Utilization of Winter Nursery Facilities for Development of Improved Cultivars

TRRF Report on 2004 Research

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Anna McClung
USDA-ARS

Rodante Tabien
Texas A&M University

Beaumont, TX
Objective: Utilize the winter breeding nursery facilities to their fullest extent to enhance cultivar development projects that are led by Drs. McClung and Tabien.

Results of Use of Puerto Rico Nursery

Approximately 4500 breeding nursery rows were planted in each of the winter nurseries. Each year a Fall nursery is planted around October and a Spring nursery is planted around Dec. in Puerto Rico. The Fall planted nursery is harvested around Feb. of the following year and the Spring planted nursery is harvested in late April. The Fall planted nursery allows for seed to be returned to Beaumont in time for planting in summer yield trials whereas the Spring planted nursery returns in time for late planting in Beaumont.

The following chart shows the percent distribution of types of breeding projects planted in each of the nurseries. Materials for genetic studies are initially used for basic research but promising materials in these studies can be spun off into cultivar development projects. Early, Mid-, and Advanced Generation materials indicate the level of selfing and selection that the material has undergone. Advanced materials are evaluated in replicated yield trials whereas pure seed selections are made in just the most promising materials that may eventually lead to headrow purification blocks.

Winter breeding nurseries are used by all of the rice breeding programs in the US because they allow breeding selections to be more rapidly advanced through selfing causing them to become stable and true breeding. This genetic stability is important before expending resources on replicated yield trials. Thus the winter nursery allows for generation of more materials for use in advanced yield trials than would be possible if we were limited to just the summer nursery.

Percent distribution of effort in various types of breeding projects planted in nurseries.

<table>
<thead>
<tr>
<th>Breeding Nurseries</th>
<th>04 Spring Puerto Rico</th>
<th>04 Summer Beaumont</th>
<th>04 Fall Puerto Rico</th>
<th>05 Spring Puerto Rico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetic Studies</td>
<td>20</td>
<td>30</td>
<td>10</td>
<td>59</td>
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<tr>
<td>Early Generation Breeding</td>
<td>12</td>
<td>43</td>
<td>0</td>
<td>27</td>
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<tr>
<td>Mid-Generation Breeding</td>
<td>60</td>
<td>24</td>
<td>72</td>
<td>8</td>
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<td>Advanced Breeding</td>
<td>5</td>
<td>3</td>
<td>18</td>
<td>4</td>
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<tr>
<td>Seed Purification</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
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