F5 plant was harvested from selected rows. The seed quality was evaluated visually and seed of plants with superior seed quality were scarified and planted in two-row plots in 1984. Based upon the above criteria for height, maturity, lodging resistance, and seed quality, F5-derived lines were selected for agronomic evaluation. In 1986, selected lines, along with the check cultivars ‘Century’, ‘Williams’, ‘Sparks’, ‘Essex’, and D81-9776 (a recently developed Maturity Group V impermeable seed coat line) were grown at Beltsville and Queenstown, MD in four row plots with four replications in a randomized complete block experiment to evaluate agronomic and seed quality characteristics.

Md84-2751 has an indeterminate growth habit and is an early Maturity Group III genotype maturing about 1 wk earlier than Williams and Sparks (Table 1). Despite the early maturity of Md84-2751, seed quality was equal or superior to any of the check cultivars. Md84-2751 and D81-9776 had impermeable seed percentages of 95 after 24 h of soaking.

Seed of Md84-2751 will be maintained by the USDA-ARS, Beltsville Agricultural Research Center-West, Beltsville, MD 20705.

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Reference and Notes


We gratefully acknowledge the assistance of C. Murphy and D. Thibeau in the development of this line.

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REGISTRATION OF SUGARBEET GERmplasm WITH COMBINED STORAGE ROT RESISTANCE AND LOW STORAGE-RESPIRATION RATE

F1009 (Reg. no. GP-130 (PI527307)) sugarbeet (Beta vulgaris L.) germplasm was developed by the USDA-ARS and the North Dakota Agricultural Experiment Station and released 8 Apr. 1988. It possesses resistance to three major storage-rot fungi and has a postharvest storage-respiration rate substantially below current commercial hybrids.

Selection for low respiration rate was accomplished by measuring internal CO2 levels of individual sugarbeet roots during storage. Selection for storage-rot resistance was accomplished by rating individual roots for their response to the three storage-rot fungi.

Seed from each plant was harvested the following year as the progenies of each plant were evaluated for respiration rate and response to the storage-rot fungi. Individuals with the desired storability traits were selected from the progenies of each plant, and seed was harvested from six of the selected families. Thirty to forty individuals from each family were selected from most families to maintain genetic diversity; however, the number of selections per family was proportionate to family performance. Selection was again based upon both individual and family performance. Some male-sterile plants were used. Upon the parentage, it was assumed that sterility resulted from cytoplasmic male-sterile plants segregating for fertility restoration. Selection was continued through three generations. The results of four selection cycles have been reported previously (1). Visual selection eliminated severely sprangled or colored roots. Root yield and sucrose concentration were also used as selection criteria. Breeder seed was maintained by USDA-ARS in quantities sufficient for reproduction for the next generation.

Breeder seed will be maintained by USDA-ARS and provided in quantities sufficient for reproduction by request to Sugarbeet Research, USDA-ARS, Beltsville, MD 20705.

L. G. CAMPBELL* AND W. M. BUGBEE

References and Notes

2. USDA-ARS, Northern Crop Science Lab., Fargo, ND 58105. Contribution of USDA-ARS and North Dakota Agricultural Experiment Station. Article no. 1729. Registration by CSSA. Author.