

Variety Evaluation of Spring Wheat and Oats in an Organic Environment

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Organic agriculture, the growing of crops without synthetic inputs such as fertilizers and pesticides, has recently been cited as one of the fastest growing segments in US agriculture. North Dakota leads the nation in acreage with over 60,000 certified acres in organic production. The majority of this production is comprised of cereal grains such as spring wheat and oats.

One of the many strengths of the land grant university is the public breeding programs that are located within this system. These breeding programs develop, release and allow cultivars to be freely propagated by the general public. Cultivars are bred and evaluated for regional and statewide adaptation as well as their fit to predominant production methods that farmers utilize. Given this scenario, the majority of the breeding effort has selected varieties under environments where the use of synthetic agrochemicals is standard. Variety selection for low-input/organic production may not be best represented by variety performance under traditional evaluation environments used to release current varieties. Variety evaluation under low input/organic environments will fill a void and meet the needs of this growing sector of agriculture. Information gathered will not only benefit organic producers, but may be useful for producers who choose to limit the amount of inputs used on their farm.

During the 2001 growing season, researchers from NDSU and the University of Minnesota in conjunction with the Northern Plains Sustainable Agriculture Society (NPSAS) initiated variety testing of spring wheat and oats on certified organic farms. This effort is not conducted at Research Centers since this land is not applicable for this type of evaluation. The organic farms chosen for testing this past growing season were located in south-central and western North Dakota.

Data gathered from this first year of evaluation will not immediately determine the needs of these farmers. However, this information will build toward the overall goals of the working group. The short and long-term goals of this effort are:

- 1) Identify small grain cultivars from existing germplasm that are best adapted to organic production methods.
- 2) Identify characteristics such as growth traits and grain quality that are superior for the organic environment.
- 3) Develop a working group of plant breeders, cereal scientists, and agronomists working along with organic agriculturists and private/public seed curators to breed, evaluate, and select varieties for organic agriculture.

Data gathered from the spring wheat and oat variety trials conducted on organically certified farms by the Carrington Research Extension Center are summarized in tables found within this report. The crop variety evaluation program at the CREC will continue to evaluate the diversity of varieties across the region. The constituency of the region represents both conventional and organic farms. These trials are an opportunity to serve a major issue identified by the organic agriculture public.