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 (LAFC 53) which produces leaf with approximately 0.20% total alkaloids (1). LMAFC 34, has more acceptable ripening, curing and yielding qualities than LAFC 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 BC1F1 plants. LMAFC 34 was selected from among doubled haploids that had varying levels of total alkaloids. The line was in the S3 generation from the original doubled haploid at its release. LMAFC 34 was released in 1984 to plant breeders, experiment stations and other research organizations for research and breeding purposes.

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 30 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 *Phytophthora parasitica* var *nicotianae* (Breda de Hann) Tucker and bacterial wilt incited by *Pseudomonas solanacearum* E.F. Smith. The resistance to these two diseases is equal to NC 95.

Seed stock will be maintained and distributed for research and breeding purposes by the Tobacco Res. Lab., USDA-ARS, Oxford, NC 27565.

**References and Notes**


REGISTRATION OF TWO HESSIAN FLY RESISTANT HARD RED WINTER WHEAT GERMPLASM

PI 478842 (Reg. no. GP-241) and PI 478843 (Reg. no. GP-242) are hard red winter wheats (*Triticum aestivum* L.) var. (*Nees*) *Triticum timopheevi* Zhuk. cytoplasmic male sterility (CMS). These lines are male fertility restorers (R lines) for *Triticum timopheevi* (Say) with the H3 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 Experiment Station in 1983.

These lines were derived from crosses of a low alkaloid breeding line developed by the USDA-ARS and North Carolina Agricultural Research Station with adapted cultivars. Both lines were developed by crossing adapted cultivars with resistant F1 plants from the previous hard red winter wheat breeding program as parents in CMS hybrid wheat breeding programs or for use in male sterile facilitated crossbreeding schemes. These lines may have value as parents in CMS hybrid wheat breeding programs or for use in male sterile facilitated crossbreeding schemes.

Both lines were developed by crossing adapted cultivars with resistant F1 plants from the previous hard red winter wheat breeding program as parents in CMS hybrid wheat breeding programs or for use in male sterile facilitated crossbreeding schemes. These F2-derived lines in F3 are homozygous for the *H3* gene and were increased from selected F2 plants of the crosses 'Wings'/'Samson'/KS70H208 (PI 478842), which traces to an F3 plant row 84-167 and 'Tam106'/'Oasis'/KS70H208 (PI 478843), which traces to F3 plant row 84-167. 'Tama'5*S'cot' is the pedigree of KS70H208 (Reg. no. GP-242) is hard red winter wheat.

Seed stock will be maintained and distributed for research and breeding purposes by the Tobacco Res. Lab., USDA-ARS, Oxford, NC 27565, or the National Small Grains Collection, USDA-ARS, Beltsville Agric. Res. Ctr., Beltsville, MD 20705.