



ALTERNATIVE CROPPING SYSTEMS TO FCV TOBACCO CULTIVATION IN INDIA

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Introduction

In the sixteenth century, tobacco was introduced to India by the Portuguese. With the advent of British colonial rule, tobacco cultivation began to be grown on a larger scale, particularly for export. Flue cured tobacco (FCV) tobacco has become one of the most well-known variety of tobacco farmed in India. Virginia, the state in which this method of curing tobacco was first created, is the name of the tobacco product commonly referred to as FCV tobacco or Virginia tobacco. The tobacco leaves are dried in a controlled environment with heat from flue pipes during the flue-curing process. FCV tobacco is very sought-after for use in cigarette manufacture since this process keeps the leaves' vibrant color and improves the flavor. India grew to become one of the world's top producers and exporters of this type, as FCV tobacco became a significant cash crop there over time.

In India, Tobacco crop is grown in an area of 0.45 M ha (0.27% of the net cultivated area) producing ~ 750 M kg of tobacco leaf. India is the 2nd largest producer and exporter after China and Brazil respectively. The production of flue-cured Virginia (FCV) tobacco is about 300 million kg from an area of 0.20 M ha while 450 M kg non-FCV tobacco is produced from an area of 0.25 M ha. In the global scenario, Indian tobacco accounts for 10% of the area and 9% of the total production (CTRI., 2023). Tobacco is one of the important commercial crops grown in India. It provides employment directly and indirectly to 45.7 million people and Rs. 6,529.30 crore in terms of foreign exchange to the national exchequer. A large share of the tobacco produced worldwide is FCV tobacco. The cultivation of FCV tobacco is primarily concentrated in the states of Andhra Pradesh,

Karnataka, and parts of Telangana, with smaller areas under cultivation in Tamil Nadu, Maharashtra, and Odisha. With clearly defined wet and dry seasons, these areas have favorable climates that made them perfect for growing this crop. India has long been a major producer of tobacco, especially Flue-Cured Virginia (FCV) tobacco, which boosts employment and exports while also being a major agricultural activity. However, there are growing calls for diversifying away from tobacco cultivation due to the negative health effects of tobacco usage as well as environmental and socioeconomic issues. World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) suggested promoting economically viable alternatives other than tobacco production in order to cut down on the supply of tobacco.

Challenges associated with FCV Tobacco Cultivation

Numerous health issues, including different forms of cancer, respiratory illness and cardiovascular disorders are associated with tobacco consumption. Moreover, tobacco cultivation itself associated with environmental impact. Cultivation of tobacco is resource-exhaustive as it is labour and energy-intensive and requires huge amount of water, fertilizer and pesticides. In addition, continuous cultivation of tobacco leads to soil and soil-microbe degradation. Growing FCV tobacco undoubtedly provides financial support for many farmers. But, handling and processing of tobacco leaves forces farmers to expose indirectly to nicotine consumption. In this regard, it is necessary that feasible alternative cropping methods be adopted to reduce the health and environmental risks associated with tobacco cultivation.

Alternative Cropping Systems to FCV Tobacco Cultivation

The move away from FCV tobacco growing requires the identification and promotion of alternative cropping methods. These substitutes need to be socially and economically acceptable to the farming communities in question, as well as environmentally sound. Several potential alternatives discussed here, with a focus on their adaptability to the regions currently engaged in tobacco cultivation.

- According to research, farmers find it challenging to switch from growing tobacco to other crops since tobacco is seen as a financially advantageous crop (Hiremath, 2000; and CTRI, 2007). In rainfed conditions, it is always safer to use intercropping systems rather than relying solely on crop failures. It was noted that a good substitution approach for tobacco growing would be mixed non-tobacco cropping patterns (Panchamukhi, 2000).

- Similar studies on bidi tobacco in Karnataka showed that sugarcane in irrigated regions and soybean and sorghum in rainfed areas can be effective tobacco substitutes. The benefit-cost ratio of tobacco and other crops, when briefly analyzed, firmly indicates that the returns on tobacco is higher than those of other crops when compared to FCV tobacco. According to preliminary research, there is no economically feasible alternative to FCV tobacco, although net returns from intercropping different crops, such as groundnut, red gram, soybean, and chilli, have been positive (WHO, 1997 and www.thehindu.co.in). According to Kaur (2002), farmers in Gujarat who transitioned from tobacco to multiple planting or intercropping with cotton had an increase in net return per hectare.

Similarly, in 2000 drought conditions forced the tobacco Andhra Pradesh farmers to plant other crops (like pulses, gingelly, maize, and soybean), which they discovered were not only cheaper to cultivate than tobacco but also viable substitutes (Sharma, 2000).

•Study conducted at Karnataka revealed that, hybrid cotton+chilli+groundnut and hybrid cotton+chilli+French bean can be economically viable alternatives to FCV tobacco for the farmers. None of the alternative sole crops tried were comparable to sole crop of FCV tobacco in terms of net returns. However, chilli was the next best remunerative crop (Dinesh Kumar et al., 2010).

•Das and Bhattacharya, (2016) shown that cultivating potato (Rs. 22429/acre), maize (Rs. 16315/acre), boro paddy (Rs. 15722/acre), gave higher gross profit than motihari tobacco (Rs. 14006/acre) in Dinhatata subdivision of Kuch Bihar, West Bengal. The average net profit was highest for potato (Rs. 16934/acre), followed by maize (Rs. 12916/acre), jati tobacco (Rs. 12877/acre), boro paddy (Rs. 12185/acre), motihari tobacco (Rs. 6057/acre), mustard (Rs. 2393/acre) and wheat (Rs. 1358/acre). The data indicated that average cost-benefit ratio in respect of operating cost was higher in boro paddy (1.5), maize (1.37) than jati tobacco (1.03) and motihari tobacco (0.92). Average return to total cost was also higher in boro paddy (0.87), maize (0.84), and potato (0.46) than jati tobacco (0.34) and motihari tobacco (0.25), and hence these can be economically viable alternative to tobacco.

•The regions currently under FCV tobacco cultivation, such as Andhra Pradesh and Karnataka, have favourable conditions for growing a variety of fruit crops. Mangoes, bananas, papayas, and citrus fruits are particularly well-suited to these regions. These crops have established domestic and export markets, which can provide substantial

economic returns. For instance, the Banganapalli mango from Andhra Pradesh has already gained a Geographical Indication (GI) tag, enhancing its market potential.

•Millets have a high nutritional value and are increasingly being promoted as a solution to food security and nutrition challenges in India. With the Indian government designating 2023 as the "International Year of Millets," interest in and demand for these crops have increased. Urban consumers' increased health concern has also raised the demand for products made from millet, giving millet farmers ready markets to transition to.

•Agroforestry integrates trees and shrubs into agricultural systems, providing multiple benefits, including improved soil health, increased biodiversity, and additional income sources from timber, fruits, and non-timber forest products. Reliance on a single crop, such as tobacco, might carry economic risks that can be mitigated by having a diverse income stream through agroforestry.

Conclusion

The transition of FCV tobacco cultivation towards alternative crop or cropping systems in India is not just preferable but also constitutive in order to ameliorate the health, environmental and socio-economic problems associated with the tobacco industry. Despite FCV tobacco being at the core of agricultural economic activity within India, it is imminent to embrace the sustainable food production system due to the increasing awareness about adverse thereon. The effectiveness of other cropping systems has several determinants such as the existence of suitable technology, market opportunities, and government's politics. It is important however for the Indian government in partnership with research institutions and other Non-Government

Organizations to take to the front the provision of such support to the farmers during this change. This entails provision of technical assistance to farmers, ensuring availability of credit, creation of access to markets and the knowledge to the farmers on the alternative crops. In the last place, the changing from single FCV tobacco cultivation to other farming options is bound to engender a more stable and vigorous agricultural sector in India. Increasing the diversity of crops planted will help farmers decrease their dependence on a particular crop, increase the stability of their earnings and help advance sustainability in the agricultural environment.

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