

# Hard Winter Wheat Varieties Released

October 30 2009, By Stephanie Yao

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NuEast    Appalachian White

ARS has released the first hard winter wheat varieties bred and developed for production in the eastern United States. Photos courtesy of David Marshall, ARS.

(PhysOrg.com) -- The first hard winter wheat varieties bred and developed for production in the eastern United States have been released by the Agricultural Research Service (ARS).

NuEast, a hard red winter wheat, and Appalachian White, a hard white winter wheat, were bred by ARS plant pathologist and geneticist David Marshall, research leader of the Plant Science Research Unit in Raleigh, N.C.

Soft winter wheats, which are used to make pastries, cookies and biscuits, are typically grown in the eastern United States. Hard wheats, on the other hand, are best suited for making bread. Hard wheat has not traditionally been a successfully grown crop in the eastern states because the area's humidity increases the incidence of disease in the field. This in turn affects yield and the quality of the grain.

But NuEast addresses these problems. In field tests, NuEast had significantly higher grain yield than the check varieties over four years of testing. It also showed moderate reaction to powdery mildew but was more resistant than some check varieties. NuEast's resistance to leaf rust is good, and it is moderately resistant to stem rust, including Ug99 races.

There are very few hard white wheats grown and produced in the [United States](#). The main challenge with growing hard white wheat under humid conditions in the eastern states is the pre-harvest sprouting typically associated with white wheats, according to Marshall.

Throughout six locations and over three years of testing, Appalachian White had significantly higher yield than the only other variety that could be considered acceptable when grown under [weather conditions](#) in the eastern states. Appalachian White also showed a higher level of resistance to powdery mildew, stripe rust, leaf rust and Hessian fly.

According to Marshall, the key to developing a hard wheat for eastern U.S. production is the ability to produce consistently good grain quality, resulting in good milling and baking characteristics when grown in a humid environment.

Millers and bakers that are part of the North Carolina Organic Bread Flour Project, an initiative supported with funding from the North Carolina Tobacco Trust Fund and Santa Fe Tobacco, have been testing the wheats since their release. So far, the feedback has been positive.

Provided by USDA Agricultural Research Service

Citation: Hard Winter Wheat Varieties Released (2009, October 30) retrieved 1 May 2024 from <https://phys.org/news/2009-10-hard-winter-wheat-varieties.html>

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