

## INTRODUCTION

Tobacco is one of the important commercial crops of India grown in an area of 4.32 lakh ha (0.27 per cent of the net cultivated area) in the country contributing 28000 crores to Indian exchequer towards excise revenue and exports. In Gujarat *Bidi* tobacco mainly grown in the districts of middle Gujarat viz., Anand, Kheda, Vadodara, Panchmahal and Dahod in an area of 1,52,000 ha which ranks first in the country with 89% of total *bidi* tobacco cultivating area whereas in Andhra Pradesh it is grown in the district of Kurnool with an area of 11,250 ha which is 7% of total *bidi* tobacco area in the country and in Karnataka, it is grown in an area of 7185 ha in Nipani which is 4% of the total *bidi* tobacco area.

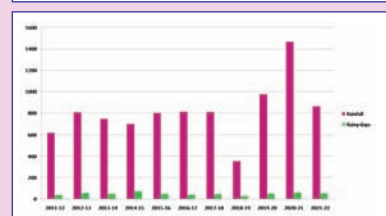


## CLIMATE AND SOILS

The climate in Gujarat is semi-arid and subtropical with fairly dry and hot summer. Monsoon generally starts during third week of June continue up to second week of September with an average annual rain fall of 942 mm and 41 rainy days. July and August are the months of heavy precipitation. Mean maximum temperature is round 40 °C and minimum temperature is around 12 °C.

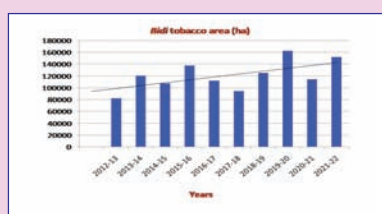
In Andhra Pradesh is monsoon generally starts during third week of June continues up to October with an average annual rainfall of 750 mm with 44 rainy days. Mean maximum temperature is round 42 °C and minimum temperature is around 19 °C.

In Karnataka monsoon generally starts during third week of June continues up to October with an average annual rain fall of 735 mm and 76 rainy days. July and August are the months of heavy precipitation. Mean maximum temperature is round 36 °C and minimum temperature is around 9 °C.



## PRODUCTION SCENARIO

Gujarat ranks first in production and productivity of tobacco. In Gujarat *Bidi*, chewing (*Lal* and *Kala Chopadia*), Hookah (*Gadaku*) and *Rustica tobacco* are grown in an area of 1.92 lakh ha producing 452 M kg with productivity of 2363 kg/ha. *Bidi* tobacco is grown in an area of 1.52 lakh ha (80%) producing 375 M kg (83%) with a productivity of 2464 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. In Gujarat around 40 thousand farmers are engaged in tobacco cultivation. The *bidi* manufacturing being a cottage industry spread over several states employs about 4 million people. They are mainly rural youths and women. Around one million people mostly tribals are engaged in plucking of *tendu* leaf, a *bidi* wrapper.



In Andhra Pradesh *bidi* tobacco is grown in an area of 11,250 ha producing 18.84 M kg with productivity of 1750 kg/ha. The production of *bidi* tobacco in Andhra Pradesh is mainly in Kurnool district.



In Karnataka *Bidi* tobacco is mainly grown in Chikodi, Hukkeri and Gokak talukas of Belagavi district. At present, it occupies an area of 6500 ha with the production of about 9815 tonnes and a productivity of 1510 kg/ha. The *bidi* tobacco produce of this area is known for its quality throughout the country.



## BIDI NETWORK CENTRES

### AINPT Cetnre, BTRS, Anand

ICAR had sanctioned the All India Co-ordinated Research Project on Tobacco during the fourth five year plan in 1970-71 with its head quarter at Anand till August 1998 to intensify the research work being carried out on major problems of tobacco having regional and inter-regional significance. Anand was one of the four main centers under the AICRP on tobacco, the other three being Rajahmundry, Pusa and Shimoga. The AICRP on tobacco was renamed as All India Network Project on Tobacco under the administrative control of the Director, CTRI, Rajahmundry from 1998. The center works through the co-ordination of multidisciplinary research by a team of scientists including Plant Breeder, Agronomist, Nematologist, Pathologist, and Soil chemist. The center works to cater to the needs of *bidi* and *rustica* tobacco growing areas of the state.

### AINPT Centre, Nandyal

Indian council of Agriculture Research sanctioned a centre to Andhra Pradesh Agricultural University at Kavali of Nellore District of Andhra Pradesh under All India Coordinated Research Project on Tobacco to cater the needs of Southern Light Soil FCV tobacco growing areas of Andhra Pradesh in October, 1970. Consequent to the establishment of full -fledged Research station at Kandukur under Central Tobacco Research Institute, the Kavali centre was shifted to Venkataramannagudem of West Godavari district, 1978 to serve irrigated *natu* tobacco growing areas of Andhra Pradesh. The Venkataramannagudem centre under APAU was shifted to Nandyal 1992 to work on cigarette *natu* and *bidi* tobacco.

### AINPT Centre, Nipani

The Agricultural Research Station, Nipani was established in the year 1938 to conduct research on *bidi* tobacco as Nipani area of Belagavi district is known for production of excellent quality *bidi* tobacco in the country. The research on tobacco was first started at Soundalaga 10 km away from Nipani towards North on the National Highway-4 in the year 1942. Later, it was shifted to Nipani in the year 1961. In the beginning, the research on both FCV and *bidi* tobacco were started during 1942. Later, it was proved that cultivation of FCV was not economical due to unfavourable climatic condition. Since then, the research on *bidi* tobacco has been concentrated at this station. The research on *bidi* tobacco got a fillip when the AICRP on *bidi* tobacco started functioning at this station from 1970. Several technologies in *bidi* tobacco cultivation have been recommended to the farming community and promising varieties of *bidi* tobacco were released from the station since its establishment.

## BIDI TOBACCO CULTIVATION

*Bidi* tobacco in Gujarat is grown during August to April, in Andhra Pradesh, from September to February and in Karnataka and from August to January. *Bidi* tobacco in Gujarat is being cultivated in sandy loam or loamy sands with good organic matter and good drainage. In Andhra Pradesh Soils are heavy black ranging from silt loam to clay and crop is raised on conserved moisture mostly as rainfed crop. In Karnataka *Bidi* tobacco can be grown on a wide range of soils from medium black to red soils. The good agricultural practices developed by AINPT Centres are being followed by the farmers. The important pests/diseases identified in these areas include *S. litura*, whitefly, aphids, damping off, root-not nematode, frog-eye-leaf spot.

## VARIETIES DEVELOPED

### Gujarat

**A 2:** Released in 1969, cured leaf yield potential is 2555 kg/ha with long and broad leaves, tolerant to leaf burn and lodging. Suitable for *bidi* tobacco growing states of Gujarat, Karnataka, Maharashtra and Madhya Pradesh.

**A 119:** Released in 1969, cured leaf potential is 2625kg/ha, Medium height, broad and well distributed leaves. Tolerant to leaf burn disease. Suitable for *bidi* tobacco growing areas of Gujarat, Karnataka, Andhra Pradesh

**GT 4:** Released in 1976, cure leaf potential is 2600. Dwarf with short internodes, tolerant to moisture stress and leaf burn disease. Suitable for Rainfed *bidi* tobacco growing areas of Gujarat.

**GT 5:** Released in 1985, cured leaf potential is 3300 kg/ha Tolerant to root-knot nematodes, shy suckering, high nicotine and smooth smoke. Suitable for *Bidi* tobacco growing areas of Gujarat

**GT 7:** Released in 1993, cured leaf potential is 2535 kg/ha, Tall with high leaf potential, tolerant to drought. Suitable for Rainfed *bidi* tobacco growing areas of Gujarat but farmers also grow under irrigated condition.

**GT 9:** Released in 2001, cured leaf potential is 3077 kg/ha. High yielding and mosaic resistant. Suitable for tobacco growing areas of Gujarat.

**MRGTH 1:** Released in 2005, cured leaf potential is 3793 kg/ha Mosaic resistant and tolerant to root-knot nematodes with high nicotine. High leaf yield potential with long and broad leaves. Suitable for Irrigated *bidi* tobacco growing areas of Gujarat

**ABT 10:** Released in 2008, Cured leaf potential is 2697 kg/ha. Highly resistant to root-knot nematodes, thick bodied with better smoke taste than GT 5, shy suckering and high yielder than A 119. Suitable for Root-knot prone areas of Gujarat.

**GABT 11:** Released in 2013, cured leaf potential is 4175 kg/ha High yielding with shy suckers. Suitable for *Bidi* tobacco growing areas of Gujarat

**GABTH-2:** Released in 2021. High yielding hybrid (3900 kg/ha) with shy suckers, long and broad leaves. High nicotine content. Suitable for Irrigated *bidi* tobacco growing areas of Gujarat



### Andhra Pradesh

**Nadyala Pogaku-1:** Released in 2015. High yielding ( 2150 kg/ha) *bidi* tobacco variety with 16 to 20 curable leaves and suitable for Rainfed areas in the *bidi* tobacco growing areas of Kurnool district of Andhra Pradesh.

### Karnataka

**NPN-190:** Released in 1979. High yielding (1500 kg/ha), tolerant to Black shank disease. Suitable for *bidi* tobacco growing areas of Nipani tract in Karnataka.

**Bhagyashree:** Released in 1996. Yield potential (2500 kg/ha under irrigation and 1700 kg/ha rainfed), tolerant to black shank disease. Suitable for *Bidi* tobacco growing areas of Belagavi district of Karnataka.

**NBD 209:** Released in 2016. High yielding (3000 kg/ha Irrigated and 2200 kg/ha rainfed) with moderate resistance to brown leaf spot, less suckers and low infestation of aphids, response to higher dose of nitrogen, performs better in harsh and severe situations. Suitable for *bidi* tobacco growing areas of Karnataka.



**Spoorthy:** Released in 1984. High yielding (2000 kg/ha), tolerant to Black shank. Suitable for *Bidi* tobacco growing areas of Belagavi district of Karnataka and Kolhapur and Sangli districts of Maharashtra.

**Bhavyashree:** Released in 1996. High yielding (2800 kg/ha irrigated 1800 kg/ha rainfed) with tolerance to blank shank disease. Suitable for *Bidi* tobacco growing areas of Belagavi district of Karnataka.

**Vedaganga-1:** Released in 2008. High yielding (2500 kg/ha irrigated, 1800 kg/ha rainfed) compared to A119, better in smoking qualities, low suckers. Suitable for *Bidi* tobacco growing areas of Belagavi district, Karnataka.

#### IMPACT OF *BIDI* TOBACCO VARIETIES

#### Extent of adoption of the most popular varieties in different states

Variety	Extent of adoption
A 119	35% (Gujarat); 65% (Andhra Pradesh); 60% (Karnataka)
GT 7	32% (Gujarat)
GT 5	10% (Gujarat)
GT 4	7% (Gujarat)
ABT 10	Widely cultivated in endemic areas of nematode (Gujarat)
Nadyal Pogaku-1	15% (Andhra Pradesh)
NBD-209	20% (Karnataka);
Bhavyashree	10% (Karnataka);

#### SEED AND SEEDLING SUPPLY

The centres are actively involved in production and supply of *bidi* varieties seed for sustainable yield and quality. On an average the centres supplies ~ 6500 kg seed to meet more than 90% seed requirement of the farmers.

Varieties	Seedling (Nos.)	Truthfully labeled Seed (kg)
A 2	2500	60
A 119	25500	4170
A 145	3500	261
GT 4	22000	293
GT 5	100000	434
GT 7	159500	1390
GABT 11	73500	38
MRGTH 1	230500	2
GABTH 2	448550	3
Total	1065550	6651

#### Most popular technologies and their adoption

##### Gujarat

S.No.	Title	Area and % of adoption of the technology
1.	Effect of organic manures on root-knot control in <i>bidi</i> nursery	50%
2.	Agro-shade net for damping-off control in <i>bidi</i> tobacco nursery	60%
3.	Integrated nutrient management of <i>bidi</i> tobacco grown in Gujarat	20%
4.	Integrated disease management in <i>bidi</i> tobacco in Gujarat	30%
5.	Agro-shade net for <i>bidi</i> tobacco seedling production in Gujarat	40%
6.	Management of damping-off in <i>bidi</i> tobacco nursery in Gujarat	80%
7.	Evaluation of new fungicides for the management of frog-eye-spot disease in <i>bidi</i> tobacco nursery in middle Gujarat	30%
8.	Management of leaf eating caterpillar in <i>bidi</i> tobacco nursery	50%

##### Andhra Pradesh

S.No.	Title	Area and % of adoption of the technology
9.	Water and Nitrogen Management	60%
10.	Alternative cropping systems for <i>bidi</i> tobacco in Andhra Pradesh	45%
11.	Effect of planting time and age of seedlings on growth, yield and quality of <i>bidi</i> tobacco	80%
12.	Effect of different levels of nitrogen and topping on growth, yield and quality of <i>bidi</i> tobacco	80%
13.	Assessment of planting methods in <i>bidi</i> tobacco to minimize the effect of water logging	60%
14.	Effect of foliar nutrition of N and K on the leaf quality and crop performance in <i>bidi</i> tobacco	80%
15.	Economization and management of P and K fertilizers for <i>bidi</i> tobacco	50%
16.	Effect of topping crop and number of leaves on growth, yield and quality of <i>bidi</i> tobacco	90%
17.	Efficacy of new insecticides against leaf eating caterpillar in <i>bidi</i> tobacco	100%

##### Karnataka

S. No.	Title	Area and % of adoption of the technology
18.	Management of Frog Eye Spot in <i>bidi</i> tobacco grown in Karnataka	80%
19.	Eco-friendly management of root-knot disease in <i>bidi</i> tobacco	50 %
20.	Zinc application for <i>bidi</i> tobacco in Karnataka	65%
21.	Management of damping-off in <i>bidi</i> tobacco nursery	90%
22.	Trap crops for Management of <i>Orobanche</i>	75%
23.	Vegetable based intercrops for <i>bidi</i> tobacco in Karnataka (under mulches)	50%
24.	Damping off management of <i>bidi</i> tobacco in Karnataka	No damping off is observed in tobacco planted in main field

#### CONSTRAINTS IN *BIDI* TOBACCO CULTIVATION

- Intermittent dry spells of drought.
- Late onset of monsoon causing delayed planting.
- Anti-smoking campaign.
- Awareness against tobacco consumption.
- Non-remunerative prices.
- No proper marketing facility to dispose-off the produce at remunerative prices.
- Lack of credit facility.
- Shift in quality requirement of markets.
- Lack of momentum in exploitation of alternative uses of Tobacco.

#### FUTURE THRUST

- *Bidi* tobacco germplasm is to be screened for tobacco specific traits.
- Developing economically viable and eco-friendly agro technologies for enhancing productivity and quality, reducing harmful substances.
- Breeding low TSNA lines besides developing cultural practices to lower TSNA .
- Identification of the drought tolerant lines and wet-foot tolerance lines.
- Developing value added products for promoting exports and generating revenue and employment on a sustainable basis would be our major mission.

#### Published by

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Word process & Designing by **Md. Elias**

# Indian *Bidi* tobacco



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