

Hard Winter Wheat Regional Nurseries

The Hard Winter Wheat Regional Nursery Program is coordinated by USDA-ARS employees stationed at Lincoln, NE. The hard winter wheat region consists of those states, mostly in the Great Plains, where hard (both red and white) wheat is grown. It extends from Texas and New Mexico in the south, to Montana in the north, and is roughly bordered on the west by the Continental Divide, and on the east by the Mississippi River. The Hard Winter Wheat Regional Nursery Program was established in 1931. It is a cooperative organization, involving federal, state and private members. Federal members primarily are employees of the USDA-ARS; state members generally work at land grant universities in the region.

Regional nurseries were established to foster testing of advanced breeding lines in diverse environments, to characterize disease response and quality characteristics of wheat cultivars before they are released for production, to facilitate free exchange of germplasm, and to allow the evaluation of potential new cultivars by states lacking wheat breeding programs. Germplasm exchange in the region is conducted in accordance with the “Wheat Workers’ Code of Ethics” (below). Seed of all entries remains legal property of the originating institutions. The USDA-ARS does not distribute seed to third parties, without written permission of the legal owners.

Current coordinator of the Hard Winter Wheat Performance Nurseries is R. Graybosch, USDA-ARS, University of Nebraska, Lincoln, Nebraska (bob.graybosch@ars.usda.gov). The nursery program includes the Southern Regional Performance Nursery (SRPN), the Northern Regional Performance Nursery (NRPN) and the Regional Germplasm Observation Nursery (RGON). The SRPN and NRPN are replicated yield trials. Each is limited to 50 entries per year. The SRPN is grown at 30+ locations, with sites in New Mexico, Texas, Oklahoma, Kansas, Colorado, Nebraska, South Dakota, Missouri, Iowa, Wyoming, Idaho and Oregon. The NRPN is grown at 15+ locations, situated in Nebraska, Minnesota, South Dakota, North Dakota, Wyoming, Idaho, and Alberta, Canada. Entries are submitted as nominees to the Regional Coordinator. Entries generally are advanced breeding lines being considered for possible release as cultivars. Entries are derived from cooperating public and private breeding programs. Entries typically are not released cultivars, and may only be entered in a trial for two years. Each trial contains long-term check cultivars. Check cultivars are used to assess long-term improvements in grain yield, quality, etc.

Seed of entries is sent from each cooperating breeding program to the Regional Coordinator. Typically, four to six entries are submitted per program. The Regional Coordinator then distributes seed of all entries to all cooperating locations for planting of replicated yield trials. Subsequent to harvest, cooperators return data on grain yield, test (volume) weight, plant height, lodging, and, at times, field response to disease infections, to the Regional Coordinator. Additional, location-specific data is accumulated, either due to local expertise, or as a result of opportunistic events. Seed of entries also is distributed to additional USDA-ARS locations for further evaluations. These include response to leaf and stem rusts (Cereal Disease Laboratory, St. Paul, MN), reactions to Hessian Fly (Plant Science and Entomology Group, Manhattan, KS). Programs at state universities provide data on acid soil tolerance, leaf rust and virus resistance (Oklahoma State University), field leaf rust reactions (Texas A&M University). After harvest, the USDA-ARS Grain Marketing and Production laboratory in Manhattan, KS, receives grain samples from all replicated yield sites. Complete end-use quality analyses, including milling and baking surveys, are conducted.

The Regional Germplasm Observation Nursery (RGON) is composed of entries at earlier stages of development, generally those just beginning to be entered in multilocation trials within their states of origin. Each cooperating breeding program may submit up to 30 entries. Entries are evaluated for winter-hardiness and reactions to various biotic (fungal and insect pathogens and pests) and abiotic (drought, winter hardiness) stresses.

Each year, the Regional Coordinator summarizes the results of the various nursery trials in report form. Region-wide and statewide means are provided, and environmental stability is analyzed. The USDA-ARS Grain Marketing and Production Lab produce a separate report, summarizing quality traits. Reports are posted at the regional web page: <http://www.ars.usda.gov/Research/docs.htm?docid=11932>. As of 2010,

only Excel® versions will be posted. These reports are intended to provide information and results associated with the Hard Winter Wheat Performance Nursery Program, conducted in cooperation with State Agricultural Experiment Stations, USDA-Agricultural Research Service, and private companies involved in wheat improvement. Reports contain preliminary data on experimental wheat lines and primarily are intended for use by cooperators and those with special interest in wheat improvement efforts. Data included herein are not intended for publication and should not be used in literature citations, nor publicity or advertising. Use of the data may be granted for certain purposes upon written request to the appropriate agency.

WHEAT WORKERS' CODE OF ETHICS

This seed is being distributed in accordance with the "Wheat Workers' Code of Ethics For Distribution of Germplasm", developed and adopted by the National Wheat Improvement Committee on November 5, 1994. Acceptance of this seed constitutes agreement.

1. The originating breeder, institution, or company has certain rights to the unreleased material. These rights are not waived with the distribution of seeds or plant material but remain with the originator.
2. The recipient of unreleased seeds or plant material shall make no secondary distributions of the germplasm without the permission of the owner/breeder.
3. The owner/breeder in distributing unreleased seeds or other propagating material grants permission for its use in tests under the recipient's control or as a parent for making crosses from which selections will be made. Uses for which written approval of the owner/breeder is required include:
 - a. Testing in regional or international nurseries;
 - b. Increase and release as a cultivar;
 - c. Reselection from within the stock;
 - d. Use as a parent of a commercial F1 hybrid, synthetic, or multi-line cultivar;
 - e. Use as a recurrent parent in backcrossing;
 - f. Mutation breeding;
 - g. Selection of somaclonal variants; or
 - h. Use as a recipient parent for asexual gene transfer, including gene transfer molecular genetic techniques.
4. Plant materials of this nature entered in crop cultivar trials shall not be used for seed increase. Reasonable precautions to ensure retention or recovery of plant materials at harvest shall be taken.