Regulation of Germsplasms

REGISTRATION OF ARIZONA 8501 BARLEY GERMPLASM FOR DISTURBED LAND RECLAMATION

ARIZONA 8501 barley (Hordeum vulgare L.) germplasm for disturbed land reclamation, PI 499692, (Reg. no. GP-76) was released by the Arizona Agricultural Experiment Station, University of Arizona, Tucson, AZ, in 1985.

A disturbed land reclamation barley breeding program, using barley genotypes adapted to harsh environments throughout the world, has been conducted at the Safford Agricultural Center, Safford, AZ, since 1960. The original parents were chosen for their apparent tolerance to high temperature, low temperature, drought, salinity, and infertile soil. Fifty selected genotypes were crossed onto male-sterile 'California Mariout' barley. Equal quantities of seed from each cross were mixed to form the basis of the population. A representative sample of the germplasm was planted in a saline soil, irrigated with saline water, and harvested each year for 20 yrs. Since the population maintained a few male-sterile plants, a small amount of cross-pollination occurred each year.

Arizona 8501 produced 68% more tillers per unit area, 54% more ground cover, and 47% more seed per unit area in copper mine reclamation soil in southern Arizona for a 4-yr period than did the best commercial barley cultivar (1). When grown in coal mine reclamation soil in northern Arizona for a 3-yr period, it produced 52% more tillers per unit area, 45% more ground cover, and 34% more seed per unit area than did the best commercial barley cultivar. This germplasm has a broad genetic base, contains a diversity of plant types, and is adapted to varied stress conditions of disturbed lands in the arid irrigated environment in the western USA. Seed of this population may be obtained from the curator, National Small Grain Collection, Building 046, BARC-West, Beltsville, MD 20705.

A. D. DAY, K. L. LUDEKE, AND M. J. OTTMAN (2)

References and Notes

REGISTRATION OF BARLEY YELLOW DWARF VIRUS TOLERANT BARLEY COMPOSITE CROSS XLIV GERMPLASM

A SIX-ROWED spring barley (Hordeum vulgare L.) male-sterile-facilitated recurrent selection population (MSFRSP), designated Composite Cross (CC) XLIV (Reg. no. GP-77), having tolerance to barley yellow dwarf virus (BYDV), has been released by the Montana Agricultural Experiment Station and the USDA-ARS.

CC XLIV contains four different sources of the Yd2 gene for tolerance to BYDV and resistance to barley yellow dwarf (BYD) disease in a background of diverse agronomic types. All four sources of the gene are barley accessions from Ethiopia [CI 1227, 1237, 1276, and 14119 (formerly 3920-1; J.C. Craddock, 1979, personal communication]. Development of CC XLIV began in May 1982 when a 500 g mixture, consisting of 325 g of CC XLIII (1) and 87.5 g each of CC XXXIII-A and -B (5), was space planted in isolation at Bozeman, MT. CC XLIII contains Yd2 from CI's 2376 and 14119 and is resistant to scald, [caused by Rhynchosporium secalis (Oud.) J.J. Davis] and net blotch (caused by Pyrenophora teres Drechs). CC XXXIII-A and -B are BYDV tolerant MSFRSP's containing the Yd2 gene from the four sources shown above, and possibly are heterogeneous for BYD resistance modifying factors from those four sources (3). Seventy-five percent of CC XXXIII-A and -B seed came from Pullman, WA and 25% came from Bozeman nursery. Space planted adjacent to this CC mixture was 165 g of an F2 population from 'Manchuria' (CI 2330) msp 10/'Sutter' (CI 15475). Sutter, containing the Yd2 gene from CI 1237 (4), is a six-rowed spring barley with tolerance to infection by BYDV and resistance to BYD disease. Plants tolerant to infection by BYDV express little or no visual symptoms, e.g., leaf chlorosis and necrosis. Plants resistant to the disease (BYD) caused by BYDV infection show little or no reduction in yield. These definitions are in general agreement with those given by Bos (2).