Original Research Article

Studies on Evaluation of French bean (*Phaseolus vulgaris* L.) Genotypes for Sustainable Production in Rohtas Condition

Ratan Kumar1*, Alok Bharti2, D. Mandal3, Arvind Kumar4 and R. K. Sohane5

1SMS (Hort.), Krishi Vigyan Kendra, Rohtas, BAU, Sabour, Bhagalpur, Bihar, India
2SMS (Animal Sc.), Krishi Vigyan Kendra, Rohtas, BAU, Sabour, Bhagalpur, Bihar, India
3SMS (Agronomy), Krishi Vigyan Kendra, Rohtas, BAU, Sabour, Bhagalpur, Bihar, India
4Krishi Vigyan Kendra, Rohtas, BAU, Sabour, Bhagalpur, Bihar, India
5Director Extension Education, BAU, Sabour, Bhagalpur, Bihar, India

*Corresponding author

**Abstract**

An experiment was conducted at farming system research and development at KVK, Rohtas farm and two other location village & Block-Nasriganj and Block-Sasaram, Village-Mohaddiganj during 2013-14 & 2014-15 to evaluate the suitable varieties (genotype) of French bean for maximum yield. The present On Farm Trial was undertaken to ascertain the production potential of different genotypes of French bean viz. Contender, Pusa Parvati, Pant Anupma, Arka Komal and Premier under Rohtas condition. From the results it was concluded that the genotype Pant Anupma and Pusa parvati which gave maximum pod yield (162.6 Q/ha) and (134.8 Q/ha) and better for other characters can be recommended for Rohtas condition.

**Keywords**
Evaluation, bean genotype, Rohtas

**Introduction**

French bean (*Phaseolus vulgaris* L.) is one of the most important vegetable crop of India, Choudhary (1987). It is commonly known as Farashi sheem or Jhar sheem in Bengali (Roy et al., 2006) belongs to the family Fabaceae in an annual diploid (zn = 2x = 22) species (Galvan et al., 2003). It is a dual purpose crop grown as vegetable and pulses. It is an important legume crops. Its dry seeds contain 21.1 per cent protein, 69.9 per cent carbohydrates, 1.7 per cent fat, 381 mg calcium, 425 mg phosphorus and 12.4 mg iron per 100 g of edible part (Ali and Kushwaha, 1987). It is also reported that common bean is an important source of protein and calories in human diets (Smithson et al., 1993).

French bean is becoming popular for its tender pods and sheked beans. Besides it maintains soil fertility through biological nitrogen fixation in association with symbiotic Rhizobium prevalent in their root nodules. The suitable variety in appropriate soil is the two important factors for higher crop production (Dhanjal et al., 1996). In Rohtas condition generally raised as an off-season vegetable crop. A number of high yielding well adopted genotypes have been identified in the past (Bose and Sen, 1986)
and were made available to the farmers but further evaluation is needed to select the suitable genotypes for increasing the productivity to a desirable level. With this view present investigation was conducted to select the suitable genotypes under Rohtas condition.

Materials and Methods
The present experiment was carried out at the Rohtas, Khera, Rohas,krishen Vigyan Kendra during spring season of 2013-14 with five French bean genotypes namely Contender, Pusa Parvati, Pant Anupma, Arka Komal and Premier. Materials and Methods were followed for the recording of data. Each experiment plot was 3.00 m long and 3.00 m wide. The seeds were sown at a row to row distance of 60 cm and a plant to plant distance of 20 cm. The recommended agronomical practices were followed for raising the crop. The data recorded on ten competitive plant for the characters like pod yield (q/ha). These following observations are recorded: pod yield/plant (g), pods/plant, pod weight, pod length, pod diameter, plant height and days to maturity. The data recorded was subjected to statistical analysis as per the procedure given by Panse and Sukhatme (1984).

Results and Discussion
The analysis of variance for eight characters was conducted to select the suitable genotypes for increasing the productivity to a desirable level. With this view present investigation was conducted to select the suitable genotypes under Rohtas condition.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df.</th>
<th>Pod yield (q/ha)</th>
<th>Pod yield/plant (g)</th>
<th>Pods/plant (nos.)</th>
<th>Pod weight (g)</th>
<th>Pod length (cm)</th>
<th>Pod dia. (cm)</th>
<th>Plant height (cm)</th>
<th>Days to maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replication</td>
<td>2</td>
<td>409.13</td>
<td>169.71</td>
<td>0.06</td>
<td>0.151</td>
<td>0.16</td>
<td>0.001</td>
<td>2.83</td>
<td>2.06</td>
</tr>
<tr>
<td>Genotype</td>
<td>4</td>
<td>22674.5</td>
<td>7891.54*</td>
<td>350.90*</td>
<td>6.36*</td>
<td>2.37</td>
<td>0.031*</td>
<td>8.41</td>
<td>40.76</td>
</tr>
<tr>
<td>Error</td>
<td>8</td>
<td>369.3</td>
<td>126.63</td>
<td>2.66</td>
<td>0.18</td>
<td>0.002</td>
<td>0.46</td>
<td>1.07</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 5 per cent level of significance.
Table 2: Pooled mean performance of French Bean genotypes for various characters

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Pod yield (q/ha)</th>
<th>Pod yield/plant (g)</th>
<th>Pods/plant (nos.)</th>
<th>Pod weight (g)</th>
<th>Pod length (cm)</th>
<th>Pod dia. (cm)</th>
<th>Plant height (cm)</th>
<th>Days to maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contender</td>
<td>108.4</td>
<td>212.92</td>
<td>22.00</td>
<td>9.67</td>
<td>15.33</td>
<td>1.56</td>
<td>46.80</td>
<td>49.00</td>
</tr>
<tr>
<td>Pusa Parvati</td>
<td>134.8</td>
<td>258.8</td>
<td>34.66</td>
<td>7.43</td>
<td>16.16</td>
<td>1.68</td>
<td>46.20</td>
<td>46.00</td>
</tr>
<tr>
<td>Pant Anupma</td>
<td>162.6</td>
<td>306.55</td>
<td>48.00</td>
<td>6.48</td>
<td>14.43</td>
<td>1.67</td>
<td>44.36</td>
<td>55.00</td>
</tr>
<tr>
<td>Arka Komal</td>
<td>93.9</td>
<td>180.45</td>
<td>20.00</td>
<td>9.03</td>
<td>15.30</td>
<td>1.47</td>
<td>43.46</td>
<td>51.66</td>
</tr>
<tr>
<td>Premier</td>
<td>95.3</td>
<td>186.93</td>
<td>28.66</td>
<td>6.52</td>
<td>13.87</td>
<td>1.47</td>
<td>43.46</td>
<td>54.00</td>
</tr>
</tbody>
</table>

SE (m) ± 14.35 6.49 0.93 0.12 0.25 0.03 0.39 0.60
SE (d) ± 20.35 9.19 1.33 0.17 0.35 0.04 0.55 0.84
CD at 5% 51.14 21.13 3.06 .38 0.80 0.09 1.27 1.94

Based upon the result obtained from the present study, it was concluded that the genotypes Pant Anupma and Pusa Parvati can be taken up for raising successful crop of French bean under Rohtas condition of Bihar. This is useful for the farmers of Rohtas district who want a good genotype on Rohtas and Bihar condition.

References