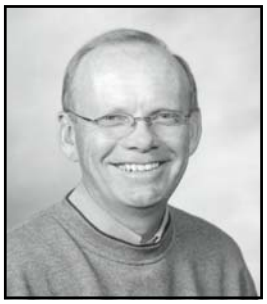
AGRONOMY NEWS

Grasslands for Tomorrow

Volume 7, Issue 2 **March 2007**



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Winter Wheat Beats the Heat

The following is reprinted with permission from the National Sunflower Association and appeared in their Sunflower Weekly Review, February 27, 2007. The information illustrates winter wheat's ability to "***beat the heat***."

The USDA-ARS Mandan location also operates a sizeable research farm with field sizes up to 40 acres. Precipitation in 2006 was well under the long term average resulting in depressed yields. Corn and field peas were not harvested due to drought, while per acre average gross returns for the following crops were: barley $12; flax $68; spring wheat $42; ***winter wheat $108****; and, sunflower $159.*

Winter Cereal Sponsors

Ducks Unlimited

Bayer CropScience

Syngenta Crop Protection

South Dakota Game, Fish and Parks

North Dakota Game & Fish Department

Natural Resources Conservation Service

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

North Dakota Dept. of Health 319 Program

NDSU and SDSU Cooperative Extension Service

Spring Reminders

CONTROL THE VOLUNTEER WINTER WHEAT IN LAST YEARS FIELDS

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CONTROL IT EARLY

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I hope the message is loud and clear to control the volunteer winter wheat in last years winter wheat fields as soon as possible. It is one of the two critical times in keeping wheat streak mosaic in check. The other is controlling the grassy plants and weeds prior to the seeding of winter wheat in the fall.

Also, are you applying adequate **nitrogen** to meet the needs for higher winter wheat yields?

Agronomy News

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2006 Dickey County Winter Wheat Management Study

Larry Anderson and Marty Visto, *Cooperators*

Seven cultivars of winter wheat were planted 7 miles east of Ellendale, ND on the Larry and Jane Anderson farm on September 19, 2005 with the assistance of Larry Anderson. All varieties were seeded at 1.2 million PLS/A at a depth of 1.0 to 1.5 inches and the seed treated with Dividend Extreme + Cruiser. Starter fertilizer was applied at 10 GPA of 10-34-0 and 3 pints/A of TJ Wheat Micromix in a deep band between the seed spread 5 to 6 inches with Anderson triple shoot openers in all plots. The winter wheat was seeded in spring wheat stubble with a 7.5 foot Horsch Anderson air plot drill with a 15-inch shank spacing.

UAN nitrogen (43 GPA or 128 lbs/A actual) was applied with stream bars provided by Amity Technology for an 85-bushel yield goal using 2.25 lbs of nitrogen per bushel. Larry Anderson applied Roundup at 48 oz/A + AMS on September 6, 2005 as a preplant burn down. Wheat Growers, Oakes, ND, applied Gramoxone at 1.3 pints/A on September 16, 2006 as a second preplant burn down. DU applied the herbicide and early fungicide treatment and Marty Visto applied the late fungicide treatment.

Figure 1. Individual winter wheat cultivars test weight response to fungicide treatment.

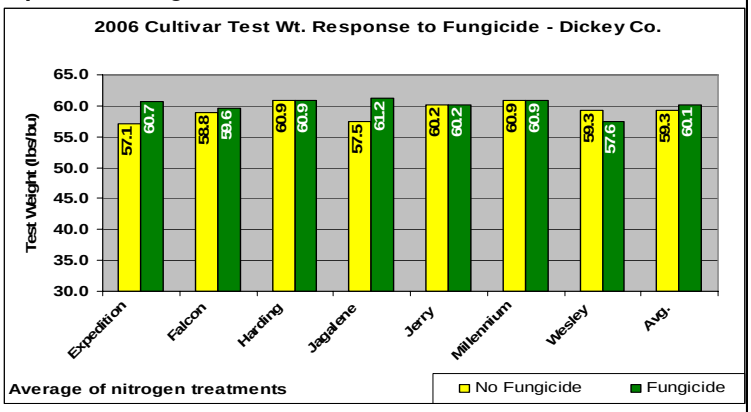
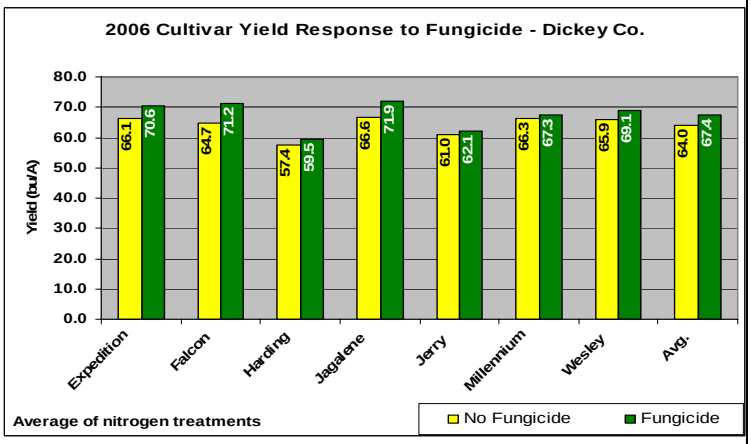


Figure 2. 2006 individual winter wheat cultivars yield response to fungicide treatment.



Soil Test Information:	**2004 Nitrogen Treatments:**
Nitrogen: 0-6" = 26 lbs 6-24" = 33 lbs	N-Check = No UAN
pH 6.2 OM 3.3%	N-Early = 43 GPA UAN on April 12
Copper 0.47 ppm	N-Split = 21.5 GPA + 21.5 GPA UAN on April 12 & 28
Zinc 1.76 ppm	N-Late = 43 GPA UAN on April 28
Boron 0.4 ppm	**2006 Rainfall:** April ~ 19th=1.00"; 27th=.10"; 30th=1.00"
Phosphorus 18 ppm (Olsen)	May ~ 7th=.30"; 10th=.20"; 21st=.25"; 23rd=.30"; 24th=.25"; 31st=.15"
Sulfur 306 lbs/2'	June ~ 10th=.75"; 14th=.15"; 15th=.35"; 24th=.40"; 30th=.10"
Potassium 418 ppm	July ~ 1st=.20" **April 1 to July 31 = 5.50"**

Fungicide Treatment:
Quilt (7 oz/A) was applied at 13 GPA with Axial + Adigor + Affinity Tankmix + Starane herbicides on April 28, 2006 at Feekes 6 growth stage (6 leaf). Tilt (4 oz./A) + BB5 NIS was applied in 25 GPA of water carrier with LurMark twin nozzles on June 7, 2006 to winter wheat at Feekes 10.51 growth stage (early flower).

Quilt and Tilt fungicides effectively retarded the development of powdery mildew and were very effective in reducing leaf spot diseases. Figure 2 shows that fungicide treatment did not significantly increase yield of any of the winter wheat cultivars in 2006. There was a 3.4 bu/A yield increase for fungicide treatment when averaged over the seven cultivars, which was significantly greater than the non-treated.

The yield increase to fungicide application at Ellendale in 2006 was limited by moisture stress and very hot temperatures following the flowering stage of winter wheat.

Fungicide application costs were not recovered for the varieties Harding, Jerry and Millennium, which have better leaf disease tolerance. It should also be noted that Harding and Jerry have not yielded as well as the other varieties in this area. Fungicide application was a break-even to small profit for the other varieties with good winter wheat prices, which reduces the yield increase needed to obtain a return on investment.

Cultivar test weight response to fungicide application is shown in Figure 1. There was not a statistically significant increase in test weight to fungicide application in 2006.

Figure 3. 2004 individual winter wheat cultivars yield response to fungicide treatment.

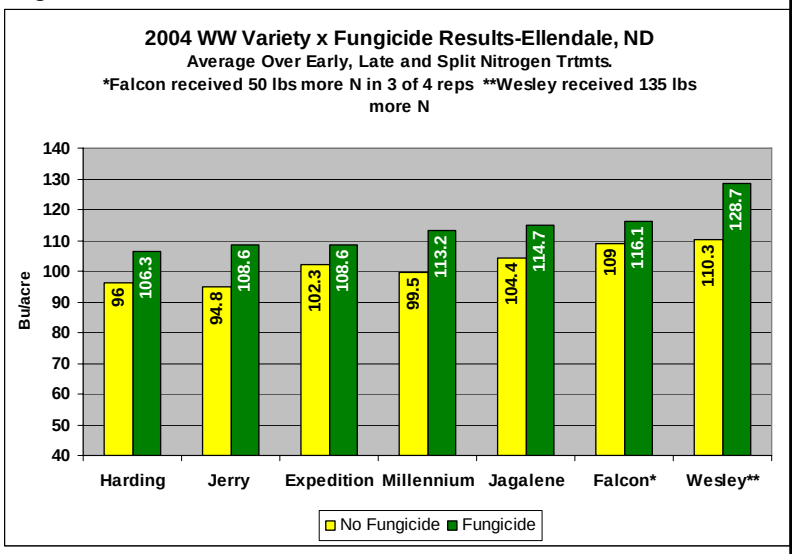
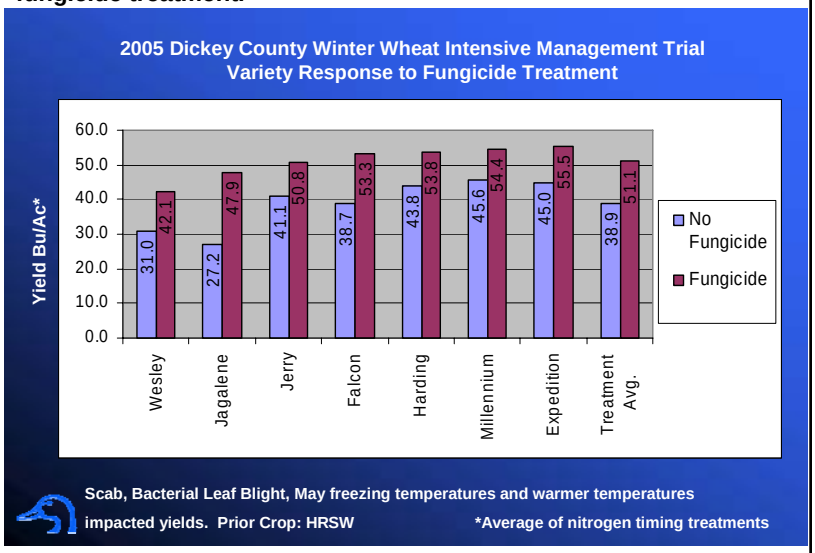


Figure 4. 2005 individual winter wheat cultivars yield response to fungicide treatment.



Varieties & Yield Potential: Figures 3 and 4 contain the winter wheat variety response to fungicide for Ellendale for 2004 and 2005, respectively. There was a very significant yield increase to fungicide application for all varieties in 2004 when the yield potential was very high and leaf spot disease and leaf rust were present. Both the early and late applications were required to protect the early growth and the flag leaf.

The yield environment was also very high in 2005, but scab had the greatest impact on yield. The greatest response to fungicide timing in 2005 was obviously from the early flower application for scab suppression.

It should also be noted that the 2005 and 2006 trials show how varieties respond in different environments based on their disease resistance. Wesley and Jagalene, two very scab susceptible varieties, could not recapture the top yields in 2005 even when they received the early flower fungicide treatment. However, in 2006 (Figure 2), when there was less disease pressure, they performed at the top of the pack.

These trials point to the importance of knowing the environment (weather), diseases present, the environment those diseases favor, yield potential, and variety characteristics.

Figure 5 compares yield response for time of nitrogen application averaged over fungicide treated and untreated plots and the seven cultivars. There was no difference in yield between the nitrogen timing treatments in 2006. Additional information on time of nitrogen application to winter wheat can be obtained in the last issue of *Agronomy News* (Volume 7, Issue 1).

Fungicide and Nitrogen Interaction: There can be interactions between fungicide and nitrogen when winter wheat yield potential is high.

Figure 6 (Ellendale – 2004) shows the average yield for seven winter wheat varieties with and without fungicide for each of the spring nitrogen timing treatments. There is no difference in yield for the nitrogen timing treatments when they have been treated with fungicide. However, the split nitrogen treatment yielded (108.1) more than the early and late nitrogen treatments when no fungicide was applied.

Figure 7 is the yield difference between the fungicide treated and untreated yields from Figure 6 for 2004 and for 2005 and 2006 for each nitrogen treatment. Yield response to fungicide treatment was greatest in the late nitrogen timing treatment (application at the 5 to 6 leaf stage) in two of the three years at Ellendale and a close second in the third year. The fungicide application to the late nitrogen treatment shows a 3-year average yield increase of 13.0 bu/A in Figure 8. The two years with the greatest yield increase also corresponded to the two years with lowest fall nitrogen soil tests. The greater response to fungicide application in the late nitrogen application may be due to reduced early plant health because of lower available soil nitrogen.

Figure 9 indicates that nitrogen and fungicide can limit each others effectiveness. All eight treatments or bars in Figure 9 received nitrogen in a deep band at seeding for an 80 bu/A yield goal. The early, late and split N treatments received an additional stream bar application providing for a total yield goal of 133 bu/A. The lighter or yellow bars did not receive the two fungicide treatments while the darker or green bars did (yellow and green bars show in email version or online).

The fungicide treatment (in the check column - yellow bar vs. green bar) added 4.4 bu/A. The extra N (average of yellow bars in the early, late and split N columns) increased yield over the check (yellow bar) by approximately 5.8 bu/A. However, when you average the treatments (the three green bars in the early,

Figure 5. 2006 affect of nitrogen time of application on yield.

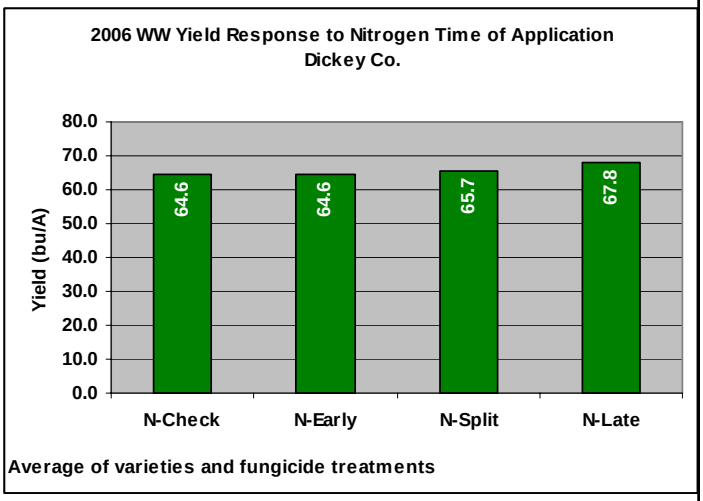


Figure 6.

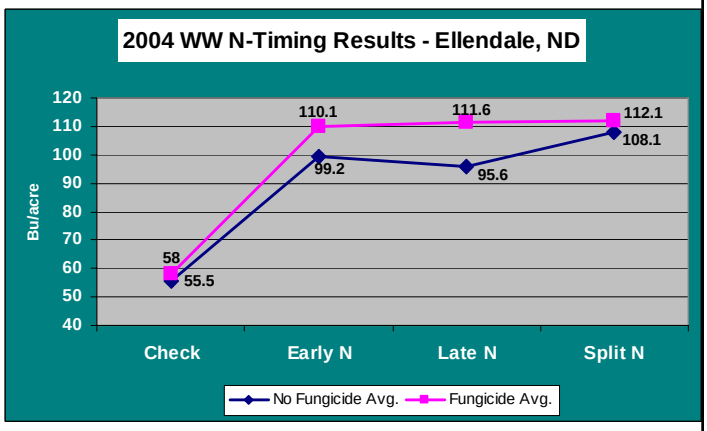
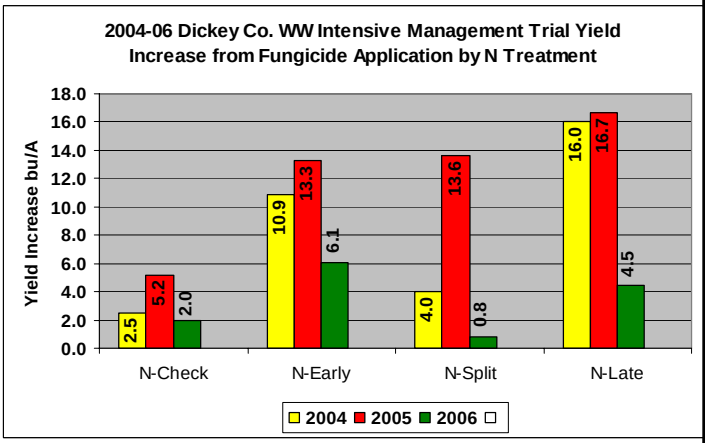


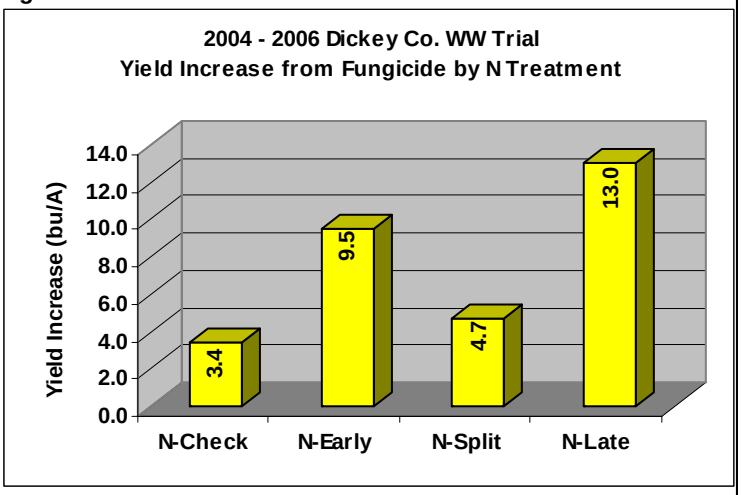
Figure 7.



late and split N columns) receiving both the extra nitrogen and fungicide and subtract that result from the yellow bar in the check column that did not receive the extra nitrogen or fungicide, the yield increase was 23.6 bu/A.

Is nitrogen, fungicide or both limiting your winter wheat's yield response to applications of these products? What is the variable limiting winter wheat yield (soil water, air temperature, fertility, disease, plant population, winter injury, planting date, etc.)?

Figure 8.



Summary

... Use a fungicide with the herbicide when winter wheat is planted in wheat or barley stubble.

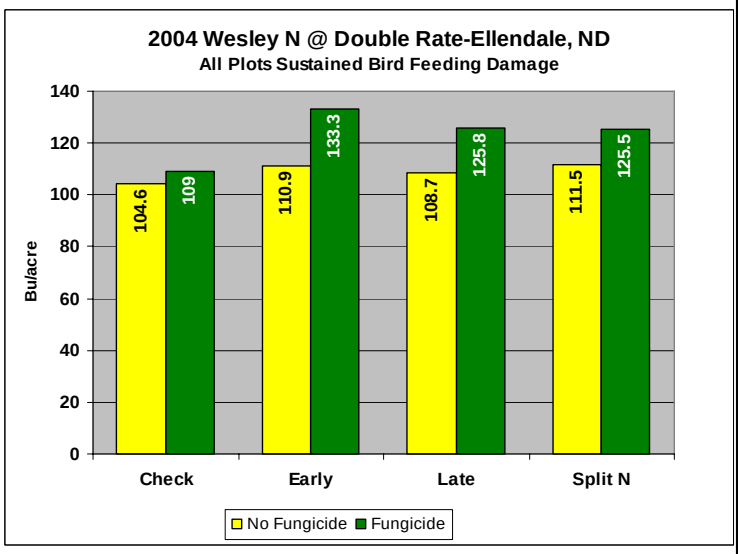
... Consider applying a fungicide at the early flower stage of growth when winter wheat yield potential exceeds 50 to 60 bu/A.

... Two fungicide treatments, one with the herbicide and one at the early flower stage of winter wheat growth, have provided the best return when winter wheat is planted in wheat or barley stubble and there is good yield potential.

... All varieties respond to fungicide treatment, regardless of disease ratings, when yield potential is high (70 bu/A +).

... A winter wheat yield increase due to fungicide application appears to be more likely when the first nitrogen application is delayed until the 5 to 6 leaf stage.

Figure 9.



... Winter wheat yield increases from fungicide application may be reduced if nitrogen is limiting winter wheat yields.

Remember, weather, presence of disease, yield potential, soil moisture, crop rotation, variety, and plant health can impact your decision whether to apply fungicide. Use your observation skills and your good judgment and you will succeed.

The encouraging part of the data is that it appears that nitrogen applications can be made from winter wheat breaking dormancy to the 5 to 6 leaf stage and still maintain yield when fungicide application is part of the management plan. Conversely, if your winter wheat is visibly short of nitrogen and the nitrogen application is being applied at later growth stages, tank mixing a fungicide with the herbicide may be necessary to compensate for a less healthy plant. The prior crops in these studies have been spring wheat and barley. Winter wheat seeded into flax, canola or peas may react quite differently.

Acknowledgements:
This research was supported in part by grants from Syngenta Crop Protection, Ducks Unlimited, ND Natural Resources Trust, ND Game and Fish Department. Others providing material support were the Bristol and Oakes Wheat Growers, Agriliance of Ellendale, NDSU Foundation Seed, SD Foundation Seed, Horsch Anderson, AgriPro Seeds, UAP Northern Plains, David Kinzler, TJ Technologies, Dickey Co. CIA, NDSU Extension Service, James River SCD and NRCS.

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Grasslands for Tomorrow

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Ducks Unlimited Grassland Partnership
2007 CRP Retention Program

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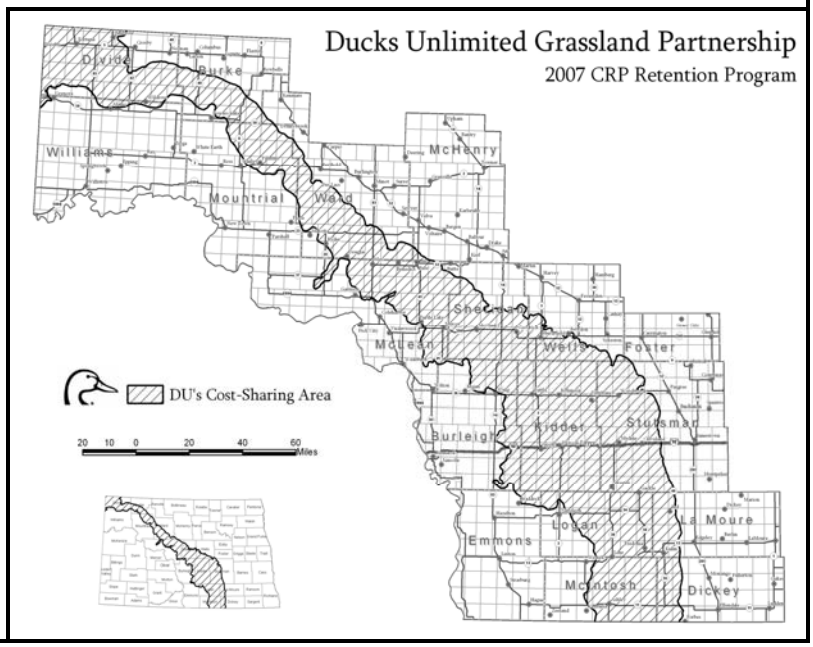
Ducks Unlimited is offering financial assistance to livestock owners in the Missouri Coteau who are in need of development or improvement of water sources and fencing on expired CRP. Keeping ranchers and range livestock on the landscape is very important to waterfowl and many other wildlife species.

Who is eligibile: CRP contract holders with privately held land in the Missouri Coteau are eligible. The project area (see map) includes portions of the following counties: McIntosh, Logan, Kidder, Sheridan, Wells, McLean, Stutsman, Ward, Mountrail, Burke and Divide.

What is eligible: Financial assistance is available for livestock water and fencing needs. These may include wells, dams, pipelines from rural water systems, power lines, and other water developments that will make a permanent water supply for livestock on grasslands. Maintenance of existing water sources, dugouts placed in wetlands and clean out of existing dugouts will not be eligible. Proposed projects need to service at least 150 acres of grassland. The cost share is up to 50%, with the cost of water projects not to exceed $3,500 and fencing projects $2,000/mile. Water and fencing projects and associated grassland must be maintained for 10 years to be eligible. The program is designed to encourage grazing, however haying can occur after July 15. The agreement will stay with the land if sold.



To apply: Call Ducks Unlimited at 701-355-3528 and ask for Paul Bultsma. For an application go to www.ducks.org/gpp.