

# AGRONOMY NEWS



Grasslands For Tomorrow

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## NITROGEN MANAGEMENT

Dr. David Franzen, NDSU Extension Soils Specialist

There is interest in exploring different options for nitrogen fertilization with alternative nitrogen sources and timing of application for winter wheat with changes in pricing. Traditionally, much of the nitrogen on winter wheat has been applied in the winter. There is little danger of loss in our frigid environment due to winter leaching, and people have been reluctant to bet on a firm driving bed for early spring "green-up" application.

However, sandy soils are still vulnerable to leaching losses in the early spring and concern about excess tillering has prompted a new look at lower fall N rates. In addition, the availability of larger, 4-wheel drive high-clearance sprayers has made problems with spring application less of a concern. Some growers who use tramlines are also positioned to take advantage of spring application.

If applying N in the spring in a topdress manner, use of liquids with streambars is the most preferred method. Wheat already greening up will not be significantly burned with this application, as long as wind speed is watched so that the integrity of the stream pattern is not broken up. The stream pattern also concentrates the N into bands, which are a little more resistant to urea volatilization than a broadcast spray. The liquid N fertilizer must have about ½ inch of rain in most soils to incorporate it so that the plants can take up the N. To be most efficient, the rainfall must occur within about 48 hours of application. The UAN (28-0-0) that is usually applied in a liquid topdress application is only half urea, with the other half ammonium nitrate.

The N in ammonium nitrate is not volatile, so even if it does not rain for a considerable period, about half of the N will still be

around when it does rain.

Urea can be applied, but needs rain within a couple days of at least ½ inch to incorporate it into the soil and begin to work. Urea also is "safe" from volatility if the weather has been so dry that the pellets are still intact until it rains. Intact pellets mean that no volatility has taken place. Higher humidity, light rains and dew disperse the pellet and set the urea N up for volatilization if significant rainfall does not take place. Application of urea impregnated with Agrotain® keeps the urea from volatilizing for about 10 days. The cost is related to the rate of N to be applied, since the rate of Agrotain® is dependent on tons and not a per acre rate.

In studies in North Dakota, a single application rate has been equivalent to split rates. If a grower decides to split the rates into more than one application, there is a risk of not getting into the field if it becomes wet and the risk of not receiving rain after application increases. In the east (Wisconsin and Virginia for example), N application is used to manipulate tillers. An agriculturalist will take stand counts in the early spring just prior to a proposed N application. If stand/tiller counts are acceptable, N application is delayed so that head counts will not be excessive. If the stand is thin, then a small N application is made to promote tillering. The remainder of the N requirement is made about 5-6 leaf. In environments where annual rainfall is considerably higher than in North Dakota, this strategy is standard operating procedure for serious growers. In North Dakota, there is more risk attached to this kind of strategy.

Although liquid N application is not a dominant fertilizer in North Dakota, I see its use increasing as fertilizer storage and infrastructure is improved. Certainly in winter wheat an increase in its use is likely due to agronomic benefits over competing products.

## **Early Season Disease Management**

A decision will have been made to include a fungicide with your winter wheat weed control program by the time you receive the next newsletter that will contain the 2003 winter wheat fungicide trial information from Dr. Marcia McMullen. The results will be from the trial conducted at the NDSU Ransom-Sargent County variety trial location on the Randy Mairs and Leonard and Pat Freeberg farms.

There are three items needed for disease infection to occur. Disease infection requires a host (wheat plant), disease source (prior crop residue containing disease or other sources), and the proper environment (generally wet conditions and appropriate temperatures).

The following are items were taken from presentations by Dr. Martin Draper, SDSU Extension Pathologist, regarding decision-making information for foliar fungicide application to spring and winter wheat.

Circumstances that increase the opportunity for fungicides to return a profit on wheat include:

- ◆ Winter wheat planted in the eastern part of the state.
- ◆ The crop is planted in wheat or corn residue. (barley residue also)
- ◆ Disease present on the lower leaves.
- ◆ Extended period of wet weather.
- ◆ The yield potential is 45 bu/a or higher.
- ◆ A susceptible variety.

Table 1 was developed by Dr. Draper indicates the environmental conditions favoring development of Stripe Rust, Leaf Rust and Stem Rust. He also indicated that Stripe Rust would start to lose its viability with temperatures above 80 degrees.

**Table 1. Environmental conditions favoring small grain rust development.**

	<b>Stripe Rust</b>	<b>Leaf Rust</b>	<b>Stem Rust</b>
Day Temps	60-70	68-77	77-86
Night Temps	50-60	59-68	59-68
Dew	yes	yes	yes

A one-year study by Roger Ashley and Dr. McMullen conducted at 3 locations in southwest North Dakota reflected the importance of considering the prior crop when adding a fungicide with the herbicide application. Tilt fungicide at 2-ounces was applied with the herbicide spring wheat at the 4 to 6 leaf stage in 2001 at Beach, Mandan and Regent, ND. Table 2 indicates the yields and shows the prior crop impact. When a broadleaf crop preceded wheat, as was the situation at Beach, there was no difference in yield between the untreated check and the foliar fungicide treatment.

**Table 2. Spring Wheat yields in bushels/acre treated with foliar applied tilt with the herbicide.**

<b>Location</b>	<b>Prior Crop</b>	<b>Untreated</b>	<b>Tilt at 2 oz.</b>
Beach	Sunflower	45.2	45.3
Mandan	Wheat	54.3	61.2
Regent	Wheat	36.3	40.8

In summary, crop rotation, weather, presence of disease, geographic location and yield potential need to be considered when adding a foliar fungicide with the herbicide application. To know if you have the presence of disease means you have to be in the field observing the wheat plants. A wheat crop planted in a prior broadleaf crop does not ensure that you do not need a foliar fungicide application. Each field needs to be evaluated individually and it doesn't hurt to be a good weather forecaster.

Dr. McMullen's three-years of winter wheat fungicide trials in southeast North Dakota planted into wheat stubble have indicated that a split fungicide treatment (with herbicide and early flower) yielded more than a foliar treatment or an early flowering treatment by themselves.

## **CONTROL VOLUNTEER WINTER WHEAT EARLY**

Control of volunteer winter wheat in the fall or very early spring is key to keeping the disease Wheat Streak Mosaic under control. This spring pay close attention to last years (2003's) winter wheat fields for volunteer winter wheat and grassy weed growth that can act as a green bridge for spread of the virus by the wheat curl mite. The disease can spread to neighboring spring grain fields so be diligent and avoid bad neighbor relations. This is the disease that started the decline of winter wheat acreages in North Dakota in the 1980's.

Destroy any volunteers or grass growth with a herbicide when the plants resume spring growth or by tillage. The disease is easily managed if volunteers and grassy weeds are controlled during the two critical time periods, which are prior to planting winter wheat in the fall and prior to the following crops emergence in the spring.

## 2004 WINTER WHEAT ACREAGE REPORT

National Agricultural Statistics Service (NASS) released the winter wheat seedings report on January 12, 2004. The NASS report indicates that the acreage seeded to winter wheat in the U.S. for 2004 decreased by 3% to 43.5 million acres. However, the acreage in the Dakota's did not follow the U.S. trend.

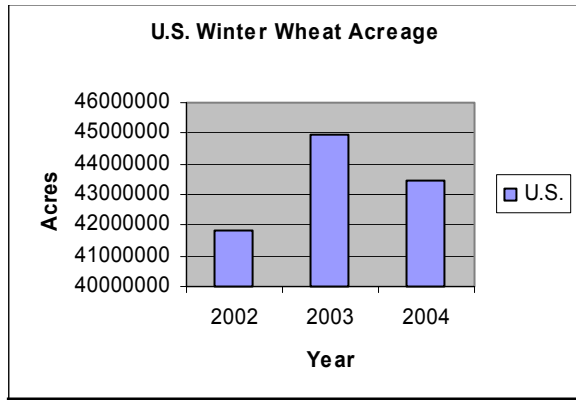


Figure 1

South Dakota's 2004 winter wheat planted acreage (Figure 2) of 1.7 million acres is an increase of 6% or 100,000 acres over the 2003 plantings. The 2004 planted acreage for North Dakota (Figure 3) is 240,000 acres an 85% increase over the 2003 plantings.

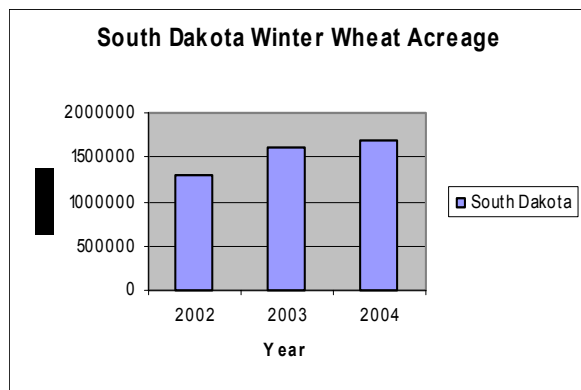


Figure 2

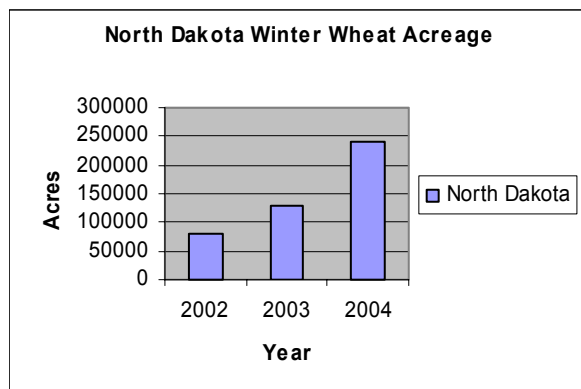


Figure 3

I believe very good 2003 winter wheat yields can take some credit for the increase in the ND acreage, but there is no doubt that the DU winter cereal program is starting to reap some benefits for the hard work of the last four years.

The sponsors need to be commended for and encouraged to continue their support of the winter cereals project. The ND Natural Resources Trust, SD Game, Fish & Parks, ND Game & Fish Dept., Wild Rice SCD and Syngenta Crop Pro-

tection are of particular importance for their early and continuing financial support. NDSU and SDSU and NRCS in both states have also been great in kind supporters.

It is very encouraging to see winter wheat acreage in the Dakota's trending higher when you consider that total wheat acres from all wheat classes in the two states has been trending lower since the early 1990's (Figure 4).

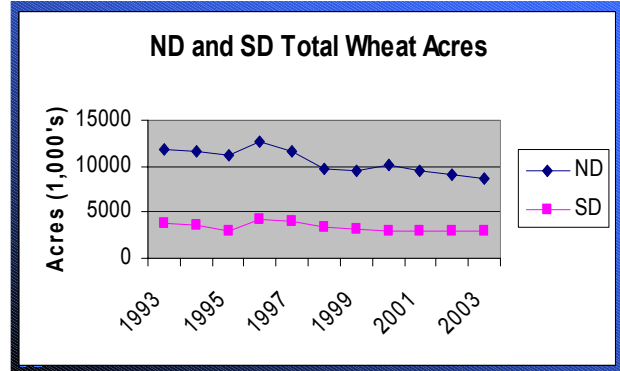


Figure 4

Figure 5 compares the average yield for winter wheat and spring wheat in North Dakota for 2003. Since 1999, winter wheat has an 8.8 bushel per acre advantage.

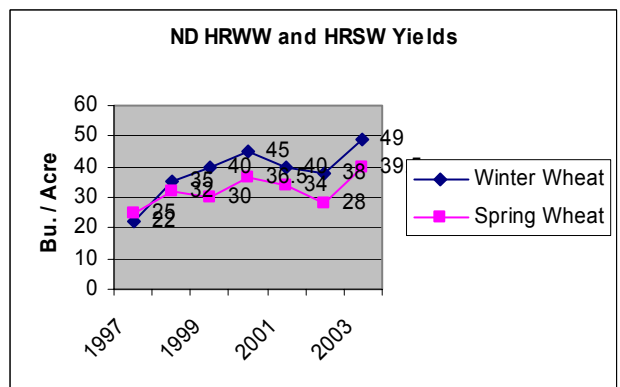


Figure 5

Figure 6 compares NASS data for winter wheat and spring wheat yields for 2003 in the three ND DU winter cereal project counties (Dickey, Ransom, and Sargent) to three similar non-project counties. The spring wheat yields are nearly identical at 51 bushels per acre in each set of three counties; however, the three project counties average winter wheat yield is 15.2 bushels per acre greater than the three neighboring counties average winter wheat yield.

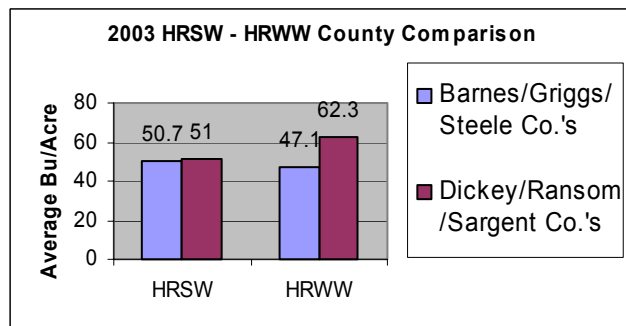


Figure 6

DU believes the increased winter wheat yields are due to research, demonstrations, education and technical assistance being coordinated by DU and it's partners in the project counties.

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RETURN SERVICE REQUESTED

## DU WEBSITE TO CONTAIN "AGRONOMY NEWS"

"Agronomy News" is now posted on the Ducks Unlimited web site. This means you can now go to the web site and view the past issues of the newsletter. DU has been receiving requests for back issues for the past year. Most of the issues are out of print and this will make it easy to deal with that problem. You will be able to go to the site and read or print the newsletter. It will be in a PDF format. Go to the DU-GPRO website which is <http://prairie.ducks.org> and click on **Agronomy News**.

## NEW WINTER WHEAT VARIETY TRIAL SITE

The NDSU Hettinger Research Extension Center in cooperation with the Area IV SCD Research Farm, USDA-ARS Northern Great Plains Research Laboratory and Ducks Unlimited have established an 18 variety winter wheat trial at the Area IV SCD Research Farm southwest of Mandan, ND. The trial is located on the southeast corner of Field G next to the spring grain variety trials.

The trial will be toured at the Area IV SCD/NGPRL tour on July 22, 2004. Appreciation is extended to Erik Eriksmoen and Tim Faller, Hettinger REC; Dr. Jon Hanson, Dr. Don Tanaka and Cal Thorson, NGPRL; and Marvin Halverson and the Area IV SCD Research Farm board for their support and cooperation in establishing this variety trial.

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## RECEIVE "AGRONOMY NEWS" BY EMAIL

We are really moving into the electronic age with this issue of the newsletter. "Agronomy News" can now be sent by email for those of you who would prefer to receive it in that format. Or, you can receive it by email and through the mail if you would also like to continue to receive a hard copy.

Advantages of receiving it by email include one to two-weeks earlier receipt of the newsletter because we avoid waiting for the printing and mail delivery. It also saves DU the printing and mailing costs.

The biggest disadvantage is keeping DU updated with your email address changes.

Please email Janell Rath or Blake Vander Vorst if you would like to receive the newsletter by email or by email and mail. There is no need to contact DU if you just want to continue to receive the newsletter by mail. Janell's email is [jrath@ducks.org](mailto:jrath@ducks.org) and Blake's is [bvandervorst@ducks.org](mailto:bvandervorst@ducks.org).

### ***Winter Cereal Sponsors***

*Ducks Unlimited*

*North Dakota Natural Resources Trust*

*South Dakota Game, Fish and Parks*

*North Dakota Game & Fish Department*

*Syngenta Crop Protection  
Natural Resources Conservation Service (NRCS)*

*Day, Marshall, James River, Ransom and Wild Rice  
Conservation Districts*

*North Dakota Dept. of Health 319 Program*

*NDSU and SDSU Cooperative  
Extension Service*