REGISTRATION OF AZ-MSFRS-82RR
RUST RESISTANT COMMON WHEAT GERMPLASM
(Reg. No. GP 217)

R. K. Thompson

AZ-MSFRS-82RR rust resistant germplasm (Triticum aestivum L.) was released by the Arizona Agricultural Experiment Station in 1980 (4). This germplasm was developed by male sterile facilitated recurrent selection (MSFRS) population breeding for exploitation by recurrent selection in areas where leaf rust (caused by Puccinia recondita f. sp. tritici), stem rust (caused by P. graminis f. sp. tritici) and stripe rust (caused by P. striiformis) are prevalent. Numerous lines with specific (vertical) resistance and many with known general and combined resistance to these diseases are incorporated into this population. It is expected that this germplasm will be used as a source of nonspecific (horizontal) resistance in epidemic areas. Continuous improvement through the MSFRS process is expected with the repeated addition of new sources for resistance and the recombination of resistance genes. Updated annual versions of the germplasm are available for general distribution and identified by the year of distribution.

This germplasm development began in the spring of 1977 at Mesa, Ariz., and AZ-MSFRS-82RR encompasses six two-generation cycles of combination-recombination and increases of approximately 1000 rust resistant cultivars from many sources. In each cycle, the combination-recombination generation was at Mesa, and the bulk increase was grown at Bozeman, Mont. Procedure has been described (3,4). The female parents in cycle one were male sterile plants selected from AZ-MSFRS germplasm composite cross A-76(3). The initial pollinators were progeny with general and combined resistance for leaf, stem, and stripe rust from the cross Minnesota II-62-16 X ‘Webster’ (2) and selections from the International Maize and Wheat Improvement Center Nurseries with low coefficients of infection for these diseases (1). Over 270 controlled crosses were made. Subsequent sources of resistance were mostly obtained from the USDA Small Grains Collection. Approximately 800 controlled crosses were made annually.

For the fourth cycle and in subsequent cycles at Mesa, AZ-MSFRS-82RR germplasm was grown from two seeding dates to more adequately utilize the wide maturity range of resistant pollinator lines. Over 800 rust-free progeny of AZ-MSFRS-82RR germplasm selected in Mexico, Texas, and Montana were recycled twice, by hand crossing into the population for recombination of rust resistant genes.

In cycles two and three female parent selection at Mesa was random. During the fourth, fifth, and sixth cycles, selection was made for male sterile parents. The 1983 cycle is planned as a recombination cycle and seed harvested from hand pollinated plants will be combined with the random harvest of outcrossed seed.

AZ-MSFRS-82RR germplasm exhibits much diversity in maturity, plant types, seed classes, and agronomic behavior. Since rust is not a serious problem in Arizona it is impossible to exploit this material locally. Limited quantities of seed of AZ-MSFRS-82RR may be obtained from the Mesa Exp. Stn., P. O. Box 1308, Mesa, AZ 85201. In October 1983, an updated version of this germplasm will be available for general distribution.

REGISTRATION OF SC81E AND SC81L
INTERMEDIATE WHEATGRASS GERMPLASM
(Reg. Nos. GP 2 and GP 3)

J. S. Rice

INTERMEDIATE wheatgrass [Agropyron intermedium var. trichophorum (Host) Halac.] germplasm SC81E (GP 2) and SC81L (GP 3) was developed at the South Carolina Agricultural Experiment Station and released in March 1982. The germplasms resulted from two breeding cycles of selection from material composed of Spring Introductions (PI), one experimental synthetic, and two cultivars. Fifteen seedlings from each source were transplanted into a field near Clemson in the fall of 1976. Plants were visually rated for vigor, spread, height, and other characteristics for two seasons. During the summer of 1981, seeds were harvested from 45 superior plants in 1979. These seeds were harvested from 180 plants of early maturity and from 231 plants of later maturity. The seeds were bulked by date of maturity to form SC81E and SC81L. The average flowering date (3 June) is 6 days earlier than that of SC81L. The overlap in flowering date may occur.

No attempt was made to select glabrous over pubescent plants. As a result, both germplasms may contain some pubescent type. These germplasms should serve as sources for material adapted for use in South Carolina and other states with similar climatic conditions.

No serious disease problems have been observed in these germplasms. Variation for plant type exists in each germplasm. Apparently the only distinct differences between SC81E and SC81L are in pubescence. Approximately 30% of SC81E plants are pubescent with about 20% pubescent in SC81L.

Variation for plant type exists in each germplasm. Intermediate wheatgrass is pubescent while others are strongly glabrous. No serious disease problems have been observed in these germplasms.

Parents for each germplasm can be traced to a combination of experimental synthetic, and two cultivars. Specific composition of each germplasm is available upon request.

These germplasms should serve as sources for material adapted to the southern and southeastern USA. This species has displaced native grasses in many regions.