EPRA International Journal of Agriculture and Rural Economic Research (ARER)- Peer-Reviewed Journal
Volume: 14 | Issue: 2 | February 2026 | Journal DOI: 10.36713/epra0813| Impact Factor SJIF(2026): 8.801| ISSN: 2321 – 7847

COST AND RETURNS OF TOBACCO CULTIVATION IN PRAKASAM DISTRICT OF ANDHRA PRADESH

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Article DOI: https://doi.org/10.36713/epra26061
DOI No: 10.36713/epra26061

ABSTRACT----------
Tobacco ranks among the most economically viable and commercially valuable agricultural crops throughout the world. Not only is tobacco a drought-resistant, hardy plant that can be grown on land unsuitable for other profitable crops, but it creates direct or indirect jobs for 38 million people. Tobacco also represents a large portion of India's commercial crop exportation. Approximately 85% of the total amount of tobacco that India exports is FCV-type (flue-cured Virginia); additionally, the state of Andhra Pradesh (AP) produces about 99% of the total amount of FCV tobacco produced in India. The purpose of this research paper will be to provide an overview of the cost and return per acre, along with the input/output ratio between various sizes of farms and how to determine the disposal pattern and marketable surplus for each type of estate operating in the tobacco sector.

KEY WORDS: *Andhra Pradesh, Cost of Cultivation, FCV Tobacco----------*

INTRODUCTION

Agricultural activity dates back over 10,000 years ago to the earliest days of civilization in India. Agricultural and related activities contribute nearly one-sixth of the GDP (15.86%) in the year 2024 (Economic Survey, 2024-2025), and 60% of the workforce is employed in agriculture. Agricultural decline continues to be a concern for policymakers because two of three rural Indians economically rely on agriculture as their primary source of income. Agricultural production, as it exists today, is neither sustainable for economic development nor environmentally sustainable practice; a number of production methods utilized throughout India produce an abundance of food but with considerably lower yield levels than would exist if sustainable practices were implemented as agricultural input. Comparatively, agricultural post Independence production performed significantly better than pre-Independence production, as the overall performance of agriculture and all other related sectors improved during the decade of 2001 - 2011; however, during the same time frame, the GDP growth rate for agriculture was very low with relatively high levels of instability leading to increased vulnerability and stress among rural agricultural communities.

Almost all Indians live in rural areas; about 60% of these individuals earn an income from agriculture, thus indicating that development of the Indian economy is closely associated to its agricultural sector. Because agriculture provides a large number of jobs and incomes to the majority of the population, agriculture has a major impact on the quality of life for Indians. The high level of engagement of the working population (majority) in the agricultural sector demonstrates the agricultural sector's dominance in India. While some jobs related to agriculture have developed with economic increasing, over the years a number of occupations ancillary to agricultural production have been considered agricultural jobs. Accordingly, the contemporary definition of agriculture includes more than just farm production, but also includes forestry, fishery, animal husbandry, beekeeping, etc. Thus, agriculture is horizontally continuing to grow, and vertically agriculture encompasses more than merely what happens on the farm - it now includes the marketing, processing, and distribution of agricultural products. In addition, a wide variety of activities that support farmers with supplies (e.g. seed, fertilizer, credit, insurance, veterinary services) for farm production are also considered part of agriculture. Small farms are very common in countries where there is both a high population density and where there exists a high number of people who are attempting to develop the economy.

One among the crops that are grown commercially is Tobacco. This hardy and tolerant of short durations can survive in poor soil which would not allow any other crops to grow. The name of the plant is Nicotianatabacum although it is usually referred to as just 'Tobacco'.

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Tobacco is an herbaceous annual/perennial grown for its leaves in the Solanaceae family and classified as 'cured' (drying done without fermentation). It is a small bushy plant with a hollow stem and large leaves shaped like large flat ovals (one leaf) that are about 0.5 m long and 0.25 m wide. The plant produces large clusters of white, cream, pink or red flowers that are comprised primarily of tubular structures that measure 3.5 - 5.5 cm (1.25 - 2 in) long.

Tobacco is commonly considered either a seedling or as a biennial crop and originates in South America where many varieties continue to be used in manufacturing cigarette-type products today. The largest single exporter of Indian tobacco across all 5 continents and over 80 countries combined. Approximately 0.25% of India's land is used for tobacco production and there are approximately 400,000 hectares devoted to the growing of 700 million kg cured leaves annually, including approximately 260 million kg Flue Cured Virginia (cigarette type) tobacco.

There are also other forms of tobacco such as biding and chewing; however, the most popular uses today are cigarette, cigar, and cheroot. The commercial use of tobacco in India provides approximately 38 million people with both direct and indirect employment.

As a result of the commercial importance of tobacco production in India, Flue-Cured Virginia tobacco accounts for approximately 85% of the total value of tobacco exports from India with Andhra Pradesh producing 99% of India's FCV crop. Increased productivity along with lower cost of production will greatly improve the overall competitiveness of the Tobacco industry both domestically and globally.

Cured Flue Cured Virginia Tobacco (individual tobacco plant is harvested) forms an important component of the composition of cigarettes globally. Productivity increases will be achieved by determining costs and returns per hectare (acre) for various sizes of farm groups, developing the disposal patterns and marketable surplus of all types of tobacco based upon the various sizes of farm groups.

Review of Literature

Kidane and Ngeh (2015) found that the production of maize is more efficient than the production of tobacco in the Tabora region. This finding has the potential to change policymakers' views on whether farmers are better off dependent on tobacco versus maize and whether the country is improving its foreign exchange.

Sharma et al. (2017) used a number of macro-economic indicators to estimate the economic costs of tobacco in India and found that the economic cost of tobacco was Rs. 104,500 crores (US$ 22.4 billion), which was 1.16% of the gross domestic product. This number was 12% greater than all combined health expenditures by state and central governments for 2011–2012. The central excise revenue collected from all tobacco products in India for the same year represented only 17% of the economic costs of tobacco products.

Hossain and Rahman (2013) studied the socio-economic impacts of tobacco in Kushtia district of Bangladesh by examining some of the basic social and economic characteristics of tobacco growers, the environmental and health conditions of farmers, and identifying the factors that led to profits in producing tobacco. They also reported that tobacco growing had some negative environmental and health consequences, although it was highly profitable for short periods of time.

MATERIALS AND METHODS

The district of Prakasam in Andhra Pradesh is one of thirteen districts and has 46 blocks. The district will utilize a total of three mandals for this study. These included two selected mandals of Podili and Racherla. Four villages; Podili & Muga Chinthala from the Mandal of Podili and Gudimetta & Racherla from the Mandal of Racherla, were selected for the purpose of this study. A list of all tobacco farmers/respondents located in the Mandal of Podili as well as in the Mandal of Racherla was prepared with assistance from any head of both mandals' villages as well as the head auctioneer of the village tobacco board. The farmers/respondents included will be categorized into three sizes of landholding. After the farmers have been classified, 10% of all respondents classified into the three size categories will be chosen randomly from every size category in each of the villages studied. The total number of tobacco farmers that will be included in this study will be equal to 100. Of the total number of farmers chosen, 50 small farmers, 35 medium farmers and 15 large farmers will be sampled. The researchers of the study will be using a tabulation approach along with at least one statistical analysis method, respectively, to analyze the data in order to report on the results obtained in the research.

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RESULTS AND DISCUSSION

This research was done in Andhra Pradesh, specifically Prakasam District, based on interviews of farmers that were selected randomly from the two blocks in the district. This section of the paper will report findings and discuss those findings related to the objectives of this study. The structure of this report is by sub-section corresponding to each of the objectives of this research project. The objectives of the study are: Determine the cost of producing crops per acre and return on investment for each of the various-sized farm groups in the study.

Cost of Cultivation of FCV Tobacco-Inputs-wise

Table 1 displays the findings of the survey. For medium and large farmers, the average investment on human labour is 28200 Rs., which contributes 25.97 percent of their total cost of cultivation; 7000 Rs. for owned labor, 6.45 percent; 21200 Rs. for hired labor, 19.52 percent; 2.39 percent of tractor power investment; 4500 Rs. seed investment, 4.15 percent; 4300 Rs. land preparation, 3.96 percent; 15000 Rs. fertilizer, 13.81 percent; 2500 Rs. plant protection chemicals, 2.30 percent; 9800 Rs. for cutting tobacco leafs, 9.20 percent; curing, 4.51 percent; grading 8000 Rs.; 7.36 percent; and 48000 Rs. for weed control and harvesting, 31.68 percent.
Similarly, small farmers are also using 24750 Rs.

The first expenditure of small farmers was on human labor at 23.40 percent (24750 Rs.), secondly at 27.83 percent (12000 Rs.) for fertilizer, followed by 11.91 percent (4800 Rs.) for curing, 11.07 percent (4480 Rs.) for tractor power, 10.92 percent (8000 Rs.) for land preparation, 7.24 percent (500 Rs.) for plant protection and at 5.83 percent (3300 Rs.) for cutting.The below mentioned investments and their percentages are the typical expenses for three different categories of farmers (marginal, small, and large).

The total investment of Rs. 20,000/- in seeds represents 4.3% of the overall cultivation costs for marginal farmers. The total investment of Rs. 18,000/- in seed represents 4.3% of the overall cultivation costs for small farmers, and the total investment of Rs. 120,000/- in seed represents 4.3% of the overall cultivation costs for large farmers.

The below mentioned investments and their percentages are the typical expenses for three different categories of farmers (marginal, small, and large).

The total investment of Rs. 80,000/- in bullock labour represents 1.03% of the overall cultivation costs for small farmers, and the total investment of Rs. 130,000/- in bullock labour represents 5.85% of the overall cultivation costs for large farmers.

The total investment of Rs. 200,000/- in tractor rental represents 11.72% of the overall cultivation costs for small farmers, 4.22% of the overall cultivation costs for marginal farmers, and 2.86% of the overall cultivation costs for large farmers.

The total investment of Rs. 1,000/- in plant protection chemicals represents 12.0% of the overall cultivation costs for small farmers; Rs. 1,500/- in plant protection chemicals represents 1.99% of the overall cultivation costs for marginal farmers; and Rs. 10,000/- in plant protection chemicals represents 1.95% of the overall cultivation costs for large farmers.

The total investment of Rs. 22,000/- in fuel wood represents 3.20% of the overall cultivation costs for small farmers, 1.23% of the overall cultivation costs for marginal farmers, and 0.84% of the overall cultivation costs for large farmers.

The total investment of Rs. 5,000/- on tobacco board licences represents 1.63% of the overall cultivation costs for large farmers, and the total investment of 2,500/- in rental value of owned land represents 11.11% of the overall cultivation costs for large farmers.

All the above-stated expenses will be incurred by all three categories of farmers throughout the entire length of the season and will continue until harvest is complete.

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Table-1: Cost of Cultivation in FCV Tobacco cultivation in Prakasam district

Inputs	Marginal	Small	Medium and Large	Total
Tractor	2200	3000	2500	2567
Bullocks	1000	2000	1800	1600
Land Preparation	**3200**	**5000**	**4300**	**4167**
Seeds	4400	5000	4500	4633
Fertilizer	10000	12000	15000	12333
Pesticide	1500	2000	2500	2000
Paddy Husk	250	500	500	417
Input Cost	**19350**	**24500**	**26800**	**19383**
Seed Sowing	2000	1850	2200	2017
Weeding	2200	2800	3000	2667
Application of Fertilizers	1800	2000	2500	2100
Application of Pesticides	1500	1200	1800	1500
Application of Water	1200	1000	1000	1067
Cutting Tobacco Leaves in Field	9000	10000	9800	9600
Bulking Labour	3000	2900	2000	2633
Curing	4500	5000	4900	4800
Grading	4200	7500	8000	6567
Total Labour cost	13600	24750	28200	22183
Owned Labour	**15800**	**9500**	**7000**	**10767**
Thread	500	500	800	600
Gunny Bags	500	750	1200	817
Fire Wood (in Tonnes)	2500	5250	6500	4750
Rental Value of Barren	7500	10000	10000	9167
Curing Cost	**11000**	**16500**	**18500**	**15333**
Transport	500	1000	1500	1000
Commission	500	500	1200	733
Total Marketing Cost	**1000**	**1500**	**2700**	**1733**
Land Revenue	500	500	500	500
Rental Value of Owned Land	10000	12500	12000	8500
Interest on Fixed Capital	1200	2500	1800	1833
Depreciation	500	1500	1000	1000
Tobacco Board License	0	500	500	333
Fixed Cost	**12200**	**17000**	**15300**	**11833**
Rental Value of Lised in Land	10000	15000	12000	12333
Miscellaneous	500	1500	750	917
Total	70850	105750	108550	87882

Source: Primary data

Cost of production by different cost concepts

As indicated in Table-.2, there are some differences between the per acre costs of production for different forms of cost accounting - (i.e., Cost A1, Cost A2, Cost B, Cost C). The cost A1 figure provided represents the actual expenses incurred (the out of pocket) on each acre incurred by the farmer directly. The cost A2 figure provided will include the rental value of the land leased to the farmer along with the Cost A1. The Cost B figure provided will include the imputed value of the land owned by the farmer and the Cost A2. The Cost C figure provided will include the imputed values such as family labour and interest on fixed assets for which the Cost B has been provided. In all of the above costs, the per acre cost of production is consistently higher for irrigated farm holdings.

It is not possible to determine a specific per acre cost of production for any specific crop since there are different implications in the economics of the cost components used and how they are calculated. In reviewing the average costs of production by cost concept, the average total costs of production resolved by Cost A1 for medium and large farm operators is greater than for marginal and small farmers: Rs.44950 for a marginal farm operator versus Rs.67250 for a small farmer; Rs.76200 for a medium and large farmer; with an overall average for all sample farmers at Rs.58632 per acre. The average total costs resolved by Cost A2 demonstrate similar differences in average value for the marginal and small farmers versus the medium and large farmers, as well as the overall average for the total farmer sample. For marginal farm operator costs of production resolved using

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the Cost A2 will be Rs.55450 and for a small farmer costs will be Rs.88700, and for a medium and large farmer costs will be Rs.80250; with the overall average for all sample growers being at Rs.80250 per acre.

Total costs of production using Cost C indicate costs of Rs.87882 at the aggregate level for all farmer types. Therefore the average per acre costs of crop production at the aggregate level are higher for medium and large farmers (Rs.108550), than for small (Rs.105750) farmers and for marginal (Rs.70850) farmers.

Table 2: Cost of production by different cost concepts

Cost Concepts	Marginal	Small	Medium and Large	Cost Concepts
Cost A1	44950	67250	76200	58632
Cost A2	55450	80250	88700	67132
Cost B	57150	84750	92000	70298
Cost C	70850	105750	108550	87882

Source: Primary Data

Cost and returns in Tobacco crop per acre in different size of farm groups

The following table presents information on the cost of cultivation per acre; returns for the main and by-products (too much). Then, gross and net return, input-output ratio and finally the size of the farm are expected to affect both yield and price; this effect will be exhibited in the gross yield per acre on medium and larger farms. Gross return per acre on marginal farms is Rs. 69375/-, Rs. 1,05,000/- on small and Rs. 120000/- on medium to large farms; in total, they all have an average of Rs. 98750/- gross return per acre across the sample farms.

There is a significant positive correlation between size of farm and gross income (or gross return) per acre, as measured by the FCV tobacco production analysis discussed herein. Thus, the higher gross income per acre being reported for larger farms results from economies of scale within the 4 categories identified in this analysis. Economies of scale are due to either the more efficient and/or higher priced use of inputs; or the greater holding capacity and/or bargaining power associated with larger farms.

Estimates for net income (or net return) as per the definition provided earlier, i.e., net income = gross income - total costs, are presented in the following table. As previously stated, the principal point of interest is that the average net income per acre was calculated as a loss of approximately Rs. -1475/- for marginal farmers; however, they were the only size category to report a net loss and all small, medium and large farmers reported net positive incomes for their respective farm size. Furthermore, it appears from the analysis that the majority of farmers grow tobacco at a loss, i.e., farmers do not receive a sufficient return on investment, or capital invested into the production of tobacco.

According to Table 3, each rupee invested in the production of FCV tobacco yields an average return of Rs.1.12; the average output:input ratio is positively correlated with the size of the farm; however restricted to the medium and larger farms that provide higher output:input ratios relative to smaller/marginal farms. Similarly, within size group comparisons, the output:input ratios increase with increasing farm size. Because of the evidence contained herein, we conclude that all categories of farmers produce tobacco for less than their total costs of production. All categories of farmers are experiencing very low returns on each rupee invested thus confirming that farmers producing tobacco will continue to produce at a loss due to low yields and price uncertainty.

In conclusion, while this study indicates that there is little difference in output level between the various farming sizes, there are substantial differences in net return levels among the farmers. Thus, there is a direct relationship between output:input ratio and farm size; therefore, the larger the farmer the higher the output:input ratio, and vice versa, the smaller the farmer the lower the output:input ratio. Overall, the evidence from this study indicates that tobacco farming is unprofitable, and the returns on a farmer's investment in tobacco farming are extremely low. Overall, the nature of the output:input ratio variation across the multiple farm sizes confirms that farmers producing tobacco are experiencing loss due to the low and uncertain nature of yields. In addition, the average net margins for tobacco farming reflect an agriculture based largely on subsistence, and therefore would not be expected to provide sufficient satisfaction to meet the basic needs of farmers and will continue to experience loss.

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Table-3: Cost and returns in Tobacco crop per hectare in different size of farm groups

Particulars	Marginal	Small	Medium and Large	Total
Cost of Cultivation	70850	105750	108550	87882
Yield in tones per hectare	9.25	14	16	13.17
Gross Returns	69375	105000	120000	98750
Net Returns	-1475	-750	11450	10868
Input output ratio	0.98	0.99	1.11	1.12

Source: Primary Data

Due to the increase in productivity and the area being planted with tobacco, tobacco production has grown considerably. Rainfall, as well as the price of the crop, have had a major impact on the planting area of tobacco but productivity improvements have not influenced this area. Tobacco crops made up a large part of the crop rotation, followed by black gram, sugar cane and paddy. Resource use patterns within tobacco werey different based on size. Costs associated with growing tobacco varied based on sizes of holdings. Per hectare production costs/tobacco cultivation on small farms were higher than medium/large sized farms. The largest expense items associated with growing tobacco were the rental value of land, hired labour/fertiliser/manure/seed. There was a significant difference between the costs associated with tobacco production based on size.

CONCLUSION

The total cost (C) of cultivating one acre of land is Rs.87882, with the cost of cultivating an acre of medium/large farmers being the highest at Rs.108550, followed by small at 105750, and marginal at Rs.70850. While there is a positive correlation between the size of the farm and the gross income per acre obtained from cultivating FCV tobacco, the gross income obtained per acre on medium/large farms can be primarily attributed to economies of scale. Economies of scale result from either more intensive use of the inputs to produce an increased quantity of output or due to an increased ability to hold or negotiate the price of products.

Net income (I) is derived by subtracting the total cost C from the gross value of output. The most significant finding in the analysis is that the marginal farmers experienced a negative net income of Rs.-1475 from the cultivation of FCV tobacco while the small, medium and large farmers experienced a positive net return. This finding suggests that the majority of FCV tobacco farmers are not economically viable. Based on the data presented, the average return on investment (ROI) for cultivating crops is 1.12 for the cultivation of FCV tobacco. There is a positive correlation between the size of the farm and the output-to-input ratio. This ratio is greater on medium and large farms than on small farms. In intra-size group comparisons, the output-to-input ratios were positively correlated to farm size, indicating that marginal farms receive less output value than the total cost of their inputs. In summary, as indicated by the previous analysis, the cultivation of FCV tobacco is not economically viable; therefore, the income for every rupee invested in cultivation is low relative to other geographical areas studied. Overall the data indicate that there are significant variances in output-to-input ratios among FCV tobacco farmers, with many farmers experiencing losses due to low and uncertain yields from FCV tobacco cultivation, creating very low margins from their agricultural exploits.

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