malawi and Turkey. India is the third largest producer of tobacco in the world after China and Brazil. Majority of the states grow one type or the other to a greater or lesser extent, significantly influencing the economy and prosperity of the farming community. FCV tobacco contributed a substantial amount of excise revenue of ₹ 19,255 crore and a foreign exchange of ₹ 5,652.17 crore in 2014-2015. In erstwhile Andhra Pradesh, FCV tobacco is grown in an area of 1,08,737 ha in East

Godawari, West Godawari, Khammam, Krishna, Guntur, Prakasam, Nellore, Karimnagar and Warangal districts, with a total production of 213.93 million kg of leaf. (Tobacco Board, 2013-14). The tobacco growing regions in Andhra Pradesh may further be classified into Northern Light Soil (NLS), Southern Light Soil (SLS), Northern Black Soil (NBS), Central Black Soil (CBS) and Southern Black Soil (SBS) based on agro-climatic conditions. Nellore and Prakasam districts of Andhra Pradesh are endowed with southern light soils and southern black cotton soils which are most suitable for FCV tobacco cultivation. Tobacco use results in severe societal costs like reduced productivity, health-cost burdens and environmental damage (Anon, 1999). In recent years, there has been considerable debate about the social, environmental and economic impact of tobacco growing, especially in developing countries. Organizations such as the Framework Convention Alliance and the World Health Organization's Framework Convention on Tobacco Control (FCTC) are calling for tobacco farmers to be encouraged to switch to alternative crops. Government of India is a signatory to FCTC, the global public health treaty under the auspices of WHO aimed at reducing tobacco supply. (WHO, 2005)

Globally several investigations were carried out to find alternative crops for tobacco. Existing studies indicate that farmers find it difficult to shift from tobacco to alternative crops because the cultivation of tobacco is considered profitable in monetary terms (Hiremath, 2000; Anon., 2006; Mahadevaswamy *et al.* (2006); Anon., 2007 and Kumar *et al.*, 2010).

Keeping this aspect in view, the present study was conducted to investigate the costs and returns of FCV tobacco and its alternative crops with special reference to southern light soils and southern black cotton soils of Nellore and Prakasam districts of Andhra Pradesh.

## **MATERIALS AND METHODS**

Nellore and Prakasam districts were purposively selected for the study as FCV tobacco is grown in southern light soils and southern black cotton soils of these districts in almost 958 villages across 13 Tobacco Auction Platforms (TAPs). A total of 156 tobacco growers and 78 non-tobacco growers were selected randomly from 13 Tobacco Auction Platforms *viz.*, Vellampalli-I, Vellampalli-II, Ongole-I, Ongole-II, Tangutur-I, Tangutur-II, Kondepi, Podili-I, Podili-II, Kandukur-I, Kandukur-II, Kaligiri and D.C. Palli, making a total sample size of 234. From each Tobacco Auction Platform 12 tobacco growers and 6 non-tobacco growers were selected randomly. The information related to the present study was collected using a well- defined and pre-tested schedule through personal interview method. Detailed information was collected and presented in tabular representation. Simple statistical tools like averages and percentages were used to compare and interpret the results properly. Data in the present study pertained to the agricultural year 2013-14. Alternative crops for FCV tobacco in the study area were observed as redgram, bengalgram and paddy. Costs and returns for all the four crops were worked out for hectare and presented in detailed.

## **RESULTS AND DISCUSSIONS**

Labour utilization, material inputs utilization and cost of cultivation, yield, gross returns, net returns, and returns per rupee expenditure aspects of FCV tobacco, bengalgram, redgram and paddy were presented in this section and subjected to comparison.

### **Labour Utilization Pattern in Tobacco and its Alternative Crops**

Total field labour of all four crops has been classified into human labour, cattle labour and machinery labour and presented in the Table 1.

Table 1: Labour Utilization

Particulars	Human Labour (Mandays Per Hectare)	Cattle Labour (Cattle Pair Days Per Hectare)	Machine Labour (Hours Per Hectare)
<b>FCV Tobacco</b>	194.9	10.31	11.25
<b>Bengalgram</b>	24.79	-	21.9
<b>Redgram</b>	33	-	18.98
<b>Paddy</b>	103.54	-	5.58

Human labour is one of the most crucial factors of production and also a major item of cost structure influencing the cultivation of any crop. Human labour was used for land preparation, transplanting, manure and fertilizer application, weeding, topping and desuckering, application of plant protection chemicals, harvesting, leaf tying, loading into barn, curing, grading, and baling in case of FCV tobacco. While in case of bengalgram and redgram operations such as sowing, manures, fertilizers and plant protection chemicals application, weeding, harvesting and threshing operations were performed by human labour. Nursery raising, transplanting and irrigation were the additional operations performed in paddy cultivation, apart from the regular operations.

The total human labour requirement for FCV tobacco, paddy, redgram and bengalgram was 194.90, 103.54, 33 and 24.79 mandays respectively. It was clearly observed that FCV tobacco required 194.90 mandays, which was almost eight times more than human labour required for bengalgram, six times more than redgram, two times more than the paddy, justifying the statement that, tobacco is a labour intensive crop.

Cattle labour utilization was observed as 10.31 cattle pair days in tobacco cultivation, while it was substituted by machinery labour in bengalgram, redgram and paddy. Marking lines in the field for transplanting and intercultivation are the two important operations done by cattle labour in tobacco fields.

Machinery labour was prevalent in bengalgram (21.9 hours), redgram (18.98 hours), tobacco (11.25 hours) and paddy (5.58 hours) in their decreasing order of magnitude. Summer Ploughing, levelling, sowing, spraying and threshing operations were observed in bengalgram and redgram, while its utilization is limited to land preparation in tobacco and paddy.

#### Material Input Utilization in FCV Tobacco and its Alternative Crops

Production of a commodity not only requires resource services *viz.*, human labour, cattle labour, machinery labour *etc.*, but also, material inputs like seeds, manures, fertilizers, plant protection chemicals *etc.*, the details of which were presented in Table 2.

**Table 2: Material Input Utilization**

Sl. No	Particulars	Units	FCV Tobacco	Bengalgram	Redgram	Paddy
1	Seed/Seedlings	Kgs/Trays	5.58	136	11.75	75
2	FYM	Tonnes	1.90	0.18	1.03	0.95
	N	Kgs	59.73	67.25	65	167.5
	P	Kgs	73.93	57.78	51.7	125
	K	Kgs	42.13	-	-	71.13
	S	Kgs	55.23	8.1	7.43	-
3	Plant protection chemicals					
	Liquids	Liter	0.33	5.73	2.35	6.83
	Dusters	Kgs	0.09	3.35	2.1	3.35
4	Sucker out	Liter	0.05	-	-	-
5	Fuel	Tonnes	5.15	-	-	-
6	Packaging material	Kgs	12.50	-	-	-

In FCV tobacco, seedlings were transplanted into field rather than sowing, which were arranged in trays, each tray accommodates approximately 1,696 seedlings. 5.58 trays were used for transplantation. Seed rate was observed as 136, 11.75 and 75 kg per hectare in bengalgram, redgram and paddy respectively. On an average, FYM was used in the order of 1.90, 1.03, 0.95, 0.18 tonnes per hectare for tobacco, redgram, paddy and bengalgram respectively. The application of N, P, K and S through chemical fertilizer was 59.73, 73.93, 42.13 and 55.23 kg per hectare in tobacco, while it was 67.25, 57.78, 0 and 8.1 kg per hectare respectively in bengalgram. It was 65, 51.7, 0 and 7.43 kg per hectare in redgram. N, P and K was used at the rate of 167.5, 125, 71.13 kg per hectare, which was highest in case of paddy crop.

Plant protection chemicals, in the form of liquids was applied at the rate of 6.83, 5.73, 2.35 and 0.33 liter per hectare in their decreasing order of magnitude in case of paddy, bengalgram, redgram and tobacco, while dusters were used at the rate of 3.35, 3.35, 2.1, 0.09 kg per hectare, in case of paddy, bengalgram, redgram and tobacco respectively.

Apart from common material inputs used, tobacco crop used "Sucker out", a suckercide at the rate of 0.05 liter per hectare to suppress suckers. Fuel wood was used at the rate of 5.15 tonnes per hectare for flue curing purpose. Packaging material such as gunny bags and ropes was used at the rate of 12.50 kg per hectare, for bailing the cured leaves.

#### **Comparison of Cost of Cultivation of FCV Tobacco and its Alternative Crops**

An attempt was made to present the cost of cultivation particulars according to cost-wise for the FCV tobacco, bengalgram, redgram and paddy in Table 3.

The total cost of cultivation for tobacco was highest (₹ 1,16,918 per hectare) when compared with paddy (₹ 63,992 per hectare), bengalgram (₹ 53,942 per hectare) and redgram (₹ 41,673 per hectare). It was noticed that the major cost component, the human labour accounted to 41.67 per cent of total cost of cultivation in tobacco, 40.45 per cent in paddy, 19.80 per cent in redgram and 11.49 per cent in bengalgram. Cattle labour was used in tobacco, which accounted for 3.53 per cent of its cost of cultivation, while it was substituted by machine labour in the rest of crops. Machine labour contribution to total cost was highest in redgram (27.33 %), followed by bengalgram (24.36 %), tobacco (5.77 %) and paddy (5.23 %) in decreasing order of magnitude. Next vital component was manures and fertilizers, which accounted to 20.66 per cent in total cost of cultivation of paddy, followed by redgram (12.53 %), bengalgram (8.68 %) and tobacco (9.27 %). Plant protection chemicals accounted to 7.17 per cent in the total cost of cultivation of bengalgram followed by paddy (3.39 %), tobacco (2.84 %) and paddy (3.39 %).

**Table 3: Comparison of Cost of Cultivation of FCV Tobacco, Bengalgram, Redgram and Paddy (in Rupees)**

I	Operational costs	FCV Tobacco	% to Total cost	Bengalgram	% to Total cost	Redgram	% to Total cost	Paddy	% to Total cost
1	Human labour	48,725	41.67	6,198	11.49	8,250	19.80	25,885	40.45
	a) Family labour	493	0.42	540	1	1,135	2.72	3,660	5.72
	b) Hired labour	48,233	41.25	5,658	10.49	7,115	17.07	22,225	34.73
2	Bullock labour	4,124	3.53	-	-	-	-	-	-
	a) Owned	1,820	1.56	-	-	-	-	-	-
	b) Hired	2,304	1.97	-	-	-	-	-	-
3	Tractor	6,750	5.77	13,140	24.36	11,388	27.33	3,348	5.23
	a) Owned	1,800	1.54	3,564	6.61	2,238	5.37	672	1.05
	b) Hired	4,950	4.23	9,576	17.75	9,150	21.96	2,676	4.18
4	Seeds/Seedlings	7,812	6.68	6,446	11.95	999	2.4	2,325	3.63
5	Manures and Fertilizers	10,840	9.27	4,681	8.68	5,223	12.53	13,219	20.66
	a) Manures	1,330	1.14	95	0.18	464	1.11	532	0.83
	b) Fertilizers	9,510	8.13	4,587	8.5	4,760	11.42	12,687	19.83
6	Plant Protection Chemicals	3,323	2.84	3,866	7.17	530	1.27	2,169	3.39
7	Fuel wood	15,841	13.55	-	-	-	-	-	-
8	Transportation	340	0.29	-	-	-	-	-	-
9	Miscellaneous	706	0.6	-	-	-	-	-	-
10	Combined harvester	-	-	-	-	-	-	1,330	2.08
1	Interest on working capital	2,585	2.21	1,170	2.17	1,188	2.85	1,448	2.26
	<b>Total variable costs</b>	<b>1,01,046</b>	<b>86.42</b>	<b>40,182</b>	<b>74.49</b>	<b>27,578</b>	<b>66.18</b>	<b>49,723</b>	<b>77.7</b>
<b>II</b>	<b>Fixed costs</b>		0		0		0		0
1	Land revenue	500	0.43	500	0.93	500	1.2	500	0.78
2	Tobacco board license fee	6	-	-	-	-	-	-	-
3	Depreciation	896	0.77	435	0.81	594	1.43	807	1.26
4	Rental value of owned land	12,500	10.69	12,500	23.17	12,500	30	12,500	19.53
5	Interest on fixed capital	1,971	1.69	326	0.6	501	1.2	463	0.72
	<b>Total fixed costs</b>	<b>15,872</b>	<b>13.58</b>	<b>13,761</b>	<b>25.51</b>	<b>14,095</b>	<b>33.82</b>	<b>14,270</b>	<b>22.3</b>
<b>III</b>	<b>Total cost</b>	<b>1,16,918</b>	<b>100</b>	<b>53,942</b>	<b>100</b>	<b>41,673</b>	<b>100</b>	<b>63,992</b>	<b>100</b>

Interest on working capital was observed as highest in redgram, with 2.85 per cent of total cost of cultivation, followed by paddy (2.26 %), tobacco (2.21 %) and bengalgram (2.17 %).

In case of tobacco, fuel wood accounted to 13.55 per cent, which was second highest contributor to total cost, after human labour, while transportation and miscellaneous costs accounted to 0.89 per cent contribution to total cost.

Fixed costs include land revenue, depreciation, rental value of owned land, interest on fixed capital and tobacco board license fee, where rental value of owned land and land revenue was ₹ 12,500 and ₹ 500 respectively for all four crops. Depreciation accounted to 1.13 per cent in total cost of cultivation in redgram, while in case of paddy, bengalgram and tobacco; it was 1.26, 0.8 and 0.77 per cent respectively. Interest on fixed capital was noticed as 1.69 per cent of total cost of cultivation in tobacco, followed by redgram (1.20 %), paddy (0.72 %) and bengalgram (0.60 %).

Total variable cost was highest in case of tobacco (₹ 1,01,046), which is 2 folds greater than that of paddy, 2.5 folds greater than that of bengalgram, 3.6 folds greater than redgram. Total fixed costs was highest in case of tobacco (₹ 15,872) but accounts for only 13.58 per cent of total cost, which revealed that total variable cost was highly contributing to total cost rather than total fixed cost. However the expenditure on fixed costs was more or less similar in all the four crops.

#### Comparison of Costs and Returns between Tobaccos its Alternative Crops for the Agricultural Year 2013-2014

In this section, an attempt was made to present the costs and returns of tobacco, bengalgram, redgram, and paddy in Table 4. As the livelihood security of the farmers directly depends on this aspect, it was subjected to comparison.

Cost of cultivation per hectare of FCV tobacco was ₹ 1, 16,918, which was highest, followed by paddy (₹ 63,992), bengalgram (₹ 53,942) and redgram (₹ 41,672). It can be noticed that the cost of cultivation in FCV tobacco is nearly 3 folds greater than that of redgram, 2 folds greater than that of bengalgram and paddy.

**Table 4: Comparison of Costs and Returns between Tobacco and its Alternative Crops (in Rupees)**

	Particulars	FCV Tobacco	Bengalgram	Redgram	Paddy
<b>I</b>	<b>Costs</b>				
<b>i</b>	<b>TVC</b>	1,01,046	40,182	27,578	49,723
<b>ii</b>	<b>TFC</b>	15,872	13,761	14,095	14,270
<b>iii</b>	<b>TC</b>	1,16,918	53,942	41,673	63,992
<b>II</b>	<b>Returns</b>				
<b>i</b>	<b>Yield ( in quintals)</b>	15	17.18	11.78	65
<b>ii</b>	<b>Price (in Rupees)</b>	9,800	3,500	4,428	1,200
<b>iii</b>	<b>Gross returns</b>	1,47,000	60,112	52,146	78,000
<b>iv</b>	<b>Net returns</b>	30,081	6,170	10,473	14,007
<b>v</b>	<b>Gross margin</b>	45954.1	19,931	24,569	28,277
<b>vi</b>	<b>Returns per rupee expenditure</b>	1.26	1.11	1.25	1.22

Source: Field survey, 2013-14.

In this section, an attempt was made to present the costs and returns of tobacco, bengalgram, redgram, and paddy in Table 4. As the livelihood security of the farmers directly depends on this aspect, it was subjected to comparison.

Total variable costs per hectare was highest in case of FCV tobacco ie. ₹ 1, 01,046, followed by paddy (₹ 49,723), bengalgram (₹ 40,182) and redgram (₹ 27,578), while total fixed costs were observed highest in redgram (₹ 14,095) followed by paddy (₹ 14,270), FCV tobacco (₹ 15,872) and bengalgram (₹ 13,761).

When gross returns per hectare were compared FCV tobacco earns ₹ 1,47,000, which was highest when compared with paddy (₹ 78,000), bengalgram (₹ 60,112) and red gram (₹ 52,146). It was noticed that, gross returns from FCV tobacco was nearly 2 times higher than from paddy and 3 times higher than bengalgram and redgram. Net returns from FCV tobacco (₹ 30,081) was highest, followed by paddy, redgram and bengalgram *i.e.*, ₹ 14,007, ₹ 10,473 and ₹ 6,170 respectively. Return per rupee expenditure was noticed to be highest in FCV tobacco (1.26) followed by redgram (1.25) paddy (1.22) and bengalgram (1.11), which were observed as more or less similar, interestingly. However, it was well noticed that tobacco was a profitable crop with highest gross and net returns of ₹ 1,47,000 and ₹ 30,081, when net returns was considered as a criterion to judge next best alternative crops, paddy in irrigated conditions and redgram in un-irrigated conditions were observed as next best alternative crops to FCV tobacco

## CONCLUSIONS

From observations, it was noticed that cost of cultivation per hectare of FCV tobacco was ₹ 1,16,918, which was highest, followed by paddy (₹ 63,992), bengalgram (₹ 53,942) and redgram (₹ 41,672). It can be conclude that, FCV tobacco was more profitable, as it earned more net returns. The next best alternative crop was paddy in irrigated conditions and redgram in un-irrigated conditions. However, farmers were unable to cope up with government suggestions to switch over to alternative crops, such as bengalgram and redgram exclusively in southern black soils and southern light soils of Andhra Pradesh, because of higher price fluctuations in pulses and lesser demand. Particularly, in case of bengalgram, produce is frequently stocked in cold storages. Government need to accelerate the alternative farming approaches to FCV tobacco, since the tobacco farming is a menace to our environment and sustained economic condition of farmers, careful and systematic approaches should be adopted to promote alternative crops to FCV tobacco by giving input subsidies, minimum support prices and providing better extension services.

**REFERENCES**

1. Anonymous, 1999, Estimation of cost of management of tobacco related cancers. Rep. of ICMR Task Force Study (1990-96), Institute of Rotary Cancer Hospital, AIIMS, New Delhi.
2. Anonymous, 2006, Annual Reports 2005-06, All India Co-ordinated Research Project on Tobacco, Navile, Shimoga, Karnataka.
3. Anonymous, 2007, Status Report for Research Programmes on Alternative Crops to Tobacco, Central Tobacco Research Institute, Rajahmundry, Andhra Pradesh.
4. Hiremath, G.K., 2000, Economics of BIDI V/S competing crops. Paper presented In: Tobacco Nation. Sem. Nov, 29-30, 2000, Univ. Agric. Sci., Dharwad (India).
5. Kumar, M.D., Naik, D.C., Sridhara. S., Vageesh, T.S., Girijesh, G.K and Rangaiah, S. 2010. Investigation on economically viable alternative cropping systems for FCV tobacco (*Nicotiana tabacum*) in Karnataka. Karnataka Journal of Agricultural Sciences. 23(5): 689-692.
6. Mahadewaswamy, M., Giridhar, K and Harishukumar. 2006a. Comparative studies on a tobacco based sequential cropping systems in Karnataka. Tobacco Research. 32(2): 73-75.
7. Tobacco Board report, 2013-14. Ministry of Commerce & Industry, Department of Commerce, Government of India. <http://pib.nic.in/newsite/PrintRelease.aspx?relid=118692>
8. World Health Organization. 2005. WHO Framework Convention on Tobacco Control. WHO Press, Switzerland. [http://www.who.int/tobacco/framework/WHO\\_FCTC\\_english.pdf](http://www.who.int/tobacco/framework/WHO_FCTC_english.pdf)





