Registration of ‘Lacey’ Barley

‘Lacey’, a six-rowed spring barley (Hordeum vulgare L.) (Reg. no. CV-290, PI1613603), was developed by the Minnesota Agricultural Experiment Station and released in February 2000. It was developed in a program to obtain low soluble protein in a Midwest malting barley. Lacey, whose experimental designation was M98, has the pedigree M44/Excel/2/M46/M44/3/M44/Excel/2/Stander. M44 and M46 were cultivar candidates in the Minnesota barley program. M44 has the pedigree ‘Nordic’/Manker/3/Morrex/2/Manker/63Ab2987-32, and M46 originated from the cross Nordic/Manker/2/‘Robust’. Breeding line 63Ab2987-32 was developed in the USDA-ARS barley breeding program at Aberdeen, ID. The final cross leading to Lacey was made in 1993. Because Lacey’s pedigree is composed primarily of Minnesota germplasm, it is expected to be best adapted to the barley-growing area of the upper Midwest USA and possibly in neighboring regions of Canada.

Lacey was developed using the pedigree method coupled with single-seed descent. It originated from a single plant taken arbitrarily from an F5 line visually selected for desirable height, straw strength, and resistance to leaf diseases. No selection was applied in the F2 through F4 generations with the F3 and F4 generations being advanced in the greenhouse. Replicated agronomic and disease testing began in Minnesota in 1996 and regional testing in 1998. Micro-malting evaluations began in 1996, industry pilot malting and brewing quality evaluations in 1997, and industry plant scale malting and brewing quality evaluations in 1999. Low soluble protein was identified in the first micro-malting evaluation in 1996, and this trait and high grain yield were the primary basis for interest in the line.

Lacey is intended to replace the varieties Robust (Rasmusson and Wilcoxson, 1983) and Stander (Rasmusson et al., 1993) that are currently popular in the Midwest. Robust, released by the Minnesota Agricultural Experiment Station (MAES) in 1983, is currently the six-rowed industry standard for malt quality. Stander, released by the MAES in 1993, has significant yield and lodging improvements over Robust, but has been reported by industry as having a soluble protein level that is too high by current standards. Lacey is similar to both Robust and Stander as it has smooth awns, covered kernels, short rachillas hairs, and white aleurone. The spike is medium-lax, medium-long, and semi-erect. Lacey is about 6 cm shorter than Robust and similar to Robust in heading date and maturity.

Lacey’s malting quality traits, determined in collaboration with the USDA Cereal Crops Research Unit at Madison, WI, and industry testing in cooperation with the American Malting Barley Association, appear to be similar to Robust, the industry six-rowed quality standard. The following quality comparisons are based on data from 13 separate evaluations made from 1996 to 1999. For the malting quality trait of most interest, soluble protein, the values were 5.6, 5.6, and 6.7%, respectively, for Lacey, Robust, and Stander. Diastatic power is percentages were 33% for Lacey and 42% for Robust. It is not as resistant to lodging as Stander.

Lacey possesses the “ND B112” gene for resistance to leaf blotch [caused by Bipolaris sorokiniana (Sacc.) Shoemaker] and Fusarium head blight [caused by Fusarium graminearum (Pers.: Pers.) vom. tritici] which conditions protein in a Midwest malting barley. Lacey, whose experimental designation was M98, has the pedigree M44/Excel/2/M46/M44/3/M44/Excel/2/Stander. M44 and M46 were cultivar candidates in the Minnesota barley program. M44 has the pedigree ‘Nordic’/Manker/3/Morrex/2/Manker/63Ab2987-32, and M46 originated from the cross Nordic/Manker/2/‘Robust’. Breeding line 63Ab2987-32 was developed in the USDA-ARS barley breeding program at Aberdeen, ID. The final cross leading to Lacey was made in 1993. Because Lacey’s pedigree is composed primarily of Minnesota germplasm, it is expected to be best adapted to the barley-growing area of the upper Midwest USA and possibly in neighboring regions of Canada.

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