

**TOBACCO PRODUCTION AND PROTECTION TECHNOLOGIES FOR
IMPROVING THE PRODUCTIVITY & QUALITY
(AGRONOMIC PRACTICES)**

Tobacco is an important commercial crop cultivated in an area of 0.4 million ha producing annually around 700 million kg of cured leaf out of which 260 M kg is Flue-Cured Virginia tobacco (cigarette type). India is the 3rd largest producer of tobacco in the world after China and Brazil. Majority of the states in the Indian union territory grow one type or the other to a greater or lesser extent, significantly influencing the economy and prosperity of the farming community. Flue-Cured Virginia (FCV), Bidi, Hookah and Chewing, Cigar filler, Cigar Wrapper, Cheroot, Burley, Oriental, HDBRG, Lanka etc., are the different types of tobacco grown in the country. Tobacco is consumed in the form of cigarettes, cigars, cheroots, bidis, pipe and hookah. It is chewed in the form of *Surti, Zarda, Qiwamquid, Masher, Kharamasala*. Also, tobacco is inhaled in the form of snuff. The crop provides employment to about 36 million people directly or indirectly including 6 million farmers in the country. India ranks 5th largest exporter of tobacco in the world after Brazil, USA, Malawi and Turkey. The crop fetches annually around Rs.1,713 crores as foreign exchange through exports and over Rs. 9,100 crores as excise revenue. An estimated ~250 million people in the country use tobacco in different forms.

Flue-cured Virginia tobacco: In Andhra Pradesh, Flue-Cured Virginia (FCV) tobacco is grown in an area of 1,25,000 ha in East Godavari, West Godavari, Khammam, Krishna, Guntur, Prakasam, Nellore, Karimnagar and Warangal districts with a total production of 170 M kg of leaf. While in Karnataka, FCV tobacco is cultivated in 85,000 ha of area with a production of 87 M kg leaf. It is also grown in a smaller area in the states of Maharashtra and Orissa. The recommended production technologies for FCV tobacco cultivation in Andhra Pradesh and Karnataka are presented in Table 1

Table 1: Crop production practices for FCV tobacco in India

Cultural Practice	Andhra Pradesh			Karnataka
	Traditional Black Soils	Northern Light Soils	Southern Light Soils	Karnataka Light Soils
Variety	Gauthami, Hema VT-1158, Hemadri and Siri	Kanchan	Gauthami, Hema, VT-1158 and Kanthi	Kanchan, Thrupthi, Rathna Swarna, Bhavya,
Preparatory Cultivation	Deep ploughing in summer, 2-3 ploughings between July and September	Deep ploughing and Discing with tractor with the onset of monsoon	Deep ploughing between July and September	Deep ploughing in March and April

Organic manures (tonnes/ ha)	FYM @7.5	Sunnhemp green manuring or application of FYM or FPC @10-12 or sheep or cattle penning	FYM @ 5	FYM @ 8-10
Date of planting	Mid October to mid November	Mid-Sept. to mid-Oct. in upper NLS and mid-Oct. to mid-Nov. in lower NLS	Mid October to Mid. November	1st week of May to middle of June
Spacing	70 x 50 cm	100 x 60 cm	70 x 50 cm	100 x 60 cm
Planting method	Flat planting	Furrow planting followed by ridging on 40 th day	Flat planting followed by ridging / earthing up	Flat planting followed by ridging
Method of fertilization	Plant row-plough furrow	Dollop	Plant row-plough furrow	Dollop
Fertiliser dose (N: P2O5: K2O kg/ha)	45:0:0 50:50:50 (SBS)	115:60:120	60:60:60 60:60:80 (Podili)	60:40:120
Irrigations	Crop is grown on conserved soil moisture	8-10	One life saving irrigation @ 40-45 days of planting	Grown in S-W monsoon conditions
Intercultural operations	Two at 20 & 40 day after planting	2 or 3 times up to 40 days and ridging on 40 th day	2 or 3 times before 40 days	2 or 3 times before 40 days
Level of topping	Judicious topping at first flower opening	Topping at flower bud initiation at 24 leaves	Bud topping	Bud topping
Sucker control	Decanol or Royalten 4% or Pendimethalin @ 0.5 – 0.6%	Decanol or Royalten 4% or Pendimethalin @ 0.5 – 0.6% followed by hand desuckering	Decanol or Royalten 4% or Pendimethalin @ 0.5 – 0.6%	Decanol or Royalten 4% or Pendimethalin @ 0.5 – 0.6%
Harvesting	Priming mature leaves	Priming mature leaves	Priming mature leaves	Priming mature leaves
Curing method	Flue-curing	Flue-curing	Flue-curing	Flue-curing
Grading	Farm grading	Plant position grading	Farm grading	Plant position grading

Note : Pendimethalin should not be used as weedicide but can be used as Suckericide in tobacco

Bidi and Pikka tobacco: *Bidi* tobacco is cultivated in Gujarat and Karnataka in 1.15 lakh ha area while *Pikka* tobacco is an important tobacco cultivated in Orissa for chewing and cheroot purposes. Important production technologies recommended for *Bidi* tobacco cultivation in Gujarat and Karnataka and for *Pikka* tobacco in Orissa are furnished in Table 2.

Table 2: Crop production practices for *Bidi* and *Pikka* tobacco in India

Cultural Practice	Bidi Tobacco		Pikka Tobacco Orissa
	Gujarat	Karnataka	
Variety	Anand119, Anand 2, GT-4, GT-5,GT-7,GT-9,GTH-1, GTH-1 (MR)	A-119, NPN 190, Spoorthy Bhavya Sree NBD-43	Pyruvithanam, J.P.1, NG-74, II-1327
Preparatory Cultivation	Deep Ploughing in summer	Deep Ploughing in summer	Deep Ploughing in summer
Organic Manures (tonnes/ha)	Green manuring or FYM @12.5 or poultry manure or Azolla	FYM @10	FYM @10
Date of planting	August	10-25 August	2nd Fortnight of August
Spacing	90 x 60 cm	100 x 75 cm	75 x 50 cm
Planting method	Flat planting	Flat planting	Flat planting & ridging
Method of fertilization	Plant row - plough furrow method	Deep placement before planting	Band placement
Fertiliser dose (N: P2O5: K2O kg/ha)	160:0:0	125:60:40	80:40:40
Irrigations	As and when required	3-4 irrigations	Nil
Intercultural operations	As and when required	2-3 times	Two hoeings & hand weeding
Level of topping	18-24 leaves	16-20 leaves	10-12 leaves
Sucker control	Decanol 4-6% & hand removal	Khudaband 4-6% or Stomp 1.5%	Decanol 4% & hand removal
Harvesting	When leaves develop spangles	When maximum no. of leaves develop spangles	Stalk cut method
Curing method	Sun - curing	Sun - curing	Sun - curing
Grading	<i>Bukha, Geran, Galia, Lankada</i>	I sort, II sort etc.	----

Burley, *Natu* and *Lanka* tobaccos: In Andhra Pradesh, Burley, *Natu* and *Lanka* tobaccos are cultivated to an extent of 45,000 ha. The Important recommended production technologies for these tobaccos are given in Table 3.

Table 3: Crop production practices for Burley, *Natu* and *Lanka* tobaccos in Andhra Pradesh.

Cultural Practice	Burley	Irrigated Natu	Rainfed Natu	Lanka
Variety	Burley-21 and Banket A1	Kommugudem, Peddavithanam, Pyruvithanam, Rangapuram	Tokaku, Viswanath, Natu Spl., Prabhat, WAF, Bhairavi	Lanka Spl.
Preparatory Cultivation	Deep Ploughing in summer	Deep ploughing in summer	Deep ploughing in summer	Deep ploughing in summer
Organic manures (tonnes/ha)	FYM @ 10	FYM @ 10 –12 or green manuring	FYM @ 15	FYM @10
Date of planting	Mid-July to mid-August	Second to last week of October	Mid-Oct. to 1 week of November	Last week of Oct. to 15 th Nov.
Spacing	90 x 45 cm	60 x 60 cm	90 x 90 cm	60 x 60 cm
Planting method	Ridge planting	Flat planting followed by ridging	Flat planting	Flat planting followed by ridging
Method of fertilization	Dollop	Dollop	Plough furrow	Dollop
Fertiliser dose (N: P2O5: K2O kg/ha)	125:50:50	350:50:100	80:50:50	300:50:50
Irrigations	Monsoon crop	6-8	Rainfed	3-4
Interculture	2 – 3 times	2 – 3 times	2-4 times	3-4 times
Level of topping	No topping	14-16 leaves	14-16 leaves	12-14 leaves
Sucker control	----	Decanol 6%	Decanol 6%	Decanol 6%
Harvesting	Priming	Stalk cut (katta) or priming (Thoranam method)	Priming	Stalk cut
Curing method	Air-curing	Air-curing	Air-curing	Air-curing
Grading	Flyings, bottom, middle and top	Melmi & Gulla	Bright, brown, dark brown, green and perished leaf	Kotaku, Baraku Mattasam and Gulla

Cigar & Cheroot, Chewing, Hookah and HDBRG Tobaccos: Chewing, cigar and cheroot tobaccos are the major types grown in Tamil Nadu. Chewing tobacco is mainly grown in West Bengal, Bihar, U.P. & Assam, while hookah tobacco is cultivated in U.P.,

Bihar, Gujarat, Haryana and Assam. HDBRG tobacco is mainly cultivated in black soils of Guntur district in Andhra Pradesh with 3 – 4 irrigations which is used in cigarette blending.

Table 4: Crop production practices for in Cigar & Cheroot, Chewing, Hookah and HDBRG Tobaccos in India

Cultural Practice	Cigar & Cheroot - Tamil Nadu	Chewing-Bihar, Tamil Nadu & West Bengal	Hookah-West Bengal	HDBRG-Andhra Pradesh
Variety	O-K.1, Bhavani Spl., Olor-10, I-737, Sangami	Bihar : Vaishali Spl., Sona, PT-76, Lichchavi West Bengal: Podali, Chama Tamil Nadu: Bhagyalakshmi, Meenakshi, Abirami, Kaviri, Meenakshi (CR)	DD-437 and Dharla Sonar-Motihari, Manasi	HDBRG
Preparatory Cultivation	4-6 ploughings in Kharif	Deep ploughing in summer	Deep ploughing in summer	Deep ploughing in summer
Organic manures (tonnes/ha)	FYM @ 25 or sheep - penning	FYM @ 25	FYM @ 20	FYM @ 10
Date of planting	Mid-Oct., to Mid-Nov.	Bihar & Bengal: Mid Sept. to mid Oct. T.N. Last week of Oct. to end of Nov.	Mid-Oct. to 1 st week of November	1 week of Oct., 1 st week of November
Spacing	Cigar: 70 x 50 cm Cheroot: 60 x 45 cm	Bihar: 90 X 75cm Bengal: 90 x 45 cm T.N. 65 x 65cm	Jati: 90 x 90 cm Motihari: 60 x 45 cm	80 x 50 cm
Planting method	Ridge planting	Ridge planting	Flat planting followed by ridging	Flat planting
Method of fertilization	Dollop	Dollop	Pocketing	PRPF
Fertiliser dose (N: P ₂ O ₅ : K ₂ O kg/ha)	100:50:100	Bihar:250:60:60 Bengal: 120:50:75 T.N:100:50:0	120:50:75	100:50:50
Irrigations	20	Bihar :3 Bengal: 2 Tamil Nadu: 22	2	2-3

Intercultural operations	2 – 3 times	2 – 3 times	4 - 5 times	2-3 times
Level of topping	14-16 leaves	Bihar: 14 –16 leaves Bengal: 8-10 leaves Tamil Nadu: 10 leaves	8 – 10 leaves	20 leaves
Sucker control	Decanol or Royalten 6%	Decanol or Royalten 6%	Decanol or Royalten 6%	Decanol or Royalten6%
Harvesting	Stalk - cut	Stalk - cut	Priming	Priming
Curing method	Sun-curing	Sun-curing	Air-curing	Sun-curing
Grading	Plant position (<i>Rasi & Kruz</i>)	Bihar: 1, 2, 3 th & 4 th grades T.N: <i>Rasi & Kruz</i>	<i>Panpatta</i> No.1, <i>Niras & Jalapatta</i>	Bottom, middle & top primings