**Assessment of Rosa spp. Plant Architecture in the Field**

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**Introduction**

- Plant Architecture is the result of growth and branching processes and depends on genetic and environment factors and their interaction.
- For ornamental plants, the overall shape of the plant is a major component of visual quality and economic value.
- Rose plant architecture is a crucial trait in rose breeding as it affects the ornamental value and flower intensity.

**Objectives**

The objective of this study is to evaluate the segregation and inheritance of plant architecture in selected populations. This is important as it will improve our ability to select the appropriate parents to obtain seedlings with the desired growth type.

**Materials and Methods**

Four diploid populations (Table 1) were created from the hybridization of the heat tolerant (J06-20-14-3, M4-4), moderate (Old Blush) and sensitive parents (Sweet Chariot, Red Fairy). Ten seedlings in each population were selected to be evaluated for plant architecture.

**Table 1. Diploid rose populations evaluated.**

<table>
<thead>
<tr>
<th>FP</th>
<th>MP</th>
<th>Family</th>
<th>Cross Time</th>
<th>Greenhouse Exp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Blush</td>
<td>M4-4</td>
<td>10041</td>
<td>2010</td>
<td>Yes</td>
</tr>
<tr>
<td>Sweet Chariot</td>
<td>M4-4</td>
<td>10043</td>
<td>2010</td>
<td>Yes</td>
</tr>
<tr>
<td>J06-20-14-3</td>
<td>Vineyard Song</td>
<td>10073</td>
<td>2010</td>
<td>Yes</td>
</tr>
<tr>
<td>J06-20-14-3</td>
<td>Sweet Chariot</td>
<td>10074</td>
<td>2010</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- Environment

The environment was in College Station, Texas raised bed in the field. Data were collected from May 1st, 2014 to May 9th.

**Figure 1. Temperature of College Station, Texas in May 2014 (wunderground.com).**

- Measurements of the components of plant architecture:

  Plant Architecture is divided into the following components:

  - Number of total nodes on the vegetative shoot (on primary and secondary branches) (Fig.3)
  - Length of vegetative and reproductive shoots (on primary and secondary branches) (Fig. 4 and 7)
  - Branching angles (between primary and secondary branch, secondary and tertiary branch) (Fig. 8)
  - Inflorescence characteristics (number of flowers on terminal inflorescence and inflorescence structure type) (Fig. 2, 5 and 6)

**Results**

- **Number of Nodes on Vegetative Shoot**

  **Figure 3. Number of nodes on the vegetative shoot of the four diploid rose populations as compared to their parents.**

- **Length of Vegetative Shoot**

  **Figure 4. Length of vegetative shoot of the four diploid rose populations as compared to their parents.**

- **Number of Flowers on the Terminal Inflorescence**

  **Figure 5. Examples of common inflorescence structure.**

- **Length of Inflorescence**

  **Figure 6. The number of flowers on the terminal inflorescence shoot of the four diploid rose populations as compared to their parents.**

- **Components of Reproductive Shoot**

  **Figure 7. Length of the inflorescence of the four diploid rose populations as compared to their parents (cm).**

- **Branching Angles**

  **Figure 8. Branching angles of the four diploid rose populations as compared to their parents.**

**Conclusions**

- All the components of plant architecture except the length of the secondary vegetative branch and the angle between primary and secondary branches showed differences among the populations indicating a genetic component for plant architecture.
- Old Blush has the fewest flowers and Sweet Chariot has the greatest number of flowers per inflorescence.
- Most seedlings/parents’ inflorescences are panicles.
- The length of pedicel differs among seedlings/parents.
- Number of pedicels on the panicle varies from one to four.