



Panoramic View of Indian Tobacco



भाकृअनुप - केन्द्रीय तम्बाकू अनुसंधान संस्थान

ICAR - CENTRAL TOBACCO RESEARCH INSTITUTE

(ICAR-NATIONAL INSTITUTE FOR RESEARCH ON COMMERCIAL AGRICULTURE)

(An ISO 9001 : 2015 Certified Institute)

RAJAHMUNDRY - 533 105, ANDHRA PRADESH, INDIA



ICAR-CTRI

MAJOR INDIAN TOBACCO TYPES



FCV



Burley



Bidi



Natu



Chewing



Jati



Lanka



Rustica



Panoramic View of Indian Tobacco



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Dr. M. Sheshu Madhav

Director

ICAR - Central Tobacco Research Institute

Rajahmundry - 533105, Andhra Pradesh, India.

Phone: 0883-2449871-4, Fax: 0883-2448341, 2410555

e-mail :directorctri@gmail.com

Website : <https://ctri.icar.gov.in>

Compiled

K. Sarala

M. Sheshu Madhav

K. Prabhakara Rao

K. Viswanatha Reddy

B. Krishna Kumari

S. Flora

K. Shravan Kumar

Word process & Design

Md. Elias

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December, 2023

Preface

Tobacco, often quoted as golden crop, is a symbol of economic prosperity to millions of farmers. It is an important commercial crop grown in India covering 4.33 lakh ha in 15 states producing about 760 M kg (FAOSTAT, 2023). India cultivates myriad styles of tobacco under widely diverse agro-ecological situations. In view of its diversified styles,



qualities, and price ranges, there is a great demand for Indian tobacco in the international markets. While giving sizeable income to the farmers, traders and government, it is providing employment to millions of people involved in its cultivation, curing, grading, processing, marketing etc.

An attempt has been made to introduce various tobacco types grown in India. The details of area, distribution, production patterns, local names and the uses of various tobacco types are given in the book. Popular varieties cultivated and researchable issues of each type of tobacco are also included. Thus, this book gives the panoramic view of various tobacco types grown in India. Majority of the people think tobacco as a single type but after going through this book, the reader will feel the actual veracity of the crop and its varied morphological traits and diversified utilities.

The Authors are thankful to the Heads of ICAR-CTRI Research Stations and In-charges of AINPT Centres for readily clarifying any of the doubts regarding the tobacco type grown in their region.

Dated : 08.12.2023

A handwritten signature in green ink, appearing to read 'Jesumma'.

(M SHESHU MADHAV)
DIRECTOR

Panoramic View of Indian Tobacco

Tobacco is one of the important high value commercial crops in India. The country ranks second in the world tobacco production after China. Tobacco crop is cultivated in an area of 4.33 lakh ha, covering 15 states, with a production of about 760 M kg. Tobacco, often quoted as golden crop, is an integral part of commerce and symbol of economic prosperity to millions of farmers. Tobacco production is an important source of livelihood and provides direct and indirect employment to the millions of population in the country. It fetches sizeable income to the farmers, traders and government and it provides employment to millions of people involved in its cultivation, curing, grading, processing, marketing *etc.* A unique feature of tobacco production in India is that myriad styles of tobacco are cultivated under widely diverse agro-ecological situations. There is great demand for Indian tobacco in the international markets due to its diversified styles, qualities and price ranges. India is the third largest exporter of un-manufactured tobacco in the world. Exports of tobacco and tobacco products contributed to Rs. 9,740 crore in terms of foreign exchange during 2022-23.

Among various species, *Nicotiana tabacum* and *N. rustica* are two cultivated species in the country. The tobacco cultivated in India found to be highly polymorphic with wide range of morphological types and diversified utilities. Tobacco types are broadly classified on the basis of curing of green leaf as flue-cured Virginia (FCV) (cured using flue pipes in the specially constructed barns) and non-flue cured Virginia (Non-FCV) types. Non-FCV types are further classified as air/sun-cured, smoke-cured, fire-cured and pit-cured. Burley, oriental and maryland types are identified on the basis of leaf type. Based on the ultimate use of leaf, tobacco types are termed cigarette, cigar filler, cigar wrapper, binder, cheroot, *bidi*, chewing, snuff, *hookah* *etc.* Majority of the dark tobaccos which are air, fire, smoke or sun cured, are indigenous tobaccos consumed in different forms such as *bidi*, cigar, cheroot, *chutta*, chewing, *hookah* and snuff. All *hookah* and *zarda* types belong to the species *N. rustica*.

Tobacco is grown in a wide range of soil and climatic conditions. Practically every state in India grows one type of tobacco or the other. However, cultivation of different types of tobacco is concentrated in certain well-defined zones. The details of major tobacco types, their growing areas, land mark/popular varieties, *etc.* are being discussed in this book.

Flue-cured Virginia (FCV) tobacco

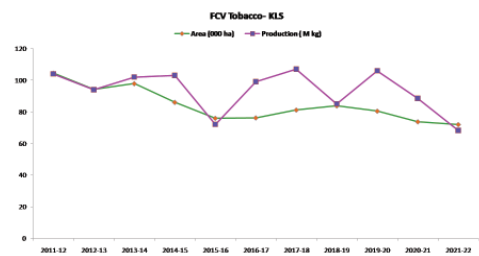
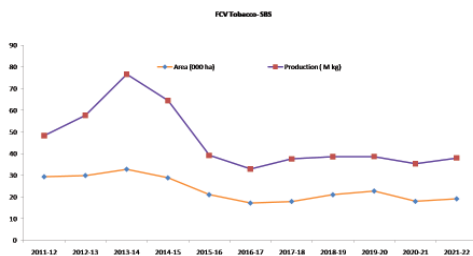
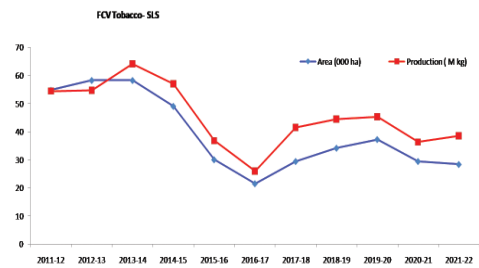
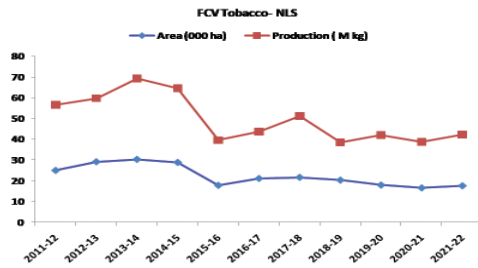
In India, Flue-cured Virginia tobacco is cultivated in an area of 1.39 lakh hectares with a production of around 241 million kg during 2022-23. This is also called Barn tobacco as the harvested leaves are cured in specially constructed barns. The leaf is primarily used in the manufacturing of cigarettes for smoking purpose. It accounts for 30% of total tobacco production and 80% of overall tobacco exports in the country.



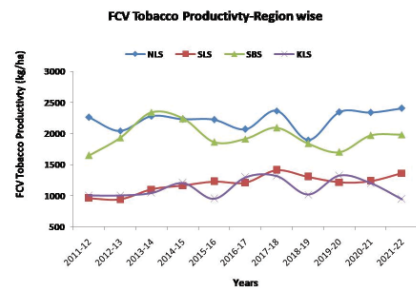
Siri

Soil characteristics play an outstanding role in deciding the quality and commercial value of FCV tobacco. It is grown on different types of soils ranging from sands to sandy loams that differ in texture and soil fertility in the states of Andhra Pradesh, Karnataka and Telangana. Based on soil type and crop growing conditions, the FCV tobacco growing production domains are classified into four agro-climatic zones. They are Traditional Black soils (TBS), Northern Light Soils (NLS) and Southern light soils (SLS) in Andhra Pradesh and Karnataka Light Soils (KLS) in Karnataka state. In Traditional Black Soils (TBS), tobacco is grown on conserved soil moisture as a post-monsoon crop during winter season (*rabi*) in an area of about 26,800 ha (2022-23). Based on the agro-climatic zones, the black soils are divided again into Northern black soils (East and West Godavari districts), Central black soils (Khammam, Krishna and Guntur districts) and Southern black soils (Prakasam and Nellore districts). Northern light soils (NLS) encompass East Godavari and West Godavari districts of Andhra Pradesh (AP) and Khammam district of Telangana, where the crop is grown in an area of 21,000 ha (2022-23). In NLS, FCV tobacco is grown under irrigated conditions during winter from October to March. Southern light soils (SLS) comprising of Prakasam and Nellore districts of AP occupy an area of 38,000 ha (2022-23) of red soils. Tobacco here is grown during winter on conserved soil moisture from North-East monsoon rains. In the Karnataka light soils (KLS), tobacco is grown as a monsoon crop (*Kharif*) in an area of 61,000 ha during south-west monsoon period from

May-June to August-September in the districts of Mysore, Hassan, Coorg, Chikkamagalur, Davanagere and Shivamogga.



In general, the tobacco productivity is highest (>2000 kg per ha) in NLS area as it is an irrigated system. Next system that yield higher productivity (>1600 kg per ha) is SBS due to rich fertility status of soils. Poor soils and unfavorable climatic conditions are responsible for lower productivity (hovering around 600 to 1000 kg per ha) in both SLS and KLS regions.



Light soils produce thin and large bodied leaf, light in weight and color, mild in strength and weak in aroma whereas leaf produced in heavy soils is usually thick and heavy dark colored strong and aromatic. The Black Soil tobacco is filler tobacco with low nicotine and neutral character and blends well with any tobacco. The cured leaf of SBS tobacco is medium to large in size and color is lemon orange to brown, nicotine content is 1.0 to 2.7% and reducing Sugars 9 to 21 %. Whereas SLS tobacco is small to medium in size and color is lemon to orange, nicotine content is 1.0 to 1.5% and reducing Sugars 10 to 18 %. Northern Light Soils (NLS) area produces flavourful to semi-flavourful tobacco with excellent ageing properties and neutral character which blends well with any tobacco. The NLS tobacco leaf is large to very large in size and color is lemon orange to orange, nicotine content is 0.6 to 2.9% and reducing Sugars 14 to 24 %. Karnataka Light Soils (KLS)

tobacco is referred as premium neutral filler tobacco and preferred for its low nicotine content high filling capacity and suitability for blending well with any tobacco. The cured leaf of KLS tobacco is medium-large in size and color is lemon-orange to orange, nicotine content is 1.5 to 1.8% and reducing Sugars 18 to 27 %.

Siri is the major variety grown in SLS and TBS regions accounting for more than 90% of the area in the last decade. Other varieties grown are CTRI Sreshta, CTRI Sulakshana, Hema and VT-1158. CTRI Sreshta is a high yielding TMV resistant variety identified for the region is slowly gaining popularity among the farmers of the region in last three years. CTRI Sulakshana is a TMV resistant and aphid tolerant variety released for the region is grown in limited pockets. Hema and VT-1158 are the varieties released prior to Siri and are preferentially grown in certain areas.



CTRI Sreshta (FCR-15)



CTRI Naveena (FCJ-11)

In Northern Light Soils, CH-3 is the major variety grown in an area of about 49% and other area is occupied by Kanchan, CTRI Naveena and few other varieties (mostly un-authorized). CTRI Naveena a high yield somaclone with a yield potential of 3300 kg/ha has been released recently to NLS area. In KLS, Kanchan is the major variety cultivated covering more than 54% of the area, followed by CH-3 (45%) and rest by FCH-222 and Sahyadri. CH-3 is a flavourful hybrid cultivated for its flavour quality leaf. Nematode problem is prevalent in KLS and black shank in NLS. Hence, Kanchan is a nematode and black shank tolerant variety is preferred in these areas. Before the release of CH-3, Kanchan occupied more than 90% of both KLS and NLS areas. FCH-222 is a *Fusarium* resistant variety, hence grown in *Fusarium* affected areas.



FCH 222



CH-3

In India, FCV tobacco is grown by farmers who are registered with the Tobacco Board, Guntur which annually fixes the region-wise production targets. Based on the targeted quota, the Board authorizes the FCV area to be planted per barn by the registered growers taking into consideration the number of licensed barns and productivity levels of the area. The area allocated for FCV tobacco by the Board has drastically declined from 2.51 lakh hectares during 2010-11 to 1.38 lakh hectares during 2021-22. Consequently, production has declined from 301 million kg to 189 million kg during the corresponding period. This is mainly attributed to crop size fixation policy in FCV tobacco, weather impacts, and market dynamics in terms of price elasticity based on demand and supply. This has led to crop diversification in FCV tobacco-growing regions of India.

Biotic stresses such as damping-off in nurseries, *Orobanche*, aphid, *Spodoptera*, black shank, drought, flooding, *Fusarium* wilt and root-knot nematodes (in KLS) are few major constraints in FCV tobacco grown in India. High residues of Crop Protection Agents (CPAs) and NTRM (Non-tobacco related material) are the issues required to be addressed in relation to exports. Increased production costs, wood fuel use in flue-curing and health related risks associated with smoking are a major concern of public importance.

Accordingly, major researchable issues for FCV tobacco are development of high yielding, good quality, stress tolerant (biotic and abiotic) and less health hazardous FCV varieties/ hybrids suited to all the zones, development of soil moisture conservation and nutrient use efficiency approaches, identification of efficient tobacco based cropping & integrated farming systems, scaling up the integrated pest management strategies, etc. Creating awareness on CPA residues and NTRMs among the farming community is essential to enhance the exports.

Bidi tobacco

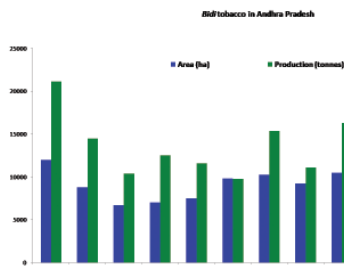
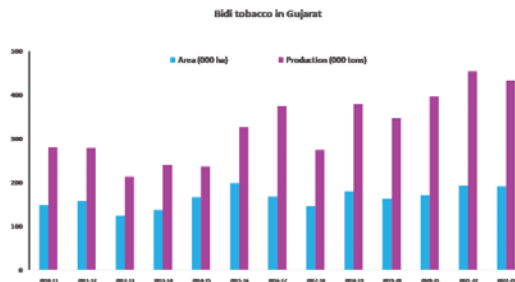
Bidi tobacco belongs to *N. tabacum* species. The leaf of *bidi* tobacco is used mainly for the preparation of *bidis*, a hand rolled smoking product made by wrapping tobacco with natural ebony leave used for smoking purpose. Among various tobacco types grown in India, *bidi* tobacco is accounting for 35% of the total tobacco area and 40% of the production in the country. In India, this is cultivated mainly in the states of Gujarat, Andhra Pradesh and Karnataka. The *bidi* manufacturing being a cottage industry spread over several states employs about 4 million people, mostly are rural youths and women. The cured leaf colour of *bidi* is orange brown to light greenish brown.



A 119

Gujarat ranks first in production and productivity of *bidi* tobacco grown in an area of 1.52 lakh ha (80%) producing 375 M kg (83%) with a productivity of 2,464 kg/ha. The production of *bidi* tobacco in Gujarat is largely concentrated in middle Gujarat comprising Kheda, Anand and Vadodara districts besides small area in Panchmahal district. In middle Gujarat, about 60 to 65% of *bidi* tobacco area is under irrigation and the remaining is rainfed. The area under *bidi* tobacco in Gujarat has increased from 1.48 lakh ha to 1.90 lakh ha during the last decade and the production has increased from 2.81 lakh tons to

4.33 lakh tons during the corresponding period. In Gujarat around 40,000 farmers are engaged in tobacco cultivation and around one million people mostly tribals are engaged in plucking of *tendu* leaf, a *bidi* wrapper. The maturity of the *bidi* tobacco is judged by pronounced development of brown spots called ‘spangles’. The nicotine content of the *bidi* tobacco here is around 8%.

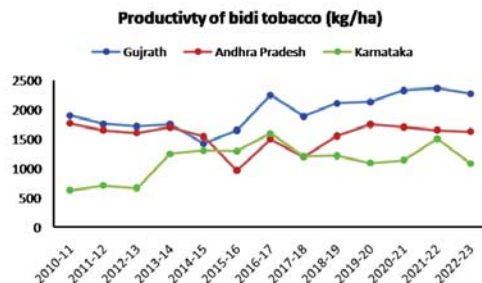
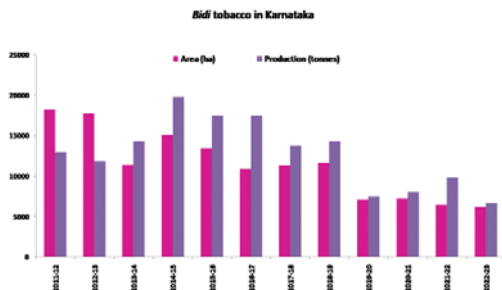


In Andhra Pradesh, *bidi* tobacco is grown in an area of 11,250 ha producing 18.84 M kg with productivity of 1,750 kg/ha. The production of *bidi* tobacco in Andhra Pradesh is mainly concentrated in Kurnool district. The area under *bidi* tobacco in Andhra Pradesh has decreased from 12,000 to 3,400 ha during the last decade and the production has decreased from 21,000

to 5, 600 tons. The nicotine content of the *bidi* tobacco here is around 5%.

In Karnataka, *Bidi* tobacco is mainly grown in Chikodi, Hukkeri and Gokak talukas of Belagavi district. At present, it occupies an area of 6,500 ha with the production of about 9,815 tonnes and a productivity of 1,510 kg/ha. The *bidi* tobacco produce of this area is known for its good quality. The area under *bidi* tobacco in Karnataka has decreased from 18,000 ha to 6,000 ha during the last decade and the production has decreased from 13,000 to 6,600 tons during the corresponding period. The nicotine content of the *bidi* tobacco here is around 5%.

The average productivity of *bidi* tobacco was high in Gujrat, followed by Andhra Pradesh and Karnataka during the last decade.



The popular varieties cultivated in the state of Gujarat are A119, GT-7, GABT-11 and GABTH-2. The *bidi* varieties, A119, Bhavyasree, NBD-209 and Vedaganga-1 are the major varieties grown in Karnataka state. A119, Nandyal Pogaku-1 and Nandyal Pogaku-2 are the varieties grown in Andhra Pradesh. The variety A-119 having a cured leaf potential of 2625 kg/ha and tolerant to leaf burn disease, released in 1969, is the land mark variety occupying majority of the *bidi* area in all the three states even till today.



GABTH 2

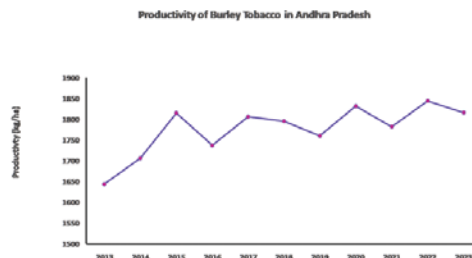
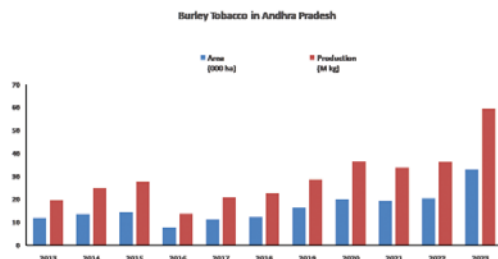


Nandyala Pogaku 2

Major researchable issues of the *bidi* tobacco in Gujarat state are the addressing the incidence of nematodes through varietal development and agronomic practices. Development of water logging tolerance genotypes, weed control under heavy rain fall situation and intensification of *bidi* tobacco cropping system by introducing pre or post tobacco crops under various mulches in Karnataka are the issues that need to be addressed. In Andhra Pradesh, intermittent dry spells of drought, late onset of monsoon causing delayed planting, severe incidence of *Orobanche*, difficulties in expanding area under light soils due to limited moisture availability are the causes of concern and requires research back up.

Burley tobacco

Burley tobacco (*N. tabaccum*) is a type of cigarette tobacco grown in India. During the preparation of cigarettes, burley tobacco is blended with FCV tobacco. Earlier, its cultivation



was concentration in the agency regions of erstwhile East and West Godavari districts of AP with planting during July- August. In recent times, its cultivation was slowly shifted to Vinukonda area and is being planted here during October - November. Even the *bidi* tobacco area in both Kurnool and Nandyal districts (7950 ha) is being replaced by burley tobacco. The burley tobacco is grown mainly during monsoon season. Burley tobacco was grown in an area of 12,000 hectare in agency tract of Eleshwaram in year 2013, presently (2023) it is increased to 27,000 ha and planted at majorly in Vinukonda area. The burley area is increasing due to its high export demand. In the same manner, the production is also nearly doubled from 23 M kg to 45 M kg in the last 9 years. The preference by the exporters also changed from the lower nicotine (~1%) to the high nicotine (3%) types. In general the colour of burley produced in agency area is tan to brown, leaf size is medium to large, nicotine is 1.2 to 2.5 % and reducing sugars 0.5 - 1.20%. The cured leaf colour of the Vinukonda burley is rich tan to brown, leaf size is large to very large, nicotine is 2.0 - 4.5% and reducing sugars 1.0 - 2.0%. Agency burley is mainly used for cigarette blending. Apart from blending in cigarettes, Vinukonda burley is used in pipe mixtures, chewing plugs and *hookah* tobacco paste.



Banket A1



Vijetha (YB 22)

Banket A1 is the major variety cultivated in all the burley area. It is a high yielding (1800 kg/ha) and TMV resistant variety. Few other un-defined varieties are also being grown in limited extent. Recently, a new burley variety, Vijetha (YB-22) a high yielding (2900 kg/ha) and TMV resistant variety was released for commercial cultivation. Vijetha presently occupies 5% of the area and picking quickly.

Developing high yielding, pest and *Orobanche* resistant burley tobacco varieties with > 3% nicotine and low TSNA levels are the research targets in burley tobacco. Exploration of the alternate locations for growing Burley (Odisha, Shivamogga, Nandyal etc.) is another issue that needs attention in view of the enhanced export demand.

HDBRG (Harvel De Bouxo Rio Grande) tobacco

HDBRG (*N. tabacum*) crop is grown in the Central and Southern Black soil areas of Guntur, Prakasam and Kurnool (Nandyala area) districts in Andhra Pradesh and to a smaller extent in Telangana.

In AP, HDBRG growing area is increasing in recent times due to increased export demand for this type. The production of HDBRG is found to fluctuate from year to year. For the year 2023, a total area of 11,700 ha was planted and the estimated crop size is 35 M kg. HDBRG is grown in an area of 300 ha in Nandyala area of Kurnool district in Andhra Pradesh.

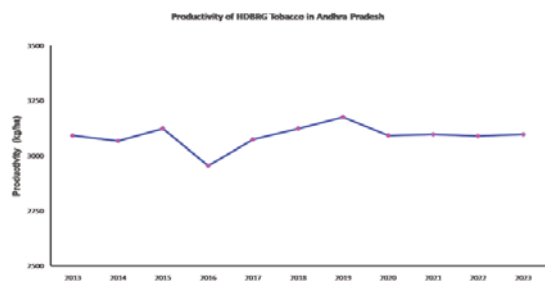
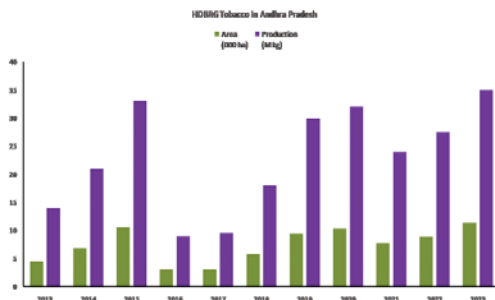
HDBRG is the *N. tabacum* type having higher biomass and higher solanesol (2%). Nicotine content is around 2.5%. HDBRG-1 and HDBRG-2 are the varieties predominantly cultivated in these areas. Currently, research on HDBRG is not taken up by any of the agencies in India. There is a need to start research on HDBRG for the development of high yielding varieties and good agricultural practices in view of the increased demand and increased area.



HDBRG 1



HDBRG 2



Oriental tobacco

The sun cured Oriental Tobacco (*N. tabacum*) is under cultivation since 1968 in a small scale in Andhra Pradesh. In view of the export demand and usage in domestic cigarette blends, its cultivation has been extended over the years to dry zones of Karnataka and Andhra Pradesh under light sandy loams. Currently, Oriental tobacco is grown in low rainfall tracks of Karnataka and Andhra Pradesh in poor and marginal soils under rainfall conditions. The crop being highly labour intensive is cultivated by small farmers having family labor. Currently, approximately 30,000 farmers distributed in 1200 villages are dependent on this crop in both the states. The rural economy in these growing villages has improved and seasonal labor migration has stopped. The maximum production is 9 million kg during 2010 and the potential is 25 million kg. The productivity is staggering between 500 to 600 kg per hectare with the existing varieties.



Izmir



Katherine

Oriental tobacco differs from other tobaccos in size, character and blending applications. Oriental tobaccos are very short plants of about three or four feet tall and leaves are small. Orientals are sun-cured. The physical characteristics of cured leaf of oriental tobacco is greenish lemon in colour and size is very small and contains 2.0 to 4.5% nicotine and 1.0 to 2.0% reducing

sugars. In view of their aromatic characters, they are blended with FCV and burley during cigarette preparation. Orientals have distinct flavor characteristics according to their specific growing location, where the weather and soil of particular places alter the leaves and differentiate them from those grown elsewhere. The landmark/popular varieties are Izmir, Basma and Katherine. Oriental variety, Tungabhadra having a yield potential of 840 kg/ha with good aroma has been identified for release during 2011.

There is a need to improve the productivity through development of improved varieties well adopted to the area and accepted by the farmers and trade.

Natu Tobacco

Natu tobacco (*N. tabacum*) leaf is used for both smoking and non-smoking uses. The leaf used for manufacturing of cigarettes has to be thin in texture with a pleasing aroma and moderate strength, where as that used for cheroot, chewing, snuff, pipe tobacco and *hookah* tobacco paste are strong in aroma and high in nicotine. The leaf is used for blending in low cost cigarettes and handmade cheroots for local consumption. The leaves are separated from the stalk after the plants are initially wilted in the field and the leaves are then strung on bamboo poles for curing in the sun.

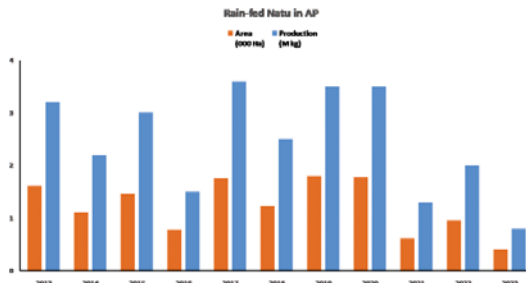
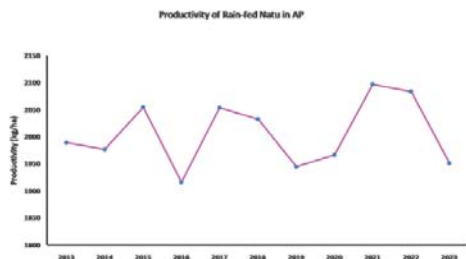
There are two types of *natu* tobacco viz. Cigarette *natu* (rain-fed *natu*) and irrigated *natu*.

Cigarette *natu* (rain-fed *natu*): This type of tobacco is cultivated in the alluvial light soils of Kurnool districts of Andhra Pradesh and Mehaboobnagar, Nalgonda, Nizamabad and Adilabad districts of Telangana. Cured leaf color is nut brown, size medium to large, nicotine 1.0 - 3.25% and reducing sugars 3.0 - 9.0%. The cigarette *natu* cultivable land is decreasing but the production and productivity more or less remains same in the last decade. In



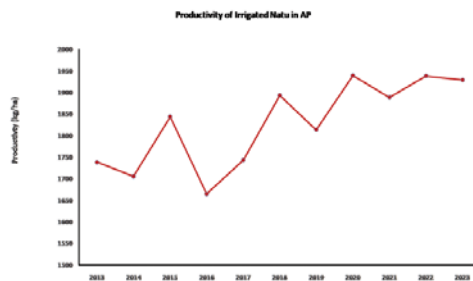
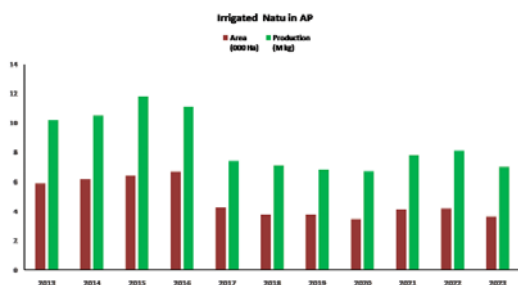
Bhairavi

Andhra Pradesh, the area under rain-fed *natu* in AP has decreased from 1609 ha to 410 ha during the last decade and the production has decreased from 3.2 million kg to 0.8 million kg during the corresponding period. The productivity of rain-fed *natu* in AP tobacco was hovering around 1900 to 2000 kg/ha during the last decade. Widely grown cultivars under rainfed *natu* are Talmari, Kurnool *natu* (WAF type) and Bhairavi.



Irrigated *natu*: *Natu* tobacco is grown in the areas of West Godavari, East Godavari, and Krishna as an irrigated crop is called irrigated *natu*. The soils cultivated are sandy to sandy loams with low organic carbon, low in available N, P and K. Grown with heavy manuring by way of organic manures, FYM, organic cakes *etc.* Though the irrigated *natu* tobacco area is reduced, the production and productivity remained constant. Cured leaf color is brown to dark brown, size medium to large, nicotine 3.0 - 5.5% and reducing sugars 1.1 - 2.6%. Rangapuram and Kommugudem are the cultivars widely cultivated under irrigated *Natu* area. In Andhra Pradesh, the irrigated *natu* area decreased from 5800 ha to 3600 ha during the last decade and the production has decreased from 10.2 million kg to 7 million kg during the period. The productivity of Eluru *natu* tobacco was hovering around 1700 to 1900 kg/ha during the last decade.

Drought and lack of improved varieties and agronomic practices are to be addressed through research in respect of this crop.



Country Cheroot tobacco (*N. tabacum*)

The tobaccos used for the preparation of cheroots are known as cheroot tobacco. They include dark air-cured tobacco types like *natu* and *lanka* grown in Andhra Pradesh, *pikka* in Odisha and cheroot tobacco in Tamil Nadu. Cured leaf colour is greenish brown to dark brown. It has high nicotine of about 5.0% and reducing sugars of about 1.5%. *Natu* tobaccos are already discussed in the previous section and *pikka* tobacco in the coming sections.



Kommugudem

Hence, the details of other cheroot types are given hereunder.

Cheroot tobacco of Tamil Nadu: Country Cheroot tobacco is mostly grown in Salem, Madurai, Coimbatore and North Arcot districts of Tamil Nadu. Two types of country cheroot tobaccos i.e. the narrow leaf type and broad leaf type are cultivated. The former confined to Erode district and the later in Salem districts of Tamil Nadu in an area of about 1200 ha. This tobacco is cultivated in both heavy and light soils as an irrigated crop. The color of the cured leaf used in cheroot is



Sangami

dark brown or almost black and the texture varies from thin to medium. The produce finds its way for the manufacture of handmade country cheroots for consumption in Tamil Nadu as well as adjoining States of Kerala, Andhra Pradesh and Karnataka. It is also consumed locally as well as in Karnataka as chewing tobacco. The variety I-737 is cultivated in major part of area followed by Sangami.

Lanka tobacco of Andhra Pradesh: *Lanka* tobacco is exclusively grown on the banks of deltaic islands of Krishna (Krishna district) and Godavari rivers (East & West Godavari and Khammam districts) of Andhra Pradesh and Telangana. This tobacco is mainly used for handmade indigenous cheroots having characteristic aroma and pungent taste and also for cigars and snuff. Planted in the main field in November. Cured leaf colour is brown. It has high nicotine of about 5.0% and reducing sugars of about 1.5%. *Lanka Special* and DR-1 are the landmark varieties.



Lanka Special

The issue of lack of high yielding and stress tolerant varieties need to be addressed through research in cheroot tobacco grown in different parts of India. Research back up in the area of production and protection practices are to be given priority.

Jati (N. tabacum) and Motihari (N. rustica) tobacco

In west Bengal both the cultivated tobacco species are grown. *N. tabacum* cultivated here is known as *jati* tobacco and *N. rustica* as *motihari* tobacco. The details of both types are given here.

***Jati* tobacco (*N. tabacum*):** The *Jati* tobacco is grown in restricted pockets in the banks of Singimari river of Dinhata sub-division at Cooch Behar district of West Bengal on either side with blocks, Adabari and Natabari. This tobacco is mainly used for chewing purpose and is sun cured. Nicotine content in *jati* tobacco is 4%. Chama, Podali, Manasi and DJ-1 are the landmark chewing varieties.



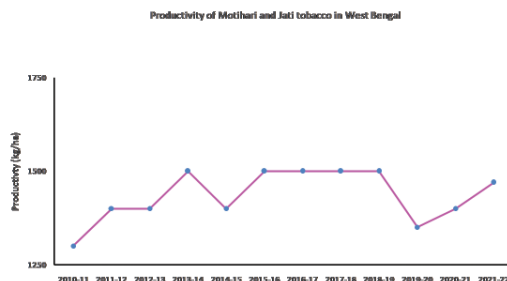
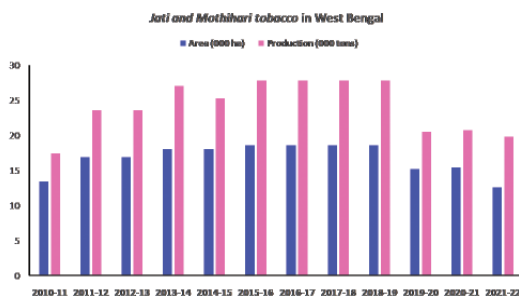
Podali

Motihari (N. rustica): *Motihari* tobacco (*N. rustica*) is grown in Northern districts of Cooch Bihar and Jalpaigudi in West Bengal as *rabi* crop. It is mainly used for *hookah* and chewing purpose. It is a sun and air cured tobacco. Nicotine content in mitihari tobacco is 5-6%. DD 437, Torsa and Dharla are the popular varieties cultivated here.



Dharla

Area and production trends of *Jati* and *Motihari* tobacco in West Bengal: In West Bengal, the area under *Jati* and *Motihari* tobacco was increased from 13,000 ha to 19,000 ha during 2010-19 and decreased to 13,000 ha during 2021-22. The production increased from 17,000 tons to 28,000 tons during 2010-19 and decreased to 20,000 tons 2021-22.



Hollow stock disease and soil acidity are problems in this area. Development of improved varieties and good agricultural practices are the researchable issues in respect of this crop.

Rustica tobacco (N. rustica)

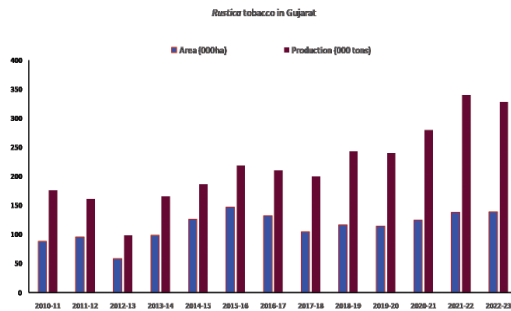
Rustica tobacco is mainly grown in West Bengal, Gujarat and Uttar Pradesh. *Rustica* tobacco is characterized by short plants with round puckered leaves and yellow flowers. In general, sun curing is followed in *Rustica* tobacco. Cured leaf contains high nicotine. The *Rustica* tobacco grown in Gujarat is mainly used for chewing purpose, and Uttar Pradesh and West Bengal are used for *hookah* and chewing purposes. It is also used in preparation of tobacco products *viz.*, chewing (*Khaini*), *zarda*, *hookah* tobacco paste, *quiwam*, tooth powder (Gul), *Paan Masala*, *Gutka* etc.

***Rustica* tobacco (Motihari tobacco) in West Bengal:** *Rustica* tobacco grown in West Bengal is known as *Motihari* tobacco. It is cultivated in an area of 12,000 hectares producing 16.2 M kg with a productivity of 1350 kg/ ha is concentrated in Cooch Behar, Jalpaiguri, Malda and Murshidabad districts. The popular varieties grown in West Bengal are DD 347, Dharla and Torsa.



GCT 3

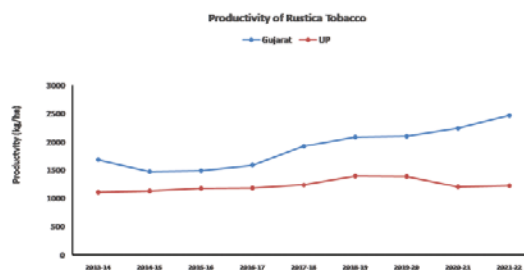
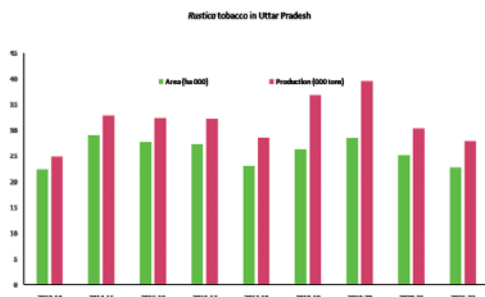
***Rustica* tobacco in Gujarat:** In Gujarat *rustica* tobacco is mainly grown in the districts of Sabarkantha, Banaskantha, Mehsana, Patan, Nadiad, Gandhinagar, Khambhat, Kheda, and Anand in an area of 1,38,400 ha. In Gujarat, the area under *Rustica* tobacco has increased from 88 thousand ha to 138 thousand ha during the last decade and the production has increased from 176 thousand tons to 328 thousand tons during the corresponding period. The popular varieties grown in Gujarat are GCT 3 and DCT.



***Hookah* tobacco in Uttar Pradesh:** *Rustica* tobacco is grown in Uttar Pradesh is known as *Hookah* tobacco. In Uttar Pradesh *hookah* tobacco is mainly grown on the alluvial soil in an area about 25,000 to 28,000 ha as irrigated crop during rabi and summer seasons producing 39,594 MT of cured leaf with an average productivity of 1,387 k/ha. The production of *hookah* tobacco in Uttar Pradesh is largely concentrated in Kanpur, Kanpur Dehat, Farrukhabad, Etah, Kasganj Barabanki, Gonda, Gorakhpur, Unnao, Azamgarh, Basti, Fatehpur and Kausambi districts. Landmark/popular varieties of *Hookah* tobacco grown are Patiyali, SK-417 and Azad Kanchan.



Azad Kanchan



In Uttar Pradesh, the area under *Rustica* tobacco has remained more or less constant (25,000 ha) with slight fluctuations during 2013-14 to 2021-22 with around 33000 tonnes production.

The productivity of *Rustica* tobacco was high in Gujarat compared to Uttar Pradesh during the last decade.

The major researchable issues for *Rustica* tobacco grown in different areas are breeding improved varieties with higher leaf yield, better leaf quality and resistance to major biotic stresses (root-knot nematode in Gujarat and hollow stock in West Bengal) suitable to various zones, development of location specific and cost effective production and protection technologies for maximising the yields and farm returns.

Chewing tobacco

Tobacco for chewing purpose is grown in Gujarat, Uttar Pradesh, West Bengal, Tamil Nadu and Bihar states. The tobacco grown in Uttar Pradesh (at *Rustica* section) and West Bengal (at *Jati* and *Motihari* section) for chewing purpose are discussed in the previous chapter. Chewing tobacco grown in Gujarat, Tamil Nadu and Bihar are discussed here.

Chewing tobacco of Gujarat: In Gujarat both *Rustica* and *N. tabacum* are used for chewing purpose. *Rustica* tobaccos of Gujarat are already discussed under *Rustica* tobacco section. The chewing tobacco (*N. tabacum* and *N. rustica*) grown in Gujarat, through a specific process of curing in the field yielding golden yellow colour of leaves is called '*lal chopadia*'. A145 is released specifically for *lal chopadia* purpose. In another process, the leaves are cured by heaping and spraying water. As leaves are turn to brown to dark brown colour in this method, this process is called '*kala chopadia*'. GT 6 and GT 8 are released for *kala chopadia* process. However, any variety belongs to *N. tabacum* and *N. rustica* can be cured in any of these processes based on farmers convenience and requirement.



GT 6

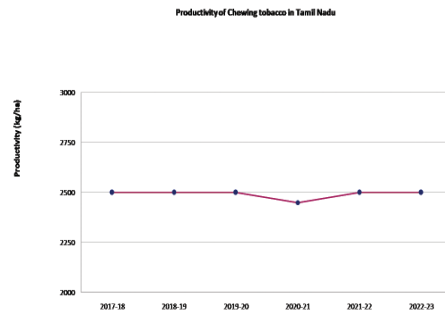
Chewing tobacco of Tamil Nadu:

Chewing tobacco cultivation in Tamil Nadu is mainly concentrated in Dindigul, Erode, Coimbatore, Madurai, South Arcot, Nagapatnam, Salem, Thanjavur, Kanyakumari and Tirunelveli districts.

There are sun-cured, pit-cured and smoke cured chewing types in Tamil Nadu. In Tamil Nadu, the area under chewing tobacco has remained between 10000 to 13000 ha during the last five years and the production has hovered between 27000 to 25000 tons during the corresponding period with about 2500 kg/ha productivity. Cured leaf is brown to dark brown in colour. Nicotine content in sun-cured tobacco is 3-6%, pit-cured 2.5-3.5%, and smoke cured 3.5-4.5%. Popular varieties of chewing tobacco type are Meenakshi CR, Bhagyalakshmi and Abirami.



Abirami



Chewing tobacco of Bihar: Chewing tobacco is grown in Vaishali, Samastipur and Muzaffarpur areas in medium and heavy soils of Purnea, Katihar and Saharsa districts. The chewing tobacco grown here is sun cured. This tobacco is also used for chewing (khaini), zarda, quiwam, tooth powder, pan masala, gutka etc. Cured leaf is brown to dark brown colour, nicotine 3-4% and chorides 1-2%. Popular varieties of chewing tobacco type are PT-76 and Vaishali Special.



Vaishali Special

Caterpillar, black shank and *Orobanche* are the major biotic stresses in chewing tobacco area. Accordingly, attention of the researcher is required in breeding improved chewing tobacco varieties for various zones and development of location specific crop production and crop protection practices addressing these issues.

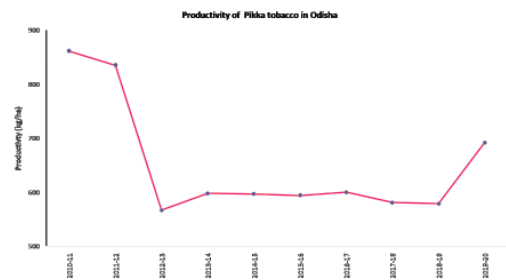
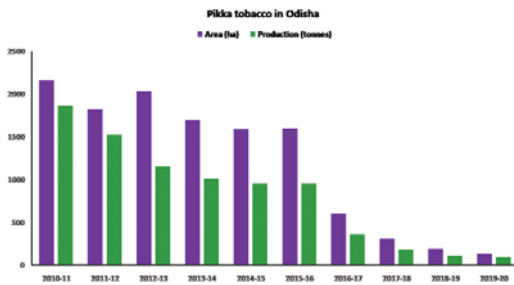
Pikka tobacco

The tobacco used for country cheroot purpose is locally known as *Pikka* in Odisha. The tobacco is cultivated on the sandy loam soils of Rayagada, Gajapati, Koraput, Nabarangpur and Parlakhemundhi districts of Odisha. Earlier country cheroot was a common form of tobacco smoking in rural areas of Odisha. *Pikka* tobacco made cheroots are smoked by fishermen community in coastal belts of Ganjam, Puri, Cuttack, and Balasore. *Pikka* tobacco leaves in general are thick, dark in colour and contains prominent veins. *Pikka* cheroot smoke is very strong in aroma and have good burn and gives chalky white colour ash. Cured leaf colour is brown and nicotine 4-5%. *Pikka* tobacco is also used in the preparation of products including tobacco paste (gudaku), snuff (orally consumed), kharamasala (gundi), dhuligundi, khaini and gutka etc.



Gajapati

In Odisha, the area under *Pikka* tobacco has decreased from 2160 ha to 130 ha during the last decade and the production from 1860 tons to 692 thousand tons during the corresponding period. The productivity of *pikka* tobacco was declined from 861 kg/ha to 692 kg/ha during the last decade. The majority of the farmers cultivate Gajapati and JP Local varieties in this area.



Lack of improved varieties is the major concern here. Hence, development of *pikka* tobacco varieties possessing higher leaf yield with acceptable quality and tolerance to biotic and abiotic stress is a major researchable issues. Crop production technologies with emphasis on solving location specific problems for sustainable tobacco production also need to be developed.

Cigar wrapper and cigar filler

The cigar wrapper is the outside layer of tobacco and gives a premium and affordable cigar one of its primary flavor components. Earlier, it used to be cultivated in Tamil Nadu and currently it is not cultivated. There are two types of cigar filler: long filler (which contains the whole leaf running from the head to the foot of the cigar) and short filler (comprised of scraps of tobacco - often the trimmed ends of long fillers). The blending of wrapper, filler, and binder is what determines the overall flavor of a premium cigar.



Dixie shade

Currently, Cigar wrapper is being cultivated in northern parts of the west Bengal in new Jalpaiguri and Cooch behar. Popular wrapper varieties are S 5, Dixie shade and Krishna. Nicotine content in cigar filler (West Bengal) is 2.05% and cigar wrapper (West Bengal) is 1.44% and cigar tobacco of Tamil Nadu is 1.24%..



Krishna

Other tobaccos: Kentucky Fire-cured (KFC) tobacco and Sun-cured Virginia (SCV)

In India, Kentucky Fire-cured tobacco is grown in an area of 3400 ha and used in blending with smoking products such as Cigarettes, *bidi*, pipe tobacco and *hookah* tobacco paste *etc.* Specifically, in Kurnool district of Andhra Pradesh, KFC tobacco is cultivated in 500 ha. KFC plantation starts during August to September. Cured leaf color is brown to dark brown, size medium to large, nicotine 2.5 - 3.75 % and chloride 1.0 - 2.0 %.

Recently in order to reduce the curing costs in flue-curing, Sun-cured Virginia (SCV) is gaining momentum. In SCV, the leaves harvested from the flue-cured varieties are cured under sun. The nicotine content of around 2.5% and reducing sugar content of 12% is preferable in this type. Mostly light cast FCV varieites are suitable for this process. Sun curing process need to be standardised through research to get desirable quality cured product. Suitable varieites and agronomic processess are to be developed for sun cured.



Sun cured virginia



INDIAN TOBACCO



N. TABACUM

N. RUSTICA

BASED ON LEAF COLOUR

HOOKAH ZARDA CHEWING

LIGHT

FCV (Light- cast)
BURLEY

MEDIUM / DARK

FCV (Dark-cast)
CIGAR FILLER
CIGAR WRAPPER
CHEROOT
TURKISH
NATU
BIDI
SNUFF
CHEWING
LANKA
MARYLAND
ORIENTAL

BASED ON CURING METHOD

FLUE-CURED

FCV

SUN / AIR CURED

FCV (Dark-cast)
CIGAR FILLER
CIGAR WRAPPER
CHEROOT
TURKISH
NATU
BIDI
SNUFF
CHEWING
LANKA
MARYLAND
ORIENTAL

SMOKE CURED

SMOKE CURED (TN)

FIRE CURED

DWFC

PIT CURED

CHEWING (Coimbatore area, TN)

BASED ON ULTIMATE USE

FCV FOR CIGERETTE.
BURLEY, NATU & ORIENTAL FOR CIGARETTE BLENDING.
FILLER, WRAPPER & BINDER FOR CIGAR.
NATU, LANKA & COUNTRY CHEROOT FOR CHEROOT.
BIDI FOR BIDI.
CHEWING (NT & NR) & JATI FOR CHEWING.
SNUFF FOR SNIFFING.
RUSTICA FOR HOOKAH.



ICAR - Central Tobacco Research Institute

(ICAR-NATIONAL INSTITUTE FOR RESEARCH ON COMMERCIAL AGRICULTURE)

(An ISO 9001: 2015 Certified Institute)

Rajahmundry - 533 105, Andhra Pradesh, India

Phone: 0883 - 2449871-4, Fax: 0883 - 2448341

e-mail : directorctri@gmail.com, director.ctri@icar.gov.in

website : <https://ctri.icar.gov.in>