REGISTRATION OF GERMLASMS

US56-13-7 (2n = 80) and US56-15-8 (2n = 80) at the USDA quarantine station, Beltsville, Md., were used in Hawaii as males in crosses, US56-13-7 with Saccharum spp. hybrid clone '57NG 174' (2n = ca. 113), and US56-15-8 with S. officinarum L. clone 'Rose Bamboo' (2n = 80). The flowering hybrid progeny within each cross were then intercrossed, producing sibbed populations. Based on vigor and freedom from diseases, progeny were selected from each sibbed population. The selected progeny from sib matings were then planted under lights to delay flowering and were crossed to Hawaiian commercial-type clones. The resulting hybrids were distributed to regional variety selection stations representing the various environments where sugarcane is grown in Hawaii. A few hybrids were installed into preliminary yield trials.

Evidently, the Thaidland S. spontaneum L. evolved with considerable buffering capacity in a high-altitude climate, for they seem to be prepotent for passing on to hybrid progeny the ability to thrive in the low sunlight upper elevations of Hawaii. Generally, in the lower elevations (below 300 m), the hybrids expressed the S. spontaneum characteristics of small stalk girth, heavy stooling, and trashy appearance. At the higher elevations (above 450 m), the hybrids were vigorous, healthy in appearance, and had excellent ratooning ability when compared with control plots. At the lower elevations, they were heavy flowering, whereas at 450 m or higher, flowering was almost completely inhibited.

Yield data from higher elevation tests indicated that, as a group, these hybrids produced exceptionally heavy cane tonnage, but juice quality was generally poorer than desired. However, three of the hybrid clones, H69-9092 (GP1), H69-9103 (GP2), and H72-8597 (GP3), were identified as having acceptable juice quality, and, in subsequent yield tests above 450 m elevations where long-age cropping (> 30 months) is practiced, higher sugar yield potential than standard commercial varieties. Clones H69-9092 (2n = ca. 116 to 128) and H69-9103 (2n = ca. 120 to 121), both US56-13-7 (BC1) progeny, resulted from a cross between the commercial-type 'H49-134' (2n = ca. 117 to 118) × S. spontaneum-derived 'H65-8458' (2n = 125, by inference). Clone 'H72-8597' (2n = 106 to 113), a US56-15-8 (BC1) progeny, was from a cross involving the commercial-type 'H50-4509' × 'H65-8425' (2n = 100).

Clones H69-9092, H69-9103, and H72-8597 are resistant to eye spot [caused by Bipolaris sacchari (Butler) Shoemaker] and leaf scald [caused by Xanthomonas albilineans (Ashby) Dowson] diseases. They are moderately resistant, moderately susceptible, and highly resistant, respectively, to the combined races of culmicolous smut (caused by Ustilago scitaminea Syd.) present in Hawaii. Vegetative cuttings of H69-9092, H69-9103, and H72-8597 will be maintained by the Experiment Station, Hawaiian Sugar Planters' Association, Aiea, Hawaii.

REGISTRATION OF TWO
SOYBEAN GERMLASMS POPULATIONS
(Reg. No. GP 40 and GP 41)

N79-1400 (Reg. No. GP 40) was synthesized from lines to the male-sterile maintainer line N69-2771. The parents were the highest yielding lines from the second recurrent selection program designated CY4. The program from which CY4 was derived was initiated as a highly productive experimental line, D49-2491, with introductions, chosen for diversity of geographic origin and high protein content. The resulting F1 plants were backcrossed to the adapted parent, D49-2491, and backcrosses advanced in bulk represent the bulk population. Equal quantities of seed from the F1 crosses between the 10 CY4 lines and the male-sterile maintainer line were bulked and planted in an isolated natural cross of 36 × 72 hills. Hills were planted 50 cm apart in a single row. About 300 male-sterile plants were harvested from the F1 generation and used to form the first generation of random mating.

N79-1500 (Reg. No. GP 41) was synthesized from six cultivars or experimental lines to the male-sterile maintainer line. The six pollen donors were the experimental line D65-6765, D68-216, F66-698, N67-4063, and the cultivars 'H72-8597' and 'Govan.' All of the pollen donors are highly adapted to the southern USA, all are resistant to the major bacterial pustule caused by Xanthomonas phaseoli Dowson var. sojensis (Hedges) Starr and Burkholder, caused by Corynespora cassiicola (Berk. and Curt.) Shoemaker, leaf spot caused by Cercospora sojina (daizu, Miura), and one or more of the parents have resistance to root-knot (M. arenaria and M. incognita) or soybean cyst (S. glycines) nematodes and phytophthora root rot caused by Phytophthora megasperma (Drechs.) var. sojae Hildebrand. In addition, two of the donors are high in protein content and one is high in seed oil percentage. Of the pollen donors will be furnished upon request. F1 plants from each of the six crosses were assigned to isolated natural crosses and planted two per hill in a block of 36 × 125 hills. Male-sterile plants were harvested from the block to form the first generation of random mating.

In both populations, ensuing generations of males were obtained by harvesting only seed from males and then planting it the following year in similar blocks. These are those described above. In the eighth generation, some male-sterile plants only were harvested to obtain the lines designated as N79-1400 and N79-1500. Lots of 50 of these populations will be available upon request. B.E. Caldwell, Dep. of Crop Science, North Carolina State Univ., Raleigh, NC 27650. The seed stock of these lines will be renewed after 5 years of storage by harvesting each in bulk.