

MN-76 was developed from a four-clone double cross (R302xR304) × (R328xR332). The two single crosses were made in the greenhouse in 1973-1974. The double cross was made in the field at Rosemount, Minn. by interplanting alternate single-cross plants in 1976. Seed harvested from the double cross constitutes the germplasm. Clones R302, R304, and R332 trace to open pollination progenies of PI 234780 (W. Germany), and PI 252537 and PI 253316 (Yugoslavia), respectively, whereas R328 was a progeny from a plant (73A-3) selected at the University of Minnesota by A.B. Simons and which traced to a field selection made near Waseca, Minn. by R.C. Kalton. Selection criteria for the parental clones of MN-76 were indole alkaloid type and concentration, forage quality, anthesis date, and plant vigor. All four parental clones contained gramine, a simple recessive indole alkaloid derived from the amino acid tryptophan, and they were free of dimethyl tryptamines, 5-methoxy tryptamines, and β -carbolines. Between 1977 and 1981 the two single crosses, MN-76, and available reed canarygrass cultivars were evaluated in the field at Rosemount as spaced plants and as solid-seeded plots and in the greenhouse. The single crosses and MN-76 were low in total indole alkaloid concentration and they were exclusively of the gramine type.

At no time did the total indole alkaloid concentration of MN-76 exceed 57% that of the available U.S. cultivars, and frequently MN-76 contained less than 30% as much alkaloid as other cultivars. MN-76 contains predominantly gramine with occasional traces of N-monomethyl-tryptamine of the eight indole alkaloids that are known to occur in reed canarygrass.

In Minnesota forage yield tests, MN-76 yielded up to 16% less dry matter per unit area than 'Rise' and up to 9% less than 'Vantage.' However, in Indiana, MN-76 yielded as well as Rise and Vantage. Its heading date was similar to that of 'Flare' (about 4 days earlier than that of Vantage and Rise). At heading, with high fertility and good moisture availability, the average leaf blade width of MN-76 was about 3mm narrower than that of Rise and Vantage. MN-76 is a moderate seed producer. In 4 harvest years it produced about 60% as much seed as Rise and Vantage. In Minnesota grazing trials, ruminants gained more weight when they grazed second and third crops of MN-76 compared to Rise (lambs and steers) or Vantage (lambs) when conditions allowed maximum expression of alkaloid concentration (up to 2.5g kg⁻¹ dry wt in MN-76 and up to 5.0g kg⁻¹ dry wt in Rise or Vantage). Incidence of diarrhea among grazing lambs was as much as 26 times greater with Rise than with MN-76⁽¹⁾.

Up to 500 g of seed of MN-76 are available to each applicant upon written request and agreement to make appropriate recognition of its source as a matter of open record when the germplasm contributes to the development of a new cultivar or hybrid. Request seed from either Laddie J. Elling or Donald K. Barnes, Dep. of Agronomy and Plant Genetics, Univ. of Minnesota, 1509 Gortner Avenue, St. Paul, MN 55108.

A. W. HOVIN AND G. C. MARTEN

References and Notes

1. Marten, G.C., R.M. Jordan, and A.W. Hovin. 1981. Improved lamb performance associated with breeding for alkaloid reduction in reed canarygrass. *Crop Sci.* 21:295-298.
2. Associate director, Montana Agric. Exp. Stn., Bozeman, MT 59717 (formerly professor, Dep. of Agronomy and Plant Genetics, Univ. of Minnesota, St. Paul, MN 55108) and research agronomist, USDA-ARS and professor of Agronomy, Dep. of Agronomy and Plant Genetics, Univ.

of Minnesota, St. Paul, MN 55108. Registration by the Crop Sci. Soc. of Am.; Joint contribution of the Minnesota Agric. Exp. Stn. (Journal Series Paper no. 13 333) and USDA-ARS. Accepted 2 May 1983.

THREE FUSARIUM WILT RESISTANT, OKRA-LEAF COTTON GERMPLASMS

THREE okra-leaf cotton (*Gossypium hirsutum* L.) lines, Auburn 72 OK-4 (GP 218), Auburn 72 OK-8 (GP 219), and Auburn 72 OK-14 (GP 220) with resistance to fusarium wilt caused by *Fusarium oxysporum* Schlecht. f. *vasinfectum* (Atk.) Syd. & Hans. and root-knot nematode (*Meloidogyne* spp.) were developed and released cooperatively by USDA-ARS and the Alabama Agricultural Experiment Station in 1982.

Auburn 72 OK-4 originated from an F₂ selection from the cross (K₄E × Auburn okra-leaf) × (K₄E × 'Hopicala'). Auburn 72 OK-8 and Auburn 72 OK-14 were developed from F₂ selections from the cross [(K₄E × 'Auburn 56') BC₄ × Auburn okra-leaf]. K₄E is a selection from a cross between Knight's BAR 4/16 × 'Empire' followed by three backcrosses to Empire, and was developed by L. S. Bird. Auburn 56 was derived from Cook 307-7, while Auburn okra-leaf originated from a backcross transfer of the okra-leaf trait into Auburn 56 by A. L. Smith. The number of backcrosses and sources of the okra-leaf trait used in this conversion program are unknown. Hopicala originated from crosses of the native Hopi Indian cotton and an Acala variety.

Auburn 72 OK-4, -8, and -14 were selected for wilt resistance on soil highly infested with fusarium wilt and root-knot nematodes at Tallassee, Ala. Fiber properties and fusarium wilt resistance of these lines are comparable or superior to those of the check, 'Stoneville 603'. The lint turnout of these lines is lower than that of Stoneville '603'; however, their mean lint yields were comparable to that of this check when grown on wilt-free soil over a 5-year period.

Small amounts of seed of these lines are available upon written request, as long as present supplies last. Requests should be addressed to the Crop Science Res. Unit, USDA-ARS, Dep. of Agronomy and Soils, Auburn University, AL 36849.

A. J. KAPPELMAN, JR.

References and Notes

1. Research plant pathologist, USDA-ARS, Auburn University, AL 36849. Registration by Crop Sci. Soc. of Am. Cooperative investigations of USDA-ARS and Alabama Agric. Stn., Auburn University, AL 36849. Accepted 25 Apr. 1983.

FOUR DISEASE-RESISTANT COTTON GERMPLASMS

FOUR disease-resistant cotton (*Gossypium hirsutum* L.) lines; Auburn 73B-1 (GP221), Auburn 73B-2 (GP222), Auburn 73B-5 (GP223), Auburn 73B-12 (GP224) were developed and released cooperatively by the USDA-ARS and the Alabama Agricultural Experiment Station in 1982.

These lines were derived from individual F₃ plant selections from the cross (K₄E × Auburn 56-5) × 79N. K₄E is a selection made by L. S. Bird from a cross between Knight's BAR 4/16 × 'Empire' followed by three backcrosses to Empire. K₄E has both the B₂ and B₃ genes for resistance