Variatel Performance for Yield Potentials under Different Row Spacings of Nicotiana Tabacum L.  

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Abstract: An experiment was conducted to evaluate the varietal row spacing effect on the productivity of tobacco varieties viz. R-5, R-9, bubaki, sinadi achcho, R-6 and R-swabri 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\(^{-1}\) at 60 and 75 cm row spacings, followed by R-swabri (888.88 Kg ha\(^{-1}\)) 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 (Poeilman, 1962). Tobacco is mostly grown for medicinal as well as stimulant purpose. The seeds of tobacco are extremly 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 (Poeilman 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, sinadi achcho, R-6 and R-swabri 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 heighest 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 Patei et al., (1992) and Tripathi et al., (1992).

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

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Plant height</th>
<th>No. of leaves/ plant</th>
<th>Days taken to flowering</th>
<th>Days taken to maturity</th>
<th>Yield (Kg)/plot</th>
<th>Yield Kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 cm</td>
<td>75 cm</td>
<td>60 cm</td>
<td>75 cm</td>
<td>60 cm</td>
<td>75 cm</td>
</tr>
<tr>
<td>R-5</td>
<td>45.0 c</td>
<td>37.0 e</td>
<td>9.5 d</td>
<td>9.5 d</td>
<td>69.0 cef</td>
<td>70.0 cde</td>
</tr>
<tr>
<td>R-9</td>
<td>41.5 d</td>
<td>40.5 d</td>
<td>10.0 c</td>
<td>10.5 bc</td>
<td>65.0 f</td>
<td>69.5cde</td>
</tr>
<tr>
<td>Bubaki</td>
<td>47.5 b</td>
<td>50.0 a</td>
<td>11.5 a</td>
<td>11.0 ab</td>
<td>59.0 g</td>
<td>67.0 cde</td>
</tr>
<tr>
<td>Sindhi</td>
<td>37.5 e</td>
<td>40.0 d</td>
<td>9.5 c</td>
<td>11.0 ab</td>
<td>76.0 ab</td>
<td>78.5a</td>
</tr>
<tr>
<td>Acho</td>
<td>37.0 f</td>
<td>40.5 d</td>
<td>6.0 g</td>
<td>10.0 cd</td>
<td>68.0 def</td>
<td>70.5cde</td>
</tr>
<tr>
<td>R-Swabri</td>
<td>33.0 f</td>
<td>35.5 f</td>
<td>8.0 e</td>
<td>7.0 f</td>
<td>71.5 cd</td>
<td>73.5bc</td>
</tr>
</tbody>
</table>

Significant at 0.05 level of probability.
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 Pandon 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