

## CHARACTERIZATION OF SCENTED LANDRACES OF CHEWING TOBACCO (*NICOTIANA TABACUM* L.)

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Central tobacco Research Institute (CTRI), Rajahmundry has been recognized as the National Active Germplasm Site for tobacco by National Bureau of Plant Genetic Resources (NBPGR), New Delhi. Since its inception, the Institute has been actively involved in collection and conservation of tobacco germplasm. Majority of the non-flue cured tobacco types are indigenous and were collected from India through survey and added to the National Gene Bank (Rao *et al.* 2005 a & b). At present a total of about 3000 accessions, including 57 wild *Nicotiana* species, are maintained at CTRI, Rajahmundry. Characterization of three scented non-FCV tobacco accessions is presented in this paper.

Tobacco grown in Sitamarhi district of Bihar and parts of Nepal are mainly shade-cured types and are used for chewing, hookah, jarda and khaini purposes. The tobaccos, here, are grown in about 5000 ha area in the alluvial sandy loams of Bhagamathi river bank and near River Ganga. The yield potential of these tobaccos ranges from 1300-1400 kg/ha and cured leaf fetches Rs 120/- per kg in the local market. These tobacco lines are scented/aromatic. Three distinct scented tobacco landraces *viz.*, Rajkhand-1, Rajkhand-2 and Rajkhand-3 cultivated by the farmers in the Sitamarhi District were collected during 2002-2003 season.

These three lines were grown and characterized for various traits during 2003-2004 and 2010-11 seasons (Table 1). Observations recorded on various morphological characters *viz.*, plant height, inter nodal length, stem colour, leaf number, various leaf parameters, suckering habit, time taking for flowering, inflorescence and floral characters. Cured leaf samples were processed for the estimation of nicotine, reducing sugars (Harvey *et al.* 1969) and chlorides (Hanumantha Rao *et al.* 1981).

Plants grow up to 100-160 cm and show open habit with lax branching. Internodal length was short in Rajkhand-2 and long in other two. Rajkhand-3 had light green colour stem compared to green in the other two lines. Leaves found to be dark green in colour and lanceolate in shape with puckered surface, undulated margin and acute tip. Leaves are droopy, sessile and midrib and venation was prominent. Auricle development was medium in Rajkhand-1 and Rajkhand-2 and less in Rajkhand-3. Leaf length and width of the Rajkhand-3 were less when compared to others. Length and width of the bottom leaves are more in all of accessions and decrease as moved upwards. Bottom leaves of Rajkhand-1 were longer and broader than Rajkhand-2 where as it was reverse in middle and top positions. Total leaf number and economic leaf number was more in Rajkhand-1 than others. Rajkhand-1 was slightly late in flowering (65-75 days after planting) compared to other two (60-70 days). Suckering (production of lateral branches) habit was medium in all the three accessions. Inflorescence was slightly compact in Rajkhand-1, lax with few branches in Rajkhand-2 and lax with profuse branching in Rajkhand-3. Flowers were light pink in Rajkhand-1 and deep pink in others with funnel shaped corolla and capsule was ovoid in shape. In general, nicotine content was slightly higher and reducing sugars lower in these landraces. Accessions, Rajkhand-2 and Rajkhand-3 have high seed bearing nature and seed oil content was 36% and 32%, respectively.

All the three lines are susceptible to Tobacco mosaic virus (TMV) disease under artificial inoculation conditions. Rajkhand-3 found tolerant to stem borer with 10% infestation compared to 100% in susceptible check variety.

Thus, the present study clearly distinguished three scented tobacco accessions. These tobacco

**Table 1. Characterization of scented tobacco landraces (2003-2004 and 2010-11)**

Sl. No.	Details / Character	Landrace		
		Rajkhand-1	Rajkhand-2	Rajkhand-3
1	Source	Bihar & around Nepal	Bihar & around Nepal	Bihar & around Nepal
2	Species	<i>N. tabacum</i>	<i>N. tabacum</i>	<i>N. tabacum</i>
3	Type of curing	Shade cured	Shade cured	Shade cured
4	Use	Chewing, Khaini, Hookah & Jarda	Chewing, Khaini, Hookah & Jarda	Chewing, Khaini, Hookah & Jarda
5	Plant habit	Open	Open	Open
6	Height up to crow foot	Medium 100-160 cm	Medium 100-160 cm	Medium 100-160 cm
7	Internodal length	11-12 cm	10 cm	11-12 cm
8	Stem colour	Green	Green	Light green
9	Branching	Lax	Lax	Lax
10	Leaf characters Lax			
	a. Shape	Lanceolate, boat shaped	Lanceolate	Lanceolate, boat shaped
	b. Surface	Puckered	Hairy, puckered, thick	Hairy, puckered
	c. Margin	Undulate	Undulate	Undulate
	d. Tip	Acute	Acute	Acute
	e. Auricle development	Medium	Medium	Less
	f. Colour	Dark green	Dark green	Dark green
	g. Angle of insertion	Drooping	Drooping	Drooping
	h. Stalk	Sessile	Sessile	Sessile
	i. Midrib and Venation	Prominent	Prominent	Prominent
	j. Size:			
	Length (cm)			
	Bottom	51	48	37
	Middle	40	43	31
Top	20	27	18	
Width (cm)				
Bottom	22	23	15	
Middle	15	16	12	
Top	5	8	5	
i. Maturity	Late	Late	Late	
11	Total leaf number	25	21	21
12	Economic leaf number	23	19	19
13	Suckering habit	Medium	Medium	Medium
14	No. of days taken for flowering	65-75	60-70	60-70
15	Inflorescence	Slightly lax	Lax with few branches	Lax with profuse branching
16	Flower colour	Light pink	Deep pink	Deep pink
17	Corolla space	Funnel	Funnel	Funnel
18	Capsule shape	Ovoid	Ovoid	Ovoid
19	Yield (kg/ha)	1300-1400	1300-1400	1300-1400
	Leaf chemical quality characteristics			
	Nicotine (%)	4.12	3.64	3.82
	Reducing sugars (%)	1.43	1.49	1.56
	Chlorides (%)	3.20	1.10	0.98
20	Seed oil (%)	--	35.56	32.30

lines can be utilized for breeding aromatic tobacco varieties. The lines Rajkhand-2 and Rajkhand-3 can be exploited for oil extraction purpose in addition to their conventional use.

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