GROWTH AND YIELD PERFORMANCE OF AONLA VARIETIES UNDER SCARCE RAINFALL ZONE

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ABSTRACT

Seven varieties of aonla have been evaluated for scarce rainfall zone under rain fed at Horticultural Research Station, Anantapur for 3 years from 2005 to 2007 in 10 years old trees in red sandy loam which are poor, shallow, rocky soils for their growth and yield. Highest plant height (4.2 m), No. of branches (12.6), plant spread (39.9 m²) and no. of fruits (861.6) were recorded in NA-10 followed by Kanchan (plant height 3.9 m and plant spread 32.9 m²), NA-7 (no. of branches 11.1) and NA-6 (no. of fruits 817.6). Highest stem girth (73.2 cm) and fruit yield (76.1 kg) per tree was recorded in Kanchan followed by NA-10 (65.5 cm and 74.8 kg yield).

Highest fruit weight (30.7 g) was recorded in NA-10 followed by Kanchan (30.2 g). More pulp weight (24.5 g) was observed in NA 7 followed by NA 6 (23.0 g). Highest seed weight (1.9 g), fruit volume (1.5 cm³) and T.S.S (15.9 %) was observed in NA-6 followed by Chakaiya (seed weigh (1.8 g), NA 10 (fruit volume 1.4 cm³) and BSR-1 (T.S.S 13.9%). NA 10 with more no. of fruits and fruit weight and Kanchan with more yield per tree were best suitable for scarce rainfall zone under rain fed conditions in poor fertile soils.

Key words: Aonla, Growth and yield, Scarce rainfall zone.

The aonla (Emblica officinalis syn. Phyllanthus emlica), is an important minor fruit and a crop of commercial significance. It is the richest source of vitamin-C. The fruits of aonla are very extensively utilized by processing industry. It is an essential ingredient of Chyawanprash, a popular ayurvedic medicine. Other products are preserves, pickles, candy, jelly, jam and squash. Fruits can also be dried and powdered to be used subsequently in the preparation of oils, hair dyes and hair oils. In traditional medicine it is considered a health and vitality restorer (Ravindran et al, 2007). Anantapur district of Andhra Pradesh belongs to scarce rainfall zone where annual rainfall is about 550 mm. Custard apple, tamarind, ber and pomegranate come under dry land horticultural crops. Exploitation of high yielding varieties of aonla suitable to arid zone is important for the improvement of financial condition of the farmers. Hence, an attempt was made for evaluation of varieties under arid zone, rain fed and shallow red sandy poor fertile soils.

Seven varieties of aonla were collected by surveying different areas and evaluated for their growth and yield characters. They were planted in a non replicated trial, 5 to 10 plants per row with spacing of 8X8 m under rain fed condition in September, 1993 at Horticultural Research Station, Anantapur. The soils are shallow, poor fertile, rocky sandy loam. The growth and yield characters were studied in all 7 varieties viz. average plant height (m), no. of branches, stem girth (cm), average plant spread (m²), no. of fruits/plant and fruit yield/tree (kg) were studied for 3 years i.e. 2005, 2006 and 2007. Some of the fruit characters were also studied during 2007-08 in different varieties viz. fruit weight (g), pulp weight (g), seed weight (g), fruit volume (cm³) and T.S.S (%).

Highest plant (Table 1) height (4.2 m), no. of branches (12.6), plant spread (39.9 m²) and no. of fruits (861.6) were recorded in NA-10 followed by Kanchan (plant height; 3.9 m and plant spread; 32.9 m³), NA-7(no. of branches 11.1) and NA-6 (no. of...
fruits 817.6). Highest plant height per plant (4.51m), no. of branches (13.5), plant spread (43 m³) was observed in NA-10 during 2005. The characters like more no. of branches, plant spread, no. of fruits, fruit weight are desirable as they enhance yield. BSR-1 var. was recorded dwarf type as its plant height recorded was 2.15 m followed by Chakaiya (2.2 m). Dwarfness in aonla was a desirable character to accommodate more no. of plants per unit area by which yield can be increased.

Highest stem girth (73.2 cm) and fruit yield (76.1 kg) per tree was recorded in Kanchan followed by NA-10 (65.5 cm and 74.8 kg yield). The stem girth (82.5 cm) was recorded highest in Kanchan during 2005. Maximum no. of fruits (954) were recorded in NA-6 and highest fruit yield per tree (84.5 kg) was observed in Kanchan (Plate 1) during 2005. Kanchan var. is reported to be a chance seedling of Chackaiya which bears profusely, suitable for preparation of pickles, triphala and other products as reported by Pathak and Pandey (1986).

Some of the fruit characters (Table 2) were also studied during 2007-08 in different varieties.
Highest fruit weight (30.7 g) was recorded in NA-10 followed by Kanchan (30.2 g).

More pulp weight (24.3 g) was observed in NA 7 followed by NA 6 (23.0 g). More pulp weight is a desirable character as it fetches more demand from pickle industry.

Highest seed weight (1.9 g), fruit volume (1.5 cm³) and T.S.S (15.9 %) was observed in (table 2) NA-6 followed by Chakaiya (seed weigh 1.8 g), NA 10 (fruit volume 1.4 cm³) and BSR-1 (T.S.S 13.9%) (plate 2).

<table>
<thead>
<tr>
<th>Varieties</th>
<th>Fruit weight (g)</th>
<th>Pulp weight (g)</th>
<th>Seed weight (g)</th>
<th>Fruit volume (cm³)</th>
<th>TSS (%)</th>
<th>Fruit yield/plant (kg)</th>
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</thead>
<tbody>
<tr>
<td>NA – 6</td>
<td>27.10</td>
<td>23.04</td>
<td>1.90</td>
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<td>15.9</td>
<td>54.0</td>
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<td>NA – 7</td>
<td>26.53</td>
<td>24.39</td>
<td>1.75</td>
<td>1.27</td>
<td>10.1</td>
<td>9.0</td>
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<td>Kanchan</td>
<td>30.23</td>
<td>21.21</td>
<td>1.47</td>
<td>1.01</td>
<td>13.7</td>
<td>70.4</td>
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<tr>
<td>NA – 10</td>
<td>30.72</td>
<td>21.72</td>
<td>1.15</td>
<td>1.40</td>
<td>10.7</td>
<td>77.25</td>
</tr>
<tr>
<td>Chakaiya</td>
<td>16.18</td>
<td>15.26</td>
<td>1.80</td>
<td>1.31</td>
<td>13.1</td>
<td>3.5</td>
</tr>
<tr>
<td>ATPS 1</td>
<td>26.34</td>
<td>24.04</td>
<td>1.25</td>
<td>1.25</td>
<td>13.0</td>
<td>36.5</td>
</tr>
<tr>
<td>BSR-1</td>
<td>19.20</td>
<td>15.50</td>
<td>1.39</td>
<td>1.33</td>
<td>13.9</td>
<td>9.24</td>
</tr>
</tbody>
</table>

CONCLUSION

The aonla var. NA 10 with more no. of fruits and fruit weight and Kanchan with more yield per tree were suitable for scarce rainfall zone in poor fertile soils.

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