

## Varietal Performance for Yield Potentials under Different Row Spacings of *Nicotiana Tabacum L.*

<sup>1</sup>Saeed Ahmed Baloch and <sup>2</sup>Zahoor Ahmed Soomro  
<sup>1</sup>Agriculture Extension, Balochistan, <sup>2</sup>Sindh Agriculture University  
 Tandojam-70060, Sindh, Pakistan

**Abstract:** An experiment was conducted to evaluate the varietal cum row spacing effect on the productivity of tobacco varieties viz. R-5, R-9, bubaki, sindhi achho, R-6 and R-swabi as main plot and row spacing i.e, 60 and 75 cm as sub plot at Tandojam. It was observed that there was a significant ( $P < 0.05$ ) difference among tobacco varieties and row spacings. The variety R-5 was late maturing with highest yield of 958.33 and 1027.77 Kg ha<sup>-1</sup> at 60 and 75 cm row spacings, followed by R-swabi (888.88 Kg ha<sup>-1</sup>) at both row spacings, this is due to the plant with thicker stem and broader leaves.

**Key Words:** Row Spacings, *Nicotiana Tabacum*, Varieties, Tandojam

### Introduction

Tobacco is in the genus *Nicotiana* belongs to family Solanaceae, sixty five species of *Nicotiana* are now recognized but two important cultivated species *tabacum* and *rustica* are grown for smoking, chewing and hookah purpose (Poehlman, 1962).

Tobacco is mostly grown for medicinal as well as stimulant purpose. The seeds of tobacco are extremely small and are usually borne in a two valved capsule, a single flower may yield from 2000 to 5000 seeds may be produced on a single plant, the tobacco leaf is the commercial product of the crop, which develops its characteristics quality only under fairly precise environmental conditions (Poehlman and Borthakur, 1969). The average yield 1911 Kg/ha with area 56.4 thousand ha under cultivation during the year 1999-2000 in Pakistan, which is low as compare to other tobacco growing countries of the World (Anonymous, 2001). To get better return from tobacco the area may be increased by adopting proper package of technology. Among various production factors, fertilizer, irrigation and spacing plays vital role in the growth and yield of tobacco. Therefore, present research was conducted to evaluate the varietal-cum-spacing effect on the growth and productivity of tobacco under agro-ecological conditions of Tandojam.

### Materials and Methods

The experiment was conducted to study the varietal cum spacing effect on the growth and productivity of tobacco at Latif Farm, Sindh Agriculture University Tandojam in split plot design with two replications during the year 1997-98. The tobacco varieties viz. R-5, R-9, bubaki, sindhi achho, R-6 and R-swabi were placed in main plot with sub plot of row spacing 60 and 75 cm between rows. The parameters for the growth and yield of tobacco are plant height, number of leaves/plant, days taken to flowering, days taken to maturity, yield/plot and yield/ha.

### Results and Discussion

Mean performance at different row spacings for yield and yield components (Table 1) reveals that the variety bubaki develops highest plant height (50.5 cm) at 75 cm row spacing and 47.5 cm at 60 cm, whereas 45 and 37 cm height at 60 and 75 cm row spacings by R-5. Highest number of leaves/plant (11.5, 11.0) were revealed by bubaki at 60 and 75 cm row spacing respectively, whereas R-9 manifested 10.0 leaves/plant at 60 cm and 10.5 leaves/plant at 75 cm row spacing respectively. This may be due to greater spacing occupied by plants and the roots zone under high spacing gets more nutrients consequently producing more number of leaves/plant. These results are confirm with the results of Patel *et al.*, (1992) and Tripathi *et al.*, (1992).

Table 1: Mean Performance of Tobacco Varieties as Affected by Different Row Spacings

Varieties	Plant height		No. of leaves/ plant		Days taken to flowering		Days taken to maturity		Yield (Kg)/plot		Yield Kg/ha	
	60 cm	75cm	60 cm	75 cm	60 cm	75 cm	60cm	75 cm	60 cm	75 cm	60 cm	75cm
R-5	45.0 c	37.0 e	9.5 d	9.5 d	69.0 def	70.0cde	137.5bc	140.5 a	1.725ab	1.85 a	958.33ab	1027.77 a
R-9	41.5 d	40.5 d	10.0 cd	10.5 bc	65.0 f	69.5cde	137.0bc	138.5 b	1.30 cd	1.40bcd	722.22 c	777.77 bc
Bubaki	47.5 b	50.0 a	11.5 a	11.0 ab	59.0 g	67.0cde	134.0 d	136.5 c	1.35 cd	1.525a-d	750.0 c	847.22abc
Sindhi Achho	37.5 e	40.0 d	9.5 d	11.0 ab	76.0 ab	78.5a	127.0 f	129.0 e	1.275 d	1.45bcd	708.34 c	850.55abc
R-6	37.0 e	40.5 d	6.0 g	10.0 cd	68.0 def	70.5cde	124.5gh	126.0fg	1.35 cd	1.3 cd	750.0 c	722.23 c
R-Swabi	33.0 f	33.5 f	8.0 e	7.0 f	71.5 cd	73.5bc	123.5 h	124.0 h	1.60abc	1.6 abc	888.88abc	888.88abc

Significant at 0.05 level of probability.

## Saeed and Zahoor: Varietal Performance for Yield Potentials

In case of days taken to flowering the variety sindhi achho took 76 and 78.5 days at 60 and 75 cm respectively followed by R-swabi which took 71.5 and 73.5 days at 60 and 75 cm row spacing respectively. As regards days taken to maturity, R-5 took maximum number of days (137.5 and 140.5) to mature at 60 and 75 cm respectively followed by R-9 which took 137 and 138.5 days to maturity at 60 and 75 cm row spacings respectively. Our results are in accordance with the results reported by Pardon *et al.*, (1984) and Patel *et al.*, (1989).

The highest yield/plot and yield/ha was exhibited by R-5, which is 1.725 Kg/plot and 958.33 Kg/ha at 60 cm whereas 1.8 Kg/plot and 1027.77 Kg/ha at 75 cm row spacing. The R-Swabi stood second and showed 1.6 Kg/plot and 888.88 Kg/ha at 60 cm as well as at 75 cm row spacing. Villarees-Olmos (1993); Upadhyay *et al.*, (1994) and Singh *et al.*, (1995) also reported similar results of their research.

### Conclusion

It is concluded that the variety R-5 shows the highest yield at 60 and 75 cm row spacings, further it is suggested that Variety R-5 should be transplanted at 60 cm row spacings for higher yield per unit.

### References

- Anonymous, 2001. Federal Bureau of Statistics, Statistics Division Govt. of Pakistan, 126.
- Padron, J.M., P.L. Cordero; E. Cabrera and P.L. Padron, 1984. Influencing of transplanting distance and topping date on yield and quality of black tobacco cultivar. Criollo Especial. Ciencia-y- Technica-en-la- Agricultura, Tobacco. 7: 37-54.
- Patel, S.H., H.R. Patel, J.A. Patel and K.B. Patel, 1989. Planting time, spacing, topping and nitrogen requirement of bidi tobacco varieties. Tobacco Rese., 15: 42-52.
- Patel, B.K., L.K. Ghelain and N.B. Patel, 1992. Smoke constituents as affected by agrotechniques of bidi cultivar. Tobacco Rese., 18: 25-28.
- Poehlman, J.M., 1962. Breeding Field Crops. The AVI publishing company Inc. westport connecticut, 208.
- Poehlman, J.M. and D. Borthakur, 1969. Breeding Asian Field Crops. Mohan Primilani for Oxford and IBH publishing Co. Pvt. Ltd. New Delhi 285-288.
- Singh, K.D., S.N. Tripathi and A.K. Panday, 1995. Response of chewing tobacco varieties to plant spacing and nitrogen levels under non-saline calcareous soil of North Bihar. Annals of Agricultural Rese., 16: 330-335.
- Tripathi, S.N., A.K. Panday; K.D. Singh and S. Amarnath, 1992. Influence of plant spacing, nitrogen topping on yield, quality and economics of chweing tobacco. Tobacco Rese., 18: 39-44.
- Upadhyay, P.N., K.G. Patel and J.B. Patel, 1994. Effect of spacings and varieties on yield and quality of bidi tobacco and their influence on succeeding summer ground nut. Tobacco Rese., 20: 134-137.
- Villares-Olmos, A.E., 1993. Influencing of planting density on yield and quality of Burley-type tobacco. Revista Industrial Agricola de Tacumen, Argentina, 70: 67-71.