

## **Tobacco** (*Nicotiana tabacum* ( $2n=48$ ))

### **ORIGIN**

*Nicotiana tabacum* ( $2n=48$ ) is a native of tropical and subtropical America but it is now commercially cultivated worldwide. Other varieties are cultivated as ornamental plants or grow as a weed.

*N. tabacum* is sensitive to temperature, air, ground humidity and the type of land. Temperatures of 20–30 °C (68–86 °F) are best for adequate growth; an atmospheric humidity of 80 to 85% and soil without a high level of nitrogen are also optimal.

### **Distribution**

In the United States, as of 2014 North Carolina was the largest producer of tobacco, with around 1,800 tobacco farms employing 30,000 workers yielding in 400 million pounds of the crop annual.

While it is the major crop for millions of Chinese farmers, growing tobacco is not as profitable as cotton or sugar cane. This is because the Chinese government sets the market price. While this price is guaranteed, it is lower than the natural market price because of the lack of market risk. To further control tobacco in their borders, China founded the State Tobacco Monopoly Administration (STMA) in 1982

In Brazil around 135,000 family farmers cite tobacco production as their main economic activity.<sup>[12]</sup> Tobacco has never exceeded 0.7% of the country's total cultivated area.<sup>[14]</sup> In the southern regions of Brazil, Virginia and Amarelinho flue-cured tobacco as well as Burley and Dark (Galpão Comum) air-cured tobacco are produced. These types of tobacco are used for cigarettes. In the northeast, darker, air-cured and sun-cured tobacco are grown.

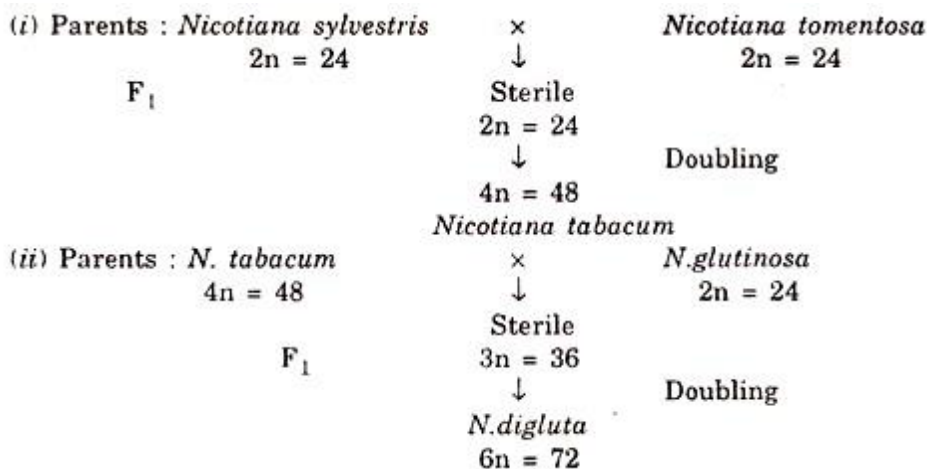
India has 96,865 registered tobacco farmers<sup>[16]</sup> and many more who are not registered. Around 0.25% of India's cultivated land is used for tobacco production.<sup>[17]</sup> Since 1947, the Indian government has supported growth in the tobacco industry. India has seven tobacco research centers that are located in Jeelugumilli, A.P., Kandukuru, A.P., Guntur, A.P., Kalavacherla, A.P., Hunsur, Karnataka., Veda sandur, Tamil Nadu, Dinhat, West Bengal and Rajamundry houses the core research institute. The government has set up Tobacco Board, Guntur which works to increase exports of Indian tobacco. Guntur is also well known place for tobacco plantation. The Central Tobacco Research Institute works under the aegis of Indian Council of Agricultural Research.<sup>[18]</sup> Tobacco crop is cultivated in an area of 0.45 M ha (0.27% of the net cultivated area) producing  $\approx 750$  M kg of tobacco leaf. India is the 2nd largest producer and exporter (in quantity

terms) after China and Brazil, respectively. The production of Flue-Cured Virginia (FCV) tobacco is about 300 million kg from an area of 0.20 M ha while 450 M kg non-FCV tobacco is produced from an area of 0.25 M ha. In the global scenario, Indian tobacco accounts for 10% of the area and 9% of the total production. By virtue of the dominant role played by this commercial crop, the Indian Central Tobacco Committee (ICTC) established Central Tobacco Research Institute (CTRI) in Rajahmundry (Andhra Pradesh) in 1947.

### Wild Relatives Of Tobacco

*Nicotiana benthamiana*, which grows wild in Australia, is widely used for experiments to study the interactions between plants and pathogens and other areas of plant biology.

Being part of the Solanaceae family, *N. benthamiana* provides a great resource to compare it to its relatives, the tomato and potato. With the availability of genome sequences from all three of these species, more detailed and exact understanding of how the different genes work can be analyzed, possibly leading to the development of more hardy, disease resistant crops.



### Breeding Objectives

In tobacco major breeding objectives are higher yield, acceptable quality and resistance to disease and insects as follows.

I. Higher Leaf Yield : Major yield components are no. of leaf per plant, leaf size and weight of single leaf.

II. Acceptable quality : quality characters include nicotine content, sugar content and aroma. High nicotine content is preferred for Bidi, hookah and chewing tobacco and low in cigarette tobacco. High sugar content is preferred in cigarette tobacco. Thin leaves are preferred for cigar and pipe smoking, thicker leaves for cigarettes and thickest leaf for chewing.

iii. Disease Resistance : Major diseases black shank, bacterial blight, fusarium wilt, powdery mildew, anthracnose, mosaic leaf curl etc.

#### IV. Insect resistance: Bud worm is most prevalent one.

No.	Material	Type	Classification
1	Aboyan	Burley	Common tobacco
2	ATNARELLO	Burley	Common tobacco
3	Big White Burley 599	Burley	Common tobacco
4	KY26	Burley	Common tobacco
5	Margland 609	Burley	Common tobacco
6	White Burley 9	Burley	Common tobacco
7	Fengzi 1	Flue-cured tobacco	Common tobacco
8	Gexin 6	Flue-cured tobacco	Common tobacco
9	Gezaji	Flue-cured tobacco	Common tobacco
10	Guanghuang 5	Flue-cured tobacco	Common tobacco
11	Honghuadajinyuan	Flue-cured tobacco	Common tobacco
12	Jinxing	Flue-cured tobacco	Common tobacco
13	Baiguniuli	Sun-cured tobacco	Common tobacco
14	Daqiugen 2	Sun-cured tobacco	Common tobacco
15	Dashangou	Sun-cured tobacco	Common tobacco
16	Datong	Sun-cured tobacco	Common tobacco
17	Dayemihe	Sun-cured tobacco	Common tobacco
18	Dazhongbaimao	Sun-cured tobacco	Common tobacco
19	2040	Cigar	Common tobacco
20	74-16	Cigar	Common tobacco
21	Black sea Samsun	Cigar	Common tobacco
22	Cuban Havana	Cigar	Common tobacco
23	Dark Virginia	Cigar	Common tobacco
24	Xiawangna	Cigar	Common tobacco
25	<i>Nicotiana. clevelandii</i> A. Gray	<i>Nicotiana. sect. Polydicliae</i>	Wild Nicotiana species
26	<i>Nicotiana debneyi</i> Domin	<i>Nicotiana. sect. Suaveolentes</i>	Wild Nicotiana species
27	<i>Nicotiana. repanda</i> Willd	<i>Nicotiana. sect. Repandae</i>	Wild Nicotiana species
28	<i>Nicotiana. rustica</i> L.	<i>Nicotiana. sect. Rusticae</i>	Wild Nicotiana species
29	<i>Nicotiana. sylvestris</i> Speg. & Comes	<i>Nicotiana. sect. Sylvestres</i>	Wild Nicotiana species
30	<i>Nicotiana. tomentosiformis</i> Goodsp.	<i>Nicotiana. sect. Tomentosae</i>	Wild Nicotiana species

#### Breeding Methods.

Generally introduction, pueline selection, back cross, pedigree and single seed descent. Specially mutation breeding, distant hybridization and biotechnology.

#### Breeding Centres

In India,

Central tobacco research institute (CTRI), Rajahmundry, AP

All India Coordinated Tobacco Improvement Project (AICTIP), Anand

