REGISTRATION OF LMAFC 34 TOBACCO GERMPLASM

LMAFC 34 (Reg. no. GP-21) is a low-medium alkaloid flue-cured tobacco (Nicotiana tabacum L.) breeding line developed and released cooperatively by the USDA-ARS and the North Carolina Agricultural Research Service. Total alkaloid content of the cured leaf averages 1.08% on a dry weight basis (3 year average) and consists primarily of nicotine since the line does not convert nicotine to nornicotine. In 1974 the USDA-ARS and North Carolina Agricultural Research Service released a low alkaloid breeding line (LAF C53) which produces leaf with approximately 0.20% total alkaloids (1). LMAFC 34, has more acceptable ripening, curing and yielding qualities than LACF 53 and still exhibits a relatively low alkaloid level. LMAFC 34 is a double haploid obtained by anther culture. The plant providing the anther from which the haploid was obtained resulted from crossing a low alkaloid line to 'NC 95' and selecting low alkaloid plants in the F2 generation. A low alkaloid selection was then backcrossed to NC 95 and low alkaloid selections were made until 5 backcrosses to NC 95 had been completed. Haploids were then produced from the BC2F1 plants. LMAFC 34 was selected from among doubled haploids that had varying levels of total alkaloids. The line was in the S2 generation from the original doubled haploid at time of its release. LMAFC 34 was released in 1984 to plant breeders, experiment stations and other research organizations for research and breeding purposes. The low alkaloid line used in the initial cross was described by Chaplin (1).

The new breeding line was evaluated in replicated tests in 1978, 1979 and 1980 at Kinston and Reidsville, NC (2). The line was compared with its recurrent parent NC 95. Results of these tests showed that plants of LMAFC 34 averaged 98 cm in height and produced 18.3 leaves per plant compared with NC 95 which averaged 110 cm in height and had 18.3 leaves. The line flowered at the same time as NC 95. The yield of LMAFC 34 was 2660 kg/ha with a grade index of 34 compared to 2730 kg/ha and a grade index of 50 for NC 95. The total alkaloid level was 1.08% compared with 3.28% for NC 95. The leaves of LMAFC 34 ripened normally and cured to a good rich color.

The cured leaf from the test in 1980 was made into cigarettes and smoked by two smoke evaluation panels. The smoke flavor compared favorably with NC 95. The new line was resistance to black shank incited by Mayetiola destructor (Say) in a semidwarf background. They were developed and released jointly by USDA-ARS and the Oklahoma Agricultural Experiment Station on 13 Sept. 1983. These F2-derived lines in F4 are homozygous for the H4 gene and were increased from selected F3 progenies from the crosses 'Wings'/'Samson'/KS70H205/3/2*'Vona' (PI 478842), which traces to an F2 plant row 80W 412-3, and 'Tam106'/'Oasis'/KS70H208/3/2*'Tam106 (PI 478843), which traces to F2 plant row 80W 598-314. 'Oshima'/'5'Scout' is the pedigree of KS70H208 and the source of the H4 gene.

Both lines were developed by crossing adapted cultivars with resistant F1 plants from the previous cross followed by pedigree selection methods. Resistant plants were selected by sending crossed seed to Manhattan, KS, for testing. The resistant plants were returned to Stillwater, OK, for the next cross. After the final cross, resistant F1 plants were selfed, and subsequent F2 populations were space planted in the field. The F2 progenies from individual F1 plants were grown in the field, and plants, derived from 30 seeds of each F2, were tested for resistance to Hessian fly. Lines homozygous for resistance were retested in F4 and F5 with final selection in F6. The lines are short stunted and resemble the recurrent parent in height, general plant appearance, seed quality, and maturity.

Germplasm amounts of seed are available from USDA-ARS, Plant Science and Water Conserv. Lab., P.O. Box 1029, Stillwater, OK 74076, or the National Small Grains Collection, USDA-ARS, Beltsville Agric. Res. Ctr., Beltsville, MD 20705.

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References and Notes


REGISTRATION OF TWO HESSIAN FLY RESISTANT HARD RED WINTER WHEAT GERMPLASMS

PI 478842 (Reg. no. GP-241) and PI 478843 (Reg. no. GP-242) are hard red winter wheats (Triticum aestivum L.) possessing the H4 gene for resistance to Hessian fly (Mayetiola destructor (Say)) in a semidwarf background. They were developed and released jointly by USDA-ARS and the Oklahoma Agricultural Experimental Station on 13 Sept. 1983. These F2-derived lines in F4 are homozygous for the H4 gene and were increased from selected F3 progenies from the crosses 'Wings'/'Samson'/KS70H205/3/2*'Vona' (PI 478842), which traces to an F2 plant row 80W 412-3, and 'Tam106'/'Oasis'/KS70H208/3/2*'Tam106 (PI 478843), which traces to F2 plant row 80W 598-314. 'Oshima'/'5'Scout' is the pedigree of KS70H208 and the source of the H4 gene.

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REGISTRATION OF MALE FERTILITY RESTORATION WHEAT GERMPLASM

Twelve lines (PI 473548 to PI 475559, GP229 to GP240) of winter wheat (Triticum aestivum L.) were developed by Wheat Breeding and Production, USDA-ARS, in cooperation with the Agricultural Research Center of Washington State University, Pullman (Table 1). These lines are male fertility restorers (R lines) for Triticum timopheevii Zhuk. cytoplasmic male sterility (CMS). These lines may have value as parents in CMS hybrid wheat breeding programs or for use in male sterile facilitated crossbreeding schemes. Sources of fertility restoration among these lines were derived from PI 316005 ('Primepi'), NB 542437 (1279A9/111-4*'Nebred'/*'Gaines') and KS 63GH279 (T. timopheevi/3*Marquis'). The specific male fertility restoration genes possessed by each of these sources were not deter-