



Policy Paper



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Doubling of FCV Tobacco Farmers' Income through Convergence of Research, Policy and Marketing Ecosystem: A Model for Commercial Crops

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ICAR-Central Tobacco Research Institute was established in 1947, which coincided with the year of India's independence. The institute was brought under the aegis of the Indian Council of Agricultural Research in the year 1965. The Institute has been commanding national tobacco research and made an outstanding contribution to the growth and development of tobacco science. Through its long voyage of 75 years, the institute has evolved into a tobacco research network system catering to the research and development needs of different stakeholders in tobacco sector in India.

Agriculture is now increasingly viewed as an industry and in fact treated as agri-business with the overall interest to enhance farm returns and profitability. In the recent times, the Indian agriculture has been witnessing paradigm shifts in outlook and focus from food security to income security and from conventional crops to high value commercial crops, aided by technological innovations and enabling policy support. Agricultural R&D institutions need to be effective in delivering research products, technologies and policies, constantly strive hard to promote their visibility and relevance in accordance with the changing priorities of the nation. Therefore, it becomes imperative for ICAR-Central Tobacco Research Institute (ICAR-National Institute for Research on Commercial Agriculture) to deepen its engagement with various stakeholders in the journey of commercial agriculture; the Institute is starting a half-yearly series of policy papers. The first issue of the series is covering one of the most important issues in commercial agriculture i.e. doubling of farmers' income through the convergence of research, policy and marketing ecosystem, and recommends such a prospective model for other commercial crops, not only to augment farmers income, but also overall growth of any crop sector. The proposed convergence model viz., R&D support, policy intervention along with the implementation of e-auction system in marketing can be perceived as a means to ensure production and price stability, empowerment of small and marginal farmers through a multi-stakeholder co-development process and socio-economic transformation of farming community.

Looking forward to your feedback

Warm regards,

Dr. M. Sheshu Madhav
Director, ICAR-CTRI

Introduction

Tobacco, a high-value commercial crop plays a vital role in increasing farmers' income, providing livelihood security to the sizeable population, and contributing significantly to foreign exchange in India. A unique feature of tobacco production in India is that different tobacco types such as Flue Cured Virginia (FCV), *bidi*, *hookah*, chewing, cigar-wrapper, cheroot, burley, oriental, HDBRG, *Lanka*, *Pikka*, *Natu*, etc. are grown under different agro-ecological conditions. The FCV and Burley tobaccos are the main exportable types and export to more than 100 countries across the globe. There is a consistent demand for Indian tobacco in the international markets due to its diversified styles, qualities, and price ranges. Over the years, India has emerged as a reliable source of tobacco supply to importing countries in the world.

In Indian tobacco sector, FCV tobacco segment is highly organized, grown in an area of 0.14 million ha in the states of Andhra Pradesh and Karnataka, with a production of around 241 million kg during 2022-23¹. FCV tobacco is often quoted as a golden crop because of low nicotine content, flavour, colour, texture etc. Indian FCV tobacco is referred as premium neutral filler tobaccos and preferred for its low nicotine content, high filling capacity and its suitability for blending well (good neutral filler) with any tobacco. FCV is an integral part of commerce, and the symbol of economic prosperity to farmers and other stakeholders, a source of livelihood and farmers' income. In India, the FCV tobacco sector is regulated by Tobacco Board from 1976 (nearly 5 decades) and the production policy for crop size fixation was practiced in consonance with the domestic demand and international demand to impart production stability, minimize price fluctuation, and ensure

remunerative prices to farmers. The main objective is to regulate the production and area under FCV tobacco in the country; however, it also focuses on the quality of the product, curing, and grading of the produce and control excess production than the quota allotted and unauthorized cultivation of tobacco by the farmers and organized marketing in the well-defined network of auction platforms in tobacco-producing regions. In this context, we have studied the major pillars of the convergence model/mechanism operating in the FCV tobacco sector- ICAR- Central Tobacco Research Institute, Tobacco Board, and Private Industry in India.

Convergence Model in the FCV Tobacco Sector in India

Convergence can be defined as a process that brings in shared values and responsibilities on a complementary mode to achieve common objectives and mutual benefits to the converging partners around targeted programs. In Indian FCV tobacco sector, the major pillars involved in the evolution of tobacco science, crop cultivation, development, and promotion are ICAR-CTRI under the aegis of the Indian Council of Agriculture Research, Tobacco Board, under the Ministry of Industry and Commerce, and Private Industry, besides vibrant and enthusiastic

tobacco farmers in the country. This demonstrates the integration of R&D institutions, regulatory organization, and trade and industry working in the convergent mode (Figure-1) for sustainable development of the sector, augmenting farmers' income, and generating sizeable foreign exchange revenue (~Rs.9740 crore, 2022-23) for the Indian economy.

ICAR-CTRI as a Key Player in Research and Technological Development

The ICAR-Central Tobacco Research Institute is a unique institution in India that extends and addresses research needs, and technology backup for different types of tobacco and serves farmers in tobacco-producing regions of the country by establishing research stations in Andhra Pradesh, Karnataka, Tamil Nadu, Gujarat, and the West Bengal. The institute has made outstanding research contributions with a focus on the development of high yielding; biotic and abiotic stress tolerant varieties, crop production technologies and conservation of natural resources, protection technologies for the production of pesticide-free tobacco, post-harvest management, and energy conservation technologies in tobacco curing and phytochemicals from tobacco.



Figure 1: Convergence Model in FCV Tobacco Sector in India

Flowchart of different stakeholders in FCV Tobacco Value Chain

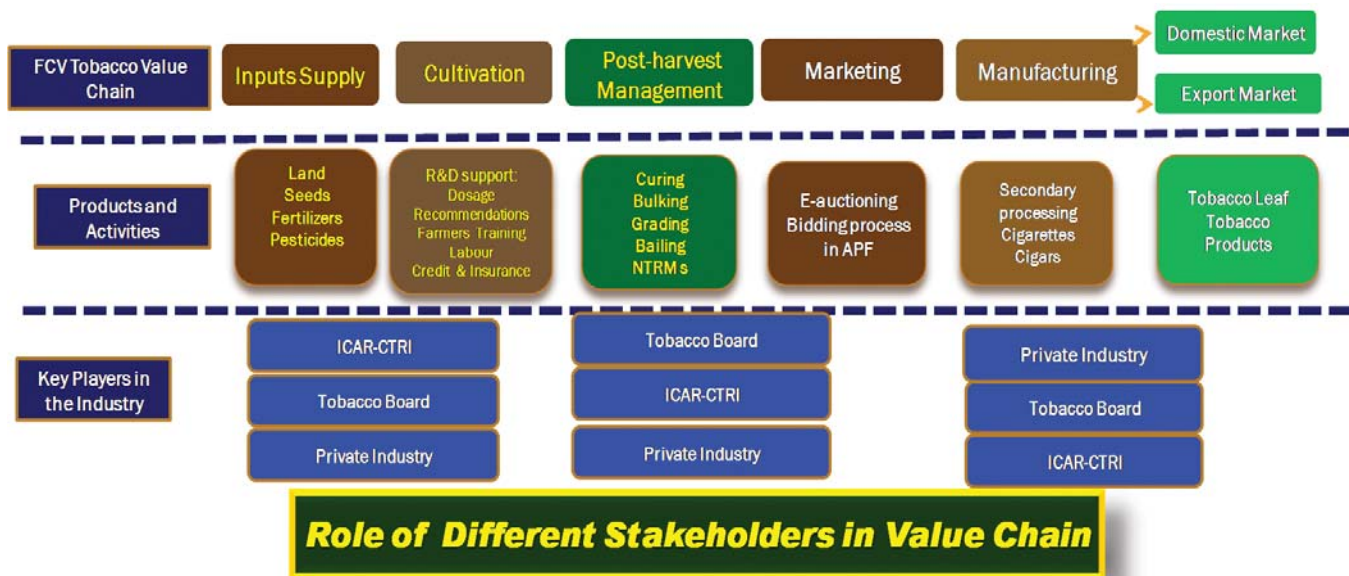


Figure 2: Flowchart of different stakeholders in FCV Tobacco Value Chain

Major Technological Interventions generated for Doubling of Farmers' Income

High-Yielding Varieties

- Developed and released 103 varieties/hybrids of different tobacco types for high yield potential/tolerance to biotic and abiotic stresses for cultivation in rain-fed and irrigated regions during the past seven decades.
- Popular varieties ruling the FCV tobacco growing regions are namely, FCR-15, Siri in the Southern Light Soil (SLS) and Southern Black Soil (SBS) regions, CH- 3, Kanchan, and FCJ-11 in the Northern Light Soil NLS region, and CH-3 and Kanchan in the Karnataka Light Soils (KLS)².
- The sole institute to supply pure and quality seed to meet more than 90% seed requirement by the FCV tobacco farmers (around 9 tons is supplied annually in different production zones).

Production Technologies

- Developed and popularized soil, crop, and fertilizer management technologies for improved production efficiency and product quality in major tobacco growing zones.

- Poly tray nursery technology was developed and promoted, especially in irrigated areas and areas infected with root not nematodes and wilt.
- Farm pond technology for harvesting rainwater for providing life-saving irrigation was popularized in FCV tobacco-growing areas of the Prakasam district of Andhra Pradesh.
- Crop intensification was promoted by growing Korra in the *Kharif* before rain-fed FCV tobacco increased the farmers' income (~ 25,000/ ha) in the SLS region.
- Strategy of the maize-tobacco cropping system was recommended for enhancing farmers' income in the traditional black soils of Andhra Pradesh.
- High-density cropping technique was promoted for the rain-fed areas to mitigate the recent climate aberrations.

Resource Conservation Technologies

- Micro sprinklers and fertigation techniques were promoted for tobacco nurseries and main crop for enhancing water (43-50%) and nutrient use efficiency (30-40%), through technology outreach activities.
- Soil fertility and irrigation water quality GIS maps were prepared and are being used as tools to assist in balanced nutrient and fertilizer usage.

2. Chandrasekhara Rao, C., K. Viswanatha Reddy, B. Hema, D. Damodar Reddy, J. Poorna Bindu and M. Sheshu Madhav. 2023. Central Tobacco Research Institute @ 75, Technical Bulletin No.1, ICAR-CTRI, Rajahmundry

- Solar and thermal energy-based fuel saving (30-40%) techniques were promoted for tobacco curing to reduce dependency on fuel wood, encourage green energy usage and reduce the cost of production
- Developed STCR-based yield target equations and an online fertilizer recommendation system to help farmers to follow balanced nutrition and reduce the cost of cultivation

Protection Technologies

- New-generation insecticide molecules with a low active ingredient were identified and promoted to use in nurseries and main crop against tobacco pests
- Developed novel analytical techniques for monitoring pesticide residues in post-harvest produce for exports

Farm Mechanization Technologies

- Topping machine developed to reduce drudgery, time and labour, and cost of cultivation

Post-harvest Technologies

- Developed standard protocols for management and handling of cured leaf (bulking, grading, baling techniques)
- Promoted tobacco curing technique for FCV tobacco types for energy saving
- Bale pressing machine for reducing labour requirement, drudgery, and the cost of production

Digital Technologies

- The tobacco seed portal was developed and distributed the seed to the end user in time
- Developed user-friendly decision support system for soil and water analysis, diagnosis of nutrient deficiencies in FCV tobacco
- Developed and deployed mobile apps for advocating GAPs (Good Agricultural Practices) to FCV tobacco farmers

Technology Outreach Activities

- The ICAR-CTRI in harmonization with the private players converges and integrates the extension services into a single platform to benefit the farmers by addressing crop management issues to enhance productivity, improve product quality for better market price and reduce the cost of cultivation.

- Technology dissemination and technology transfer, periodical monitoring, field visits, and tailor-made training programs for different crop growth stages were implemented to equip the field-level functionaries of the Tobacco Board and Private Industry for effective technology transfer and enhancing productivity and farmers' income

The persistent efforts of ICAR-CTRI have led to a significant increase in FCV tobacco productivity and quality with the adoption of varieties and standard production practices recommended by the institute. Thereby ICAR-CTRI created a huge economic impact on FCV tobacco farmers, and become significant player towards doubling farmers' income.

Tobacco Board as a Player in Policy Formulation and Implementation

Regulated Production

Tobacco Board, as a regulatory body under the Ministry of Commerce and Industry, was constituted by the Government of India, under the "Tobacco Board Act, 1975", for inclusive development of the FCV tobacco sector. Its role is to facilitate the smooth functioning of the vibrant FCV tobacco farming system, ensure fair and remunerative prices to FCV tobacco farmers (~85,000 growers in Andhra Pradesh and Karnataka, 2021-22), and promotion of tobacco exports (227 million kg, 2022-23).

WHO - FCTC (Framework Convention on Tobacco Control)

India ratified WHO-FCTC 2005, a commitment to implement the provisions of the FCTC in India. Hence, the Board has restricted both horizontal expansion of the FCV tobacco area under cultivation and the construction of new barns for curing. The production policy was focused on the vertical expansion of the crop while concentrating on the quality of the farm produce with concerted research and development support in convergence with ICAR-CTRI.

The crop regulation is demand-driven; any change in crop size is in accordance with the demand and supply in national and international markets.

The main purpose is to regulate the production and area allotment under FCV tobacco in the country. So that there will not be any glut in the markets and farmers can get remunerative price. The barn is a physical structure where tobacco curing takes place, a crucial management unit based on which the Tobacco Board decides on the area allotment for cultivation and production quota. Currently, the number of barns are 92,553 (38,858 in Andhra Pradesh and 53,695 in Karnataka) licensed by Tobacco Board. The Tobacco Board Grower Registration Number (TBGR number) is assigned to each registered tobacco grower by the Tobacco Board in the states of Andhra Pradesh and Karnataka and the license renewal is mandatory for growing tobacco in every crop season.

Regulated Production System

The FCV tobacco production is regulated by Tobacco Board through its production policy in India. It is a process of fixing the crop size in terms of area allocation and production quota in consonance with domestic demand and international demand.

Levies for Excess Production

Tobacco Board controls the excess production than the quota allotted to and unauthorized cultivation of tobacco by the farmers. The growers are not allowed to plant tobacco in excess of the area authorized and produce tobacco over and above the quota authorized by the Board. The excess quantity produced by the registered growers and unauthorized production by unregistered growers without registration will be in violation of the Tobacco Board Act, 1975. Further, additional charges were being levied on excess production for allowing the sale of excess tobacco produced by registered growers over and above the quota authorized as notified by the Government of India. This system is very unique feature in FCV tobacco production, which does not exist in any other crops in India.

Marketing Ecosystem: e-Auction in FCV tobacco

The marketing eco-system for FCV tobacco is organized consisting of the e-auctioning arrangement in the well-established network of auction platforms (17 auction platforms in Andhra

Pradesh and 10 auction platforms in Karnataka). Further, to increase marketing efficiency and eliminate manual errors, Tobacco Board introduced the IT-enabled fool proof marketing process in the year 2012 to auction FCV tobacco with the objective to ensure price stability, remunerative prices and assured swift payment. This system provided greater transparency in the bidding process and facilitates growers to view the bidding process through electronic displays and proved to be vibrant in achieving targeted goals. Therefore, all the stakeholders accepted the module, especially the farmers appreciated for realizing high prices.

Market Intelligence and Export Promotion

Tobacco Board promotes export marketing, provides market intelligence and regulates recurring instances of imbalances in supply and demand. There is constant monitoring of the FCV tobacco market in India and the world to minimize wide price fluctuations and ensure remunerative prices to the FCV tobacco growers. It focuses on sustaining the demand for Indian tobacco in existing international markets, developing new markets overseas, and devising marketing strategies in consonance with demand through trade delegations, participating in international exhibitions, brand creation and building confidence in the international buyers. Moreover India is known as a reputed, regular and reliable bulk supplier of tobacco to the international markets so that import countries and international companies trust on Indian tobacco.

Extension and Advisory Services

Tobacco Board facilitates the supply of approved varieties of seed through ICAR-CTRI and the research wing of Private Industry to FCV tobacco growers in Andhra Pradesh and Karnataka. Further, Tobacco Board also ensures the supply of farm inputs at competitive prices, provides technical advice to the growers by training farmers on best farm practices starting from seed to farm sales with the dynamic involvement of people from trade and industry during the crop growing season, and organizes crop and farm input loans to growers at a competitive rate of interest. Model project area scheme is implemented in the selected villages to promote specific technology suitable to enhance yield and to showcase the technology.

Social Welfare Initiatives

Tobacco Board implements various measures to ensure the overall welfare of FCV tobacco growers and their families mainly such as FCV tobacco growers welfare fund is aimed at the welfare of FCV tobacco growers, approved by the Ministry of Commerce and Industry to provide financial assistance in the form of grants/loans for the educational, social, and health needs of the growers and their family members in addition to assistance in times of natural calamities and production-related services such as organizing collection and analysis of soil and water samples of registered tobacco growers at free of cost and advising growers on the suitability of soil and water for cultivation and application of a correct dose of fertilizers and facilitating insurance coverage of barns and tobacco stocks.

Industry as a Player in Promoting Trade and Exports

ESG Initiatives

The industry giving importance to the ESG (environment, social, and governance) initiatives, which play a key role in the social and economic development of tobacco growers in the country. It also promotes GAPs (Good Agricultural Practices), and crop development initiatives with a network of local field-level functionaries in coordination of ICAR-CTRI and Tobacco Board. Important interventions concentrating on making livelihood sources in agriculture and allied activities with productive, and sustainable initiatives such as E-Choupal, watershed development, afforestation, economic empowerment and support FCV tobacco farming to increase farmers' income on a sustained basis.

Economic Incentives to FCV Tobacco Growers

The industry extends support and provides economic incentives in the form of subsidies for farmers for drip irrigation and fertigation in FCV tobacco growing regions, capacity-building programs, regulate crop protection agents, and the use of safe chemicals for sustainable tobacco farming.

CSR Initiatives

Industry promotes crop development initiatives through CSR (Corporate Social Responsibility)

programmes in FCV tobacco-growing regions for overall development of farming communities and build economic, social, and environmental capital towards sustainable improvement of society.

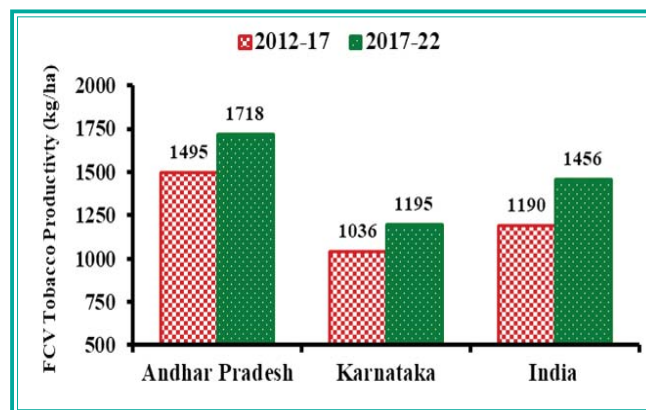
Market Information and Price Signals

The industry also pays adequate attention in the field of market information and providing current market demand mainly in export markets and price signals, ascertaining demand in global markets for realizing better prices, creating awareness about international quality standards for improving quality aspects of Indian FCV tobacco and linking farmers to international markets.

Impact of Convergence Model on Crop Productivity, Price and Income of FCV Tobacco Growers in India

Trends in Productivity of FCV Tobacco

The intensive research and developmental efforts of ICAR-CTRI, Tobacco Board, Trade and Industry have led to an increase in the productivity of FCV tobacco in the country. In Andhra Pradesh, the productivity of FCV tobacco increased from 1495 kg/ha during 2012-17 to 1718 kg/ha during 2017-22, while in Karnataka where the crop is grown under rain fed conditions, yet, the productivity has increased from 1036 kg/ha during 2012-17 to 1195 kg/ha during 2017-22. The overall productivity of FCV tobacco in India has increased from 1190 kg/ha to 1456 kg/ha during the corresponding period (Figure-3).

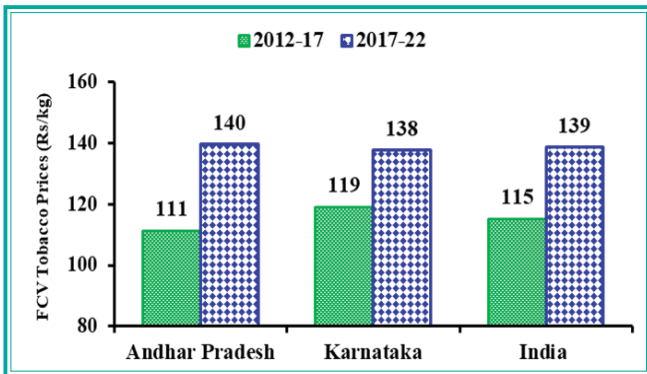


Source: Tobacco Board, 2023

Figure 3: Trends in FCV Tobacco Productivity in India from 2011-12 to 2021-22

Trends in Prices of FCV Tobacco

The growth in the prices of FCV tobacco was positive during the last decade, the average annual price of FCV tobacco increased from Rs. 111/kg during 2012-17 to Rs.140/ kg during 2017-22, while in Karnataka, it was increased from Rs.119/ kg during 2012-17 to Rs.138/ kg during 2017-22 and overall prices in India have increased from Rs.115/kg to Rs.139/kg during the corresponding period (Figure-4). This is mainly attributed to an increase in demand for quality tobacco characterized by balanced leaf chemistry, low pesticide residues, and low heavy metals mainly due to the adoption of scientific management interventions.

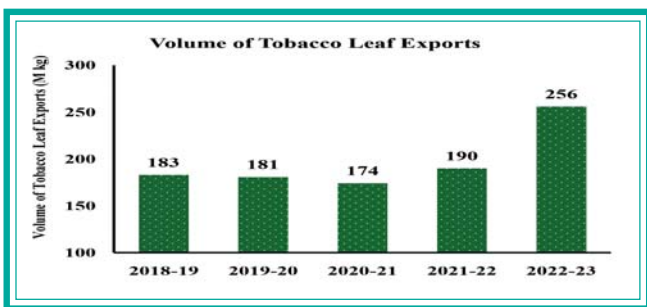


Source: Tobacco Board, 2023

Figure 4: Trends in Prices of FCV Tobacco in Andhra Pradesh and Karnataka from 2011-12 to 2021-22

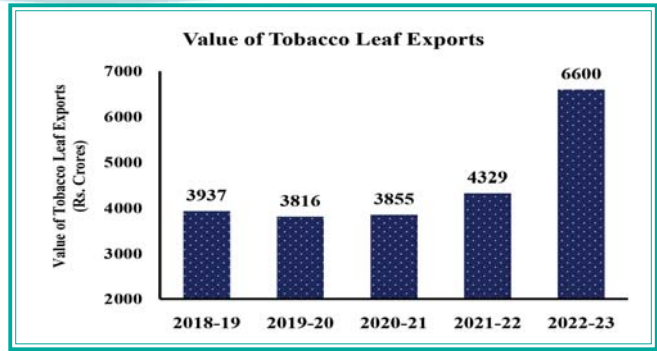
Tobacco Leaf Exports

The volume of tobacco leaf export increased from 182 million kg during 2017-18 to 190 million kg during 2021-22 with Y-O-Y fluctuations. In terms of export value, the export earning was Rs. 3,871 Crore during 2017-18 to Rs. 4,329 Crore during 2021-22 (Figure 5 & 6). The scrupulous adoption of technology interventions has led to the production



Source: Tobacco Board, 2023

Figure 5: Trends in the volume of tobacco leaf export during the last five years

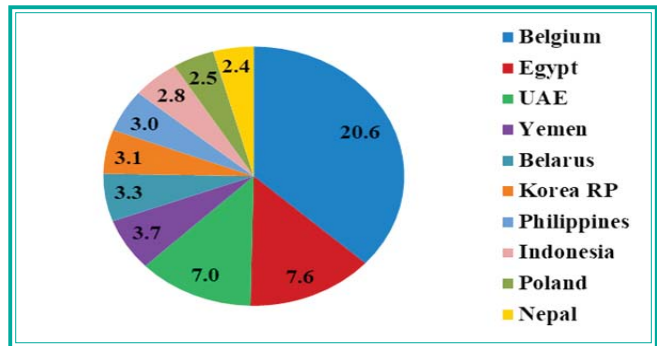


Source: Tobacco Board, 2023

Figure 6: Trends in the value of tobacco leaf export during the last five years

of the quality leaf with low levels of pesticide residues and free from NTRMs (Non Tobacco Related Materials). Accordingly, there has been a continuous demand for Indian tobacco in the international markets.

Globally, India is the only country which produces FCV tobacco in two seasons and it is a net exporter of FCV tobacco. Among major export markets, Belgium is the India's FCV tobacco major export destination accounts for 20.6% of the tobacco leaf export and other major export destinations are Egypt (7.6%), UAE (7.0%), Yemen (3.7%), Belarus (3.3%), Korea RP (3.1%), Philippines (3.0%), Indonesia (2.8%), Poland (2.5%), and Nepal (2.4%) (Figure 7).



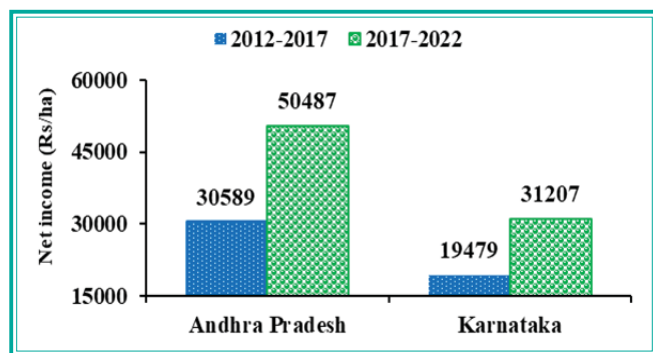
Source: Tobacco Board, 2023

Figure 7: Export Share for tobacco leaf in different export destinations

Trends in FCV Tobacco Farmers' Income

The research and technology backup has enhanced the growth in productivity of FCV tobacco, which resulted in a significant rise in farm produce. Further, enhanced crop production coupled with higher prices has led to a substantial increase in the net income of FCV tobacco farmers. The average net income has increased from Rs. 30, 589/ha in Andhra Pradesh during 2012-17 to Rs. 50, 487/kg during 2017-21, while in Karnataka, it increased

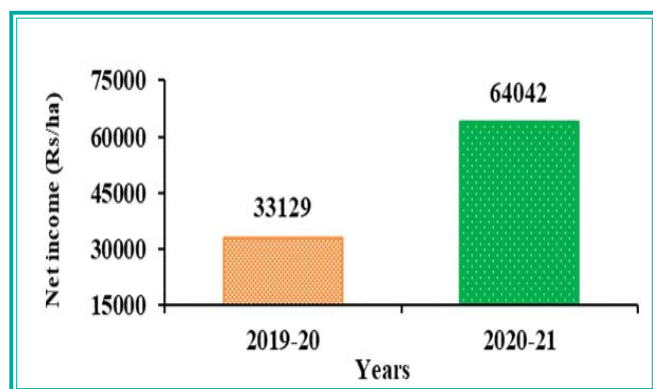
from Rs. 19,479/ha to Rs. 31, 207/ha during the equivalent period (Figure-8).



Source: Tobacco Board, 2023

Figure 8: Trends in Net Income of FCV tobacco in Andhra Pradesh and Karnataka from 2011-12 to 2021-22

This implies net income of FCV tobacco growers increased by 65% in Andhra Pradesh and 52% in Karnataka during the corresponding period. But, during the years 2019-20 and 2020-21, the average net income in FCV tobacco has almost doubled i.e. from Rs. 33,129/ ha to Rs. 64,042/ha in Andhra Pradesh (Figure-9), which is in line with the goal of the national level initiative on the doubling of farmers' income. The achievement is highly noteworthy in the regulated commercial crop like FCV tobacco in India.



Source: Tobacco Board, 2023

Figure 9: Net Income of FCV tobacco in Andhra Pradesh during 2019-20 and 2020-21

Conclusion

From the policy perspective, key points have emerged from the convergence model operating in Indian FCV tobacco sector.

- Sustained investment in research for developing new products and technologies, a dedicated commodity board for regulated production, marketing and exports, coupled with intensive efforts of the industry for overall sector development has been happening in the FCV tobacco over the past several years.
- However, in recent times, the most cohesive convergence was witnessed due to the regular interaction of R&D institutions with the Tobacco Board and Trade and Industry that augmented and sustained the FCV tobacco farming though it is grown in limited pockets with intensive cultivation.
- In a nutshell, a rugged convergent model with concerted and coordinated efforts of key complementing players created an enabling ecosystem in FCV tobacco sector that resulted in the accomplishment of the goal of doubling farmers' income.

Recommendations

- The convergence platform evolved under the FCV tobacco production and marketing ecosystem presents a prospective model to follow in commercial agriculture in India.
- The non-FCV tobacco sector is vastly unorganized, there is a need to develop and deploy similar kind of scalable convergence model to promote the growth of the non-FCV tobacco sector and augment farmers' income.
- This kind of unique scalable convergence model need to be emulated in high value commercial crops like chilli, turmeric, cotton and sugarcane with the participation of R&D institutions, government, and private industry.
- This convergence approach is to empower small and marginal farmers through a multi-stakeholder co-development process and socio-economic transformation of farming community to generate significant economic gains at micro and macro levels.

For further details and feedback

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