Table 1. Fatty acid composition of A6 and its parent FA 8077.

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>Line</th>
<th>Palmitic</th>
<th>Stearic</th>
<th>Oleic</th>
<th>Linoleic</th>
<th>Linolenic</th>
<th>Arachidic</th>
</tr>
</thead>
<tbody>
<tr>
<td>A6</td>
<td>8.0</td>
<td>28.1</td>
<td>19.8</td>
<td>35.5</td>
<td>6.6</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>FA 8077</td>
<td>8.4</td>
<td>4.4</td>
<td>42.8</td>
<td>36.7</td>
<td>7.6</td>
<td>&lt;1.0</td>
<td></td>
</tr>
</tbody>
</table>

Two random pods were harvested from each M₁ plant, and the seeds were bulked. The M₁ population was grown in Puerto Rico, and plants were harvested individually. Each M₂ plant was progeny tested at Ames in two replications. Twelve seeds were planted in hills spaced 1 X 1 m. A 20-seed sample from each plot was analyzed for fatty acid composition at Ames by Lynne A. Miller with gas-liquid chromatography.

The fatty acid composition of A6 and its parent are shown in Table 1. The percentage of stearic acid in A6 was substantially higher than in FA 8077. No genotype of soybean has previously been identified with such a high stearic acid percentage. High stearic acid in A6 was associated with a marked reduction in oleic acid, but palmitic, linoleic, and linolenic acid did not seem to be affected. A6 had about 2.0% of arachidic acid (20:0), which is higher than that usually found in soybean oil.

A6 and FA 8077 were planted in Puerto Rico during January, 1982. Individual plants of A6 were harvested and analyzed for fatty acid composition. High stearic acid was observed in all of the plants of A6.

A6 is of Group O maturity, averaging about 6 days earlier than 'Weber,' a cultivar of Group 1 maturity. It has purple flowers, brown pubescence, brown pods at maturity, and shiny yellow seeds with black hila. The visual appearance of A6 for agronomic characters is inferior to soybean cultivars grown commercially.

Seed of A6 will be distributed by the Committee for Agricultural Development, Iowa State Univ., Ames, IA 50011. Seed will be maintained by the Iowa Agriculture and Home Economics Experiment Station.

REGISTRATION OF F1003 SUGARBEET GERMPLASM FOR LOW INTERNAL CO₂¹

D. F. Cole²

A SUGARBEET (Beta vulgaris L.) breeding line (F1003) was developed by ARS-USDA in cooperation with the Agric. Experiment Station, North Dakota State Univ., Fargo, N.D. Breeder seed will be maintained by ARS-USDA and will be distributed in 5 g quantities to sugarbeet breeders upon written request to ARS-USDA, Sugarbeet Research, Waldron Hall, North Dakota State Univ., Fargo, ND 58105.

Initially, a single root from each of five introductions from the USSR, L'govsk 078, Mezhotnensk 104, Ramonsk 036, Uladovsk 20, and VNIS-F505, was selected for low internal CO₂ after 80 days storage at 5 C. The roots were induced to flower and the plants were interpollinated. No attempt was made to control the pollen source. The second cycle was produced by interpollinating six plants selected for low internal CO₂ from the polycrossed progeny of Mezhotnensk 104. Sixteen and 17 plants selected for low internal CO₂ were interpollinated in cycles 3 and 4, respectively. Seed were bulked in each cycle and F1003 is the bulked seed resulting from cycle 4. Internal CO₂ levels of F1003 were 27% lower than levels of 'Hilleshog 833.' Sucrose and thin juice purity of F1003 were equal to Hilleshog 833 when grown in replicated tests at Fargo, N.D.

Respiration is the major cause of sucrose loss in stored sugarbeet roots and post harvest internal levels of CO₂ are positively correlated with respiration rates of sugarbeet roots. F1003 was developed as a genetic source for low internal CO₂ levels in sugarbeets which can be used in the development of new parental lines and cultivars and for genetic and breeding research.

REGISTRATION OF OK 78828 TRITICALE GERMPLASM¹

K. D. Beatty³, L. H. Edwards³, E. L. Smith³, and I. L. Eldridge³

OK 78828 triticale (X Triticeaeae Wittmack) was released 18 Jan. 1982 jointly by the Oklahoma and Arkansas Agricultural Experiment Stations as germplasm material for use in forage or grain breeding programs. The line resulted from the cross of 'Wichita' hard red winter wheat (Triticum aestivum L. em. Thell.) X 'Bolne' rye (Secale cereale) made in the greenhouse at Stillwater, Okla. during the winter of 1970. Wichita wheat is still grown on a small acreage in western Oklahoma. Bolne rye was developed by the Noble Foundation in Oklahoma and released by the Oklahoma Agricultural Experiment Station.

The Wichita/Bolne F₁ was planted in the field at Stillwater in 1971. No attempt was made to double the chromosomes. The plants were somewhat wheat-like but exhibited hairy necks and a high level of sterility. The F₁ plants were likely pollinated by other triticale lines in the nursery and were harvested in bulk.

The F₂ through F₇ generations were grown at Stillwater using a modified pedigree method. Individual spike or plant selections were made in the F₂, F₃, and F₄ generations. Selections were made only among progeny rows in the F₃ and F₄ generations. The F₅ was grown in an observation nursery and the line with the highest yield in this nursery was assigned selection number OK 78828.

The F₆ was grown in a preliminary yield nursery at Stillwater in 1979. 'Scout 66' wheat and OK 78828 yielded 4,738 and 4,533 kg/ha, respectively. OK 78828 had a test weight of 68.2 kg/ha, a heading date of 4 May and a plant height of 102 cm; Scout 66 had a test weight of 77.2 kg/ha, a heading date of 7 May and a plant height of 104 cm. Seeds of OK 78828 were distributed to cooperators in the Southern U.S. on a limited basis in 1979 and it was included in several tests of the Uniform Winter Triticale Tests conducted in 1979-1980. OK 78828 was grown in the Oklahoma Advanced Performance Nursery in 1979-1980. Scout 66 wheat has been widely grown in Oklahoma and 6TA-131 has been used as a "standard" winter triticale entry in Uniform Winter Triticale Tests. Grain yield of OK 78828 exceeded 6TA-131 by 7% and Scout by 9%.

In Arkansas, OK 78828 is classed as a facultative to winter habit, erect, mid-tall line that has produced more fall and spring forage compared to commonly grown wheat cultivars. The grain yield from nine environments in 1979-1980 and 1980-1981 was 102% that of 'Coker 68-15,' a soft red winter wheat widely grown in Arkansas, and 156% of 6TA-131. During the 1980 and 1981 seasons, OK 78828 had 7% less Septoria tritici damage and an 11% better forage rating than Coker 68-15. OK 78828 is mid-