a weak, rather long basal rachis internode which results in considerable head snapping after maturity.

The ability to yield well in diverse environments and the dominant nature of the desirable spike characters should make Arimont a valuable parent in breeding both hybrid and conventional cultivars.

Seed will be maintained jointly by the Arizona Agric. Exp. Stn. and the USDA, and can be obtained from the authors.

REGISTRATION OF BARLEY COMPOSITE CROSSES XXX-A TO G1
(Reg. Nos. GP 20 to GP 26)


Seven barley (Hordeum vulgare L.) populations, designated Composite Cross XXX-A to XXX-G, have been released by ARS-USDA, and the Arizona, Idaho, and Montana Agric. Exp. Stns.

Composite Cross XXX originated from natural crossovers between the USDA World Collection of barley and male sterile diploid plants from the balanced tertiary trisomic 27d msg2. The World Collection was increased in 1966 and 1967. The spring barleys were grown at Aberdeen, Idaho, about one-half in the summer of 1966 and the remainder in the summer of 1967. All of the winter barleys were grown at Mesa, Ariz. in the winter of 1966-67. Seed that would produce male sterile plants were planted across the ends of the increase rows and outcrossed seed set on the plants were harvested. The three F1 populations were grown in separate plots. Various populations were established from this material.

Populations of Composite Cross XXX were established to facilitate selection of genes governing a high incidence of natural cross pollination. All of the lines in the World Collection with the ability to effect cross pollination were given the opportunity to furnish pollen to produce the original populations. Subsequent populations have been produced by harvesting outcrossed seed set on male sterile plants. This has resulted in selection of both male and female flowers with increased ability to cross pollinate.

The released populations of Composite Cross XXX are:

- **CC XXX-A F1 seed (GP 20).** Mixture of the F1 seed of the three original populations.
- **CC XXX-B F1 seed (GP 21).** The next generation from CC XXX-A.
- **CC XXX-C F1F2 seed (GP 22).** From first one-half of the spring barleys grown alternately at Mesa and Aberdeen in the same year.
- **CC XXX-D F1F2 seed (GP 23).** From mixture of F2 seed of the three populations grown at Mesa.
- **CC XXX-E F1F2 seed (GP 24).** From two-rowed plants selected from the three populations.
- **CC XXX-F F2F3 and F1F2 seed (GP 25).** From mixture of F2 seed of the first one-half of the spring barleys and F1F2 seed of the second one-half of the spring barleys grown at Bozeman.
- **CC XXX-G F1F2 seed (GP 26).** From mixture of the three populations grown at Aberdeen.

These Composite Cross populations will seed a wide range of characters and for ability to cross should be useful to breeders for cross pollination under diverse environmental conditions.

Seed will be maintained jointly by the Arizona Agric. Exp. Stn. and USDA, and can be obtained from the last-named author.

REGISTRATION OF COTTON COMBINED LINESS BR 69-120, BR 70-111 AND BR 70-118
(Reg. Nos. GP 24 through GP 26)

P. H. van Schaik, C. M. Brown, and John H. Turner, Jr.

Three breeding lines of cotton (Gossypium hirsutum L.) were released by ARS-USDA. These lines combine high lint yield with a combination of fiber properties. They also have the high stalk stiffness and early maturity, features that are needed for an efficient machine harvest. These lines were developed from a cross of ATE 509N (Acara 51 X Triple Hybrid-Early Fluff) and a tall, productive, early maturing, erect plant type with high salt tolerance, but the fiber was considered too short and weak for greenhouse testing. The ATE 509N (Hopi Acara 46 X HA9-1) was too indehiscent for good agronomic performance, but it had the strong fiber and desirable boll and seed traits. An outstanding F0 progeny row in the 1969 nursery at Brawley, BR 70-111 and BR 70-118 were derived from selections in that progeny. Yield and quality data for these breeding lines with the commercially grown cultivar (Deltapine 16), are presented in Table 1.

<table>
<thead>
<tr>
<th>Entry</th>
<th>GP No.</th>
<th>Lint</th>
<th>Lint Boll wt.</th>
<th>Span length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kg/ha</td>
<td>%</td>
<td>g</td>
<td>2.5% in.</td>
</tr>
<tr>
<td>BR 69-120</td>
<td>24</td>
<td>1723</td>
<td>38.2</td>
<td>5.14</td>
</tr>
<tr>
<td>BR 70-111</td>
<td>25</td>
<td>1828</td>
<td>38.4</td>
<td>5.04</td>
</tr>
<tr>
<td>BR 70-118</td>
<td>26</td>
<td>1949</td>
<td>39.1</td>
<td>5.09</td>
</tr>
<tr>
<td>Deltapine 16</td>
<td>ck</td>
<td>1547</td>
<td>37.3</td>
<td>5.42</td>
</tr>
</tbody>
</table>

* Fiber data from 3 tests only

The main defects of these stocks are verticillium wilt susceptibility and more pubescent main stems and leaves than upland cottons. Fiber length and yarn strengths of the BR 70-111 and Micronaire decreased for the BR 70-111 compared to BR 69-120.

The fiber of these stocks is shorter and heavier than that of the commercial variety Deltapine 16, but it shows considerable variation at maturity, with high lint yield, stalk stiffness and early maturity, features that are needed for efficient machine harvest. These lines were developed from a cross of ATE 509N (Acara 51 X Triple Hybrid-Early Fluff) and a tall, productive, early maturing, erect plant type with high salt tolerance, but the fiber was considered too short and weak for greenhouse testing. The ATE 509N (Hopi Acara 46 X HA9-1) was too indehiscent for good agronomic performance, but it had the strong fiber and desirable boll and seed traits. An outstanding F0 progeny row in the 1969 nursery at Brawley, BR 70-111 and BR 70-118 were derived from selections in that progeny. Yield and quality data for these breeding lines with the commercially grown cultivar (Deltapine 16), are presented in Table 1.

Table 1. Average lint yield, fiber and spinning properties of three breeding stocks compared with commercial check in four tests (1971-1974).*