Yield potential of 89-Y-235 in large test plots was significantly lower than M-202. 89-Y-235 reaction to the major California rice diseases stem rot (Sclerotium oryzae Cattaneo) and aggregate sheath spot [Rhizoctonia oryzae-sativae (Sawada) More-]
due] was similar to M-202. 89-Y-235, with its large kernel size and improved plant type, is a unique breeding line that may be useful in future rice cultivar improvement. It is being jointly released by the California Cooperative Rice Research Foundation, the California Agricultural Experiment Station, and the USDA-ARS. For an initial five year period, small quantities of 89-Y-235 seed will be distributed for research purposes upon written request to the Rice Experiment Station, P.O. Box 306, Biggs, CA 95917. Appropriate recognition of source should be given when this germplasm contributes to research or the development of new germplasm or cultivars.

K. S. MCKENZIE,* C. W. JOHNSON, J. J. OSTER, AND J. E. HILL (6)

Registration of Eight Hessian Fly Resistant Common Winter Wheat Germplasm Lines (Carol, Erin, Flynn, Iris, Joy, Karen, Lola, and Molly)

Eight genes for resistance to Hessian fly, Mayetiola destructor (Say), were transferred individually by backcrossing and selfing into 'Newton' (CI 17715) wheat (Triticum aestivum L.), a commercial hard red winter cultivar susceptible to all Hessian fly biotypes to which it has been tested. The eight germplasm lines (Table 1) were developed by the Purdue University Agricultural Experiment Station in cooperation with the USDA-ARS, with release in 1993. Newton is the source of the cytoplasm of the germplasm lines. Newton has a moderate level of winterhardiness suitable for commercial production in Kansas. The germplasm lines have not been tested adequately for level of winterhardiness, but survived two winters during seed increase at Lafayette, IN.

The resistance source parental lines (Table 1) include the cultivars ‘Lamed’ (CI 17650), ‘Arthur 71’ (CI 15282), ‘Knox 62’ (CI 13701), and ‘Luso’; the germplasm line Ella (CI 17938); and Purdue University–developed lines IN 76529 and IN 916. The final line, with resistance from H13, was obtained from the Wheat Genetics Resource Center, Kansas State University, Manhattan, KS. The H13 resistance is derived from KU 2076, Triticum tauschii (Coss.) Schmal., via a synthetic hybrid KU 221-19 developed at Kyoto University, Japan (1). The sources of the resistance genes described here have been recently published (2).

The eight germplasm lines (Table 1) were developed by two to six backcrosses to a single typical plant of Newton, Selection 207 or its selfed progeny, followed by three to five generations of plant selection. During the development of the resistant lines, seedling plants were tested for reaction to Biotype L if the gene provided resistance to Biotype L, to Biotype D if the gene provided resistance to Biotype D, but not to Biotype L, and similarly to Biotype B or Biotype C if the gene provided resistance to only one of these biotypes. The Hessian fly biotypes were those maintained by some of the authors at the USDA-ARS Insect and Weed Control Research Unit, Purdue University. Reactions of genotypes in the Newton background were generally typical of those in the original sources. The genotypes at final multiplication for release were in the F2 to F3 generation of selfing following the final backcross.

The eight germplasm lines were tested as seedlings at 18 °C to Biotypes B, C, D, and L of Hessian fly to verify recovery of typical resistant reactions (Table 2). Our procedures have been previously described in detail (3). Reactions were typical of those expected. Plants of lines carrying H10 or H12 gave a more pronounced stunting than others, but most plants grew out of the stunting and were resistant; however, some plants were susceptible (Table 2). In other tests, the degree of this stunting reaction and expression of resistance has varied with Hessian fly biotype, temperature, and infestation level. Lines with gene H9 have been inconsistent in reaction to Biotype C. In some other tests, selections with gene H9 gave susceptible reactions.

All the lines appear somewhat similar to Newton, but range from 0 to 4 d later in heading and from 10 cm shorter to 7 cm taller than Newton. Similarity to Newton is related to number of backcrosses to Newton. All lines are awned.

The eight germplasm lines offer single-gene resistance to Hessian fly in a background of Newton hard red winter wheat. These offer adequate winterhardiness for testing in many areas of the USA for determining the value of the individual genes in providing resistance to local populations of Hessian fly. They also provide genes in a hexaploid background for use in breeding resistant cultivars or for genetic studies.

Germplasm amounts of seed of these lines may be requested from the corresponding author for five years and thereafter from the National Small Grains Collection, USDA-ARS, P.O. Box 307, Aberdeen, ID 83210.