Effect of organic & inorganic seed treatments on yield & yield attributing characters in Brinjal (Solanum melongena L.)

Kalyan Singh Seervi, Praveen Choyal, Radhelal Dewangan, Ramesh ND and Shankar Lal Yadav

Abstract
A field experiment was conducted during kharif season 2017 at field experiment, Department of Genetics and Plant Breeding, Naini Agricultural Institute, SHUATS, Allahabad (U.P.) to study the effect of organic & inorganic seed treatments on yield & yield attributing characters in Brinjal (Solanum melongena L.). The field experiments were laid out in a Randomized Block Design. All pre-sowing treatments recorded significantly higher yield parameters over control. However, GA3 (100ppm) recorded significantly fruit yield (first Picking) 18.41 t/ha than the other pre-sowing treatments except ZnSO4 (10%) and Cow Urine (20%). Similarly yield components were significantly higher in GA3 (100ppm) where as control recorded significantly lower yield parameters.

Keywords: brinjal, seed treatment, yield, pre-sowing, organic and inorganic

Introduction
Brinjal (Solanum melongena L.) commonly known as egg plant, belongs to the family Solanaceae and referred by different names, viz., egg plant, aubergine, garden egg (French), baigan (Hindi), badanekai (Kannada), vangi (Marathi) and vankaya (Telugu). Brinjal is an important vegetable crop grown in India throughout the year. India is regarded as the center of origin of brinjal (Vavilov, 1931) [15]. Contrary to the common belief, it is quite high in nutritive value and can be well compared with tomato. Brinjal fruit contains high amount of Carbohydrates (6.4%), Protein (1.3%), Fat (0.3%), Calcium (0.02%), Phosphorus (0.02%), Iron (0.0013%) and other mineral matters. Apart from this, it also contains- Carotene (34 mg), Riboflavin (0.05 mg), Thiamine (0.05 mg), Niacin (0.5 mg) and Ascorbic acid (0.9 mg) per 100 g fruit (Choudhary, 1976) [2].
The brinjal plant contains an alkaloid called “solanine” found in roots and leaves. Some medicinal use of egg plant tissues and extract include treatment of diabetes, asthma, cholera, bronchitis and diarrhoea, its fruits and leaves are reported to lower blood cholesterol levels. In dryland agriculture, drought resistance of plant is one of the very important factors to get the higher yield. Though, this is largely depends on genetic makeup of the variety, pre-sowing treatments like hardening also practiced to defy the ill effects of drought on emergence and growth of crop. Pre-sowing treatments have done in order to impart resistance against stress conditions viz., drought and cold to the emerging seedlings (Balamurugan et al., 2003) [1]. Pusa Purple Round was developed at IARI, New Delhi. The plants are very tall with a thick stem of greenish purple colour. Leaves are highly serrated and deep green in colour. Fruits are round with purple colour. Each fruit weighs on an average 130-140g with only 6 fruits per plant, resistant to shoot borer and little leaf disease.

Materials and Methods
The field experiment for present investigation entitled was conducted during kharif 2017 at field experimental center, Department of Genetics and Plant Breeding, Naini Agricultural Institute, SHUATS, Allahabad U.P. The experiment consisted of 7 treatments involving one sowing, viz., drought and cold to the emerging seedlings (Balamurugan et al., 2003) [1]. Pusa Purple Round was developed at IARI, New Delhi. The plants are very tall with a thick stem of greenish purple colour. Leaves are highly serrated and deep green in colour. Fruits are round with purple colour. Each fruit weighs on an average 130-140g with only 6 fruits per plant, resistant to shoot borer and little leaf disease.
The experiment consisted of 7 treatments involving one control (without pre-sowing treatment). The details of the treatments are given below.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>No. of fruit</th>
<th>Fruit Length (%)</th>
<th>Fruit Girth (%)</th>
<th>Fruit Weight (g)</th>
<th>Fruit yield/Per plant (kg)</th>
<th>Fruit yield/Per plot (kg)</th>
<th>Fruit yield/ha (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>4.67</td>
<td>7.12</td>
<td>6.54</td>
<td>123.54</td>
<td>0.538</td>
<td>2.88</td>
<td>13.80</td>
</tr>
<tr>
<td>ZnSO₄ @ 5%</td>
<td>5.16</td>
<td>7.50</td>
<td>6.57</td>
<td>125.24</td>
<td>0.646</td>
<td>3.23</td>
<td>18.41</td>
</tr>
<tr>
<td>ZnSO₄ @ 10%</td>
<td>5.50</td>
<td>7.90</td>
<td>7.30</td>
<td>131.90</td>
<td>0.714</td>
<td>3.35</td>
<td>14.31</td>
</tr>
<tr>
<td>Gibberellic acid@ 50ppm</td>
<td>5.83</td>
<td>8.11</td>
<td>7.49</td>
<td>137.19</td>
<td>0.718</td>
<td>3.99</td>
<td>17.05</td>
</tr>
<tr>
<td>Gibberellic acid@ 100ppm</td>
<td>6.16</td>
<td>8.60</td>
<td>8.42</td>
<td>140.25</td>
<td>0.753</td>
<td>4.31</td>
<td>18.41</td>
</tr>
<tr>
<td>Cow urine @ 10%</td>
<td>5.00</td>
<td>7.90</td>
<td>6.31</td>
<td>130.89</td>
<td>0.554</td>
<td>3.27</td>
<td>13.97</td>
</tr>
<tr>
<td>Cow urine @ 20%</td>
<td>5.33</td>
<td>8.10</td>
<td>7.45</td>
<td>134.11</td>
<td>0.625</td>
<td>3.70</td>
<td>15.81</td>
</tr>
</tbody>
</table>

**Results and Discussions**

In the present study fresh seeds of brinjal seeds (cv. Pusa Purple Round) was given pre-sowing treatment with ZnSO₄ (5%), ZnSO₄ (10%), GA₃ (50ppm), GA₃ (100ppm), Cow urine (10%), Cow Urine (20%), soaking-drying in addition to various concentration. The treated seeds were evaluated for field performance. The result are discussed here under.

There was remarkable effect on yield parameters under different treatment combination. Number of fruit per plant, fruit length (cm), fruit girth (cm), fruit weight (g), fruit yield/plant (kg), fruit yield per plot (kg), fruit yield per ha. (t) has shown significant result with the application of different levels ZnSO₄, Gibberellic acid and Cow urine.

The seed treatment, T₃ (GA₃ @100ppm) was recorded maximum number of fruit per plant (6.16), fruit length (8.60cm), fruit girth (8.42cm), fruit weight (140.25g), fruit yield/plant (0.753kg), fruit yield per plot (4.31kg) and fruit yield per ha. (18.41t) followed by T₅ (GA₃ @50ppm). The similar results of higher fruit yield due to pre-sowing treatment with GA₃ 200ppm were reported by Jagadish (1993) in tomato, chilli, and onion and Tewari et al. (2001) in onion.

It is concluded form the present study different pre sowing seed treatments showed significant effect on yield parameters, treated with (T₃) Gibberellic acid@ 100ppm (Soaking) 24 hours recorded higher and followed by (T₅) Gibberellic acid@ 50ppm (Soaking) 24 hours. Gibberellic acid@ 100ppm (T₄) recorded significantly higher fruit length, fruit girth, fruit weight, fruit yield/plant(kg), fruit yield per plot (kg), fruit yield per ha.(t), it was the best treatment. These conclusions are based on the result of field investigation.

**Table 1: Effect of pre-sowing seed treatments on fruit yield parameters in Brinjal.**

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