New Forage Grasses Stand Up to Grazing

Two drought-tolerant grasses from ARS researchers in Logan, Utah, fight erosion and will help wildlife and cattle stay well fed on western U.S. ranges.

Scientists at the ARS Forage and Range Research Unit put Douglas crested wheatgrass through 10 years of breeding and testing in several western states. Vavilov crested wheatgrass was 15 years in the making.

Both varieties, available for the first time last year to rangeland researchers and commercial seed companies, thrive in some regions of the Great Plains and the Intermountain West. These wheatgrasses will not crowd out native plants.

They're bred to provide spring and autumn forage at sites up to 7,500 feet altitude. Douglas needs at least 10 inches of rain a year; Vavilov, an excellent performer on sandy soils, can survive with only 8. Both grasses develop strong root systems that help hold soil in place.

The grasses grow about 3 feet tall. Douglas is very leafy, and its leaves stay green longer than those of many other crested wheatgrasses, according to plant physiologist N. Jerry Chatterton. These traits are a plus, he says, "because animals like the leaves best, not the stems."

Douglas' origins are Iran, Turkey, and the former Soviet Union. The researchers named the plant after ARS colleague Douglas Dewey, a world authority on wheatgrasses. Dewey died in 1993.

Vavilov crested wheatgrass, a Siberian type with some Turkish parentage, honors Nikolay I. Vavilov, a Russian scientist who identified the centers of origin of cultivated plants and established one of the world's most important collections of plant seeds.

The Logan researchers distributed an initial supply of the wheatgrass seed last year, and more will be available this fall. Plant breeders may contact the Logan lab; commercial seed producers should call Stanford Young at the Utah Crop Improvement Association in Logan, (801) 797-2082. Some seed may be on sale at dealers in time for fall 1995 planting.

Douglas and Vavilov are the work of Logan scientists Kay H. Asay, Kevin B. Jensen, W. Howard Horton, Douglas A. Johnson, and Chatterton, in collaboration with the Utah State Agricultural Experiment Station and USDA's Natural Resources Conservation Service.—By **Marcia Wood,** ARS.

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Gamagrass Genes Could Protect Corn

Ideally, the best pest control will be no pest control—if ARS researchers in Columbia, Missouri, succeed in transferring rootworm resistance from eastern gamagrass into adapted corn germplasm. This could later be used by private breeders to develop commercial hybrids.

In a project under way since 1991, ARS entomologists B. Dean Barry and Bruce E. Hibbard, plant breeder Larry L. Darrah, and plant geneticist Edward H. Coe have been evaluating gamagrass, *Tripsacum dactyloides,* and exotic maize from Mexico and Central America. The scientists are in the ARS Plant Genetics Research Unit located at the University of Missouri.

"We already knew that mature gamagrass plants had some resistance to rootworms," says Hibbard. "But to protect corn all the way from seedling stage through flowering, we needed to find rootworm resistance in gamagrass seedlings."

In greenhouse studies, former ARS entomologist Dan J. Mollenbeck, Hibbard, and Barry tested 50-day-old gamagrass and corn seedlings, which they infested with 50 western corn rootworm eggs.

Larvae feeding on the gamagrass seedlings weighed less than those feeding on the corn. In further studies, they found that only three larvae survived on a total of 20 gamagrass plants, while one larva per plant survived on the corn. These results established for the first time that gamagrass is resistant in the seedling stage, as well as in the mature stage.

More cropland is treated with insecticides for corn rootworms than for any other insect pest.

While about a third less insecticides are used on row crops than the amount of herbicides applied for weed control, this research is being done in an effort to reduce the overall use of agricultural chemicals and improve water quality in the Corn Belt.

Hibbard is also studying how corn rootworms behave while selecting their host plants. Studies are in progress to evaluate a more uniform hatching strain of rootworms, which will enhance plant-screening accuracy.—By **Linda Cooke,** ARS.

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