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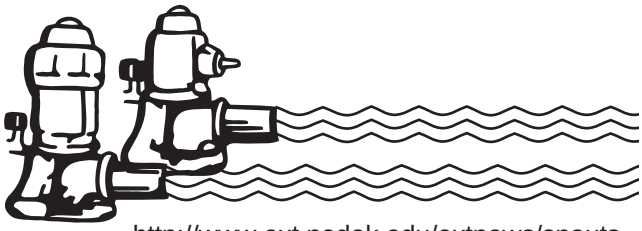

water spouts

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http://www.ext.nodak.edu/extnews/snouts

Field Days and Irrigation Tours for 2002

MDT – Mountain Daylight Time

Hettinger			
Research Extension Center	July 9	5 p.m. MDT	701/567-4323
Dickinson			
Research Extension Center	July 10	8:30 a.m. MDT	701/483-2348
Williston			
Research Extension Center	July 11	8:45 a.m.	701/774-4315
Casselton			
Agronomy Seed Farm	July 15	5:30 p.m.	701/347-4743
Carrington			
Irrigation Research Research Extension Center	July 16	9 a.m.	701/652-2951
Minot			
North Central Research Extension Center	July 17	9 a.m.	701/857-7679
Sidney, Montana			
Eastern Ag Research Center	July 17	8:30 a.m. MDT	406/482-2208
Langdon			
Research Extension Center	July 18	8 a.m.	701/256-2582
Staples, Minn.			
Horticulture Field Day Central Lakes Ag Center	July 18	6 p.m.	877/977-7778
Tappen Area			
Irrigated Potato Field Day I-94, Pettibone Exit – north side of freeway	Aug 6	9 a.m.	701/231-7076
Williston			
Mon-Dak Ag Field Tours Irrigation Demo Fields	Aug 7	9 a.m.	701/572-8880
Oakes			
Irrigation Research Site	Aug. 20	9 a.m.	701/742-2189

MSIDA Irrigation Tour

The Missouri Slope Irrigation Development Association (MSIDA) will be hosting its annual summer irrigation tour July 9. Tour registration will be in the parking lot at Kist Livestock, 1715 40th Ave SE (south side of Memorial Highway) in Mandan between 9:00 and 9:30 a.m. The tour schedule is as follows:

- 9-9:30 a.m. — Register and gather at Kist Livestock
- 10-noon — Price feedlot (dairy heifers and beef)
  Boeckel's feedlot (purebred Angus and irrigated alfalfa)
- Noon — Lunch in Hazen
- 1:30-6 p.m. — Site visits in the Hazen/Beulah area (stops to be determined)
- 6 p.m. — Steak supper at the Ron Gunsch Farm

The cost of the tour is $15 or $10 for just the steak supper. You must provide your own transportation or car pool with someone else. For more information, contact Kevin Nelson (701) 663-3012, Allen Wahl (701) 258-3928 or any MSIDA regional director.

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Blueberry and Tomato Field Night at Staples, Minnesota

University of Minnesota horticultural specialists will lead discussions on tomato mulching, organic practices, blueberry startup and maintenance practices, and small-scale marketing tips on **Thursday evening July 18** at the Central Lakes College – Agriculture Center in Staples. Discussion will be tailored round the interests of potential and existing commercial growers and Master Gardeners. Production practices included in the discussion will be soil pH, fertility, weed control, plastic mulching, trickle irrigation and grower experiences.

Registration is free and opens at 5:30 p.m. The field night will run from 6 p.m. to dusk and take place in the tomato and blueberry planting south of the bus garage. If raining, the horticultural meeting will be held indoors at the Agriculture Center.

Field night is co-sponsored by the University of Minnesota Extension Service, UM-Central Region Partnership, UM-College of Agricultural, Food and Environmental Sciences and the Central Lakes College – Agriculture Center.

For more information, contact the UM-Central Region Partnership at 1-877-977-7778.

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Management of White Mold in Dry Beans

White mold or Sclerotinia stem rot, caused by the fungus *Sclerotinia sclerotiorum*, can be a very damaging disease of dry bean under favorable conditions. Keeping disease levels to a minimum can be a difficult task some years. Tools used to manage the disease include variety selection, fungicide application, and good irrigation practices.

Although no variety is resistant to white mold, some varieties may perform better than others in the presence of the disease. These “tolerant” varieties should be planted in areas where white mold can be a potential problem. The NDSU Extension Service publication A-654, North Dakota Dry Bean Performance Testing, shows which varieties have a tolerant or susceptible reaction to white mold.

Topsin M (Cerexagri) and T-methyl (Micro Flo) fungicides, which contain the active ingredient thiophanate-methyl, are labeled for white mold management in dry beans. Timing of the fungicide application is critical in achieving the best results. Fungicides should be applied when 10 to 30 percent of the plants have at least one open bloom. Fungicides should not be applied within 28 days prior to harvest.

Applications of a fungicide may be made via airplane, with a ground sprayer or through irrigation sprinklers. Fungicides applied by airplane appear to work better with spray volumes ranging from 7 to 10 gallons per acre (GPA) compared to volumes of 5 GPA or less. When applying by ground, drop nozzles between the rows and a nozzle over the top of the row provide the best coverage. Applying fungicides with a pressure of 100 pounds per square inch (psi) or greater will also increase coverage. When applying through sprinkler irrigation, the system should be set to deliver between 0.1 and 0.25 inches of water per acre. The treated area should not be irrigated 24 to 48 hours after the application to prevent washing the fungicide off.

Scheduling irrigation properly can help reduce white mold development. Research conducted by the University of Minnesota at Staples showed that scheduling irrigation events when the average soil water tension in the upper 10 inches of the soil reached 65 to 75 centibars could reduce the potential for white mold development.

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New Irrigated Potato Research Site near Tappen

A new irrigated research site for potatoes has been established near Tappen, N.D. The Northern Plains Potato Growers’ Association purchased the land and a lateral-move irrigation system for the research effort. The irrigated area is approximately 52 acres, of which about 25 acres is being used for potato research this year. The irrigation system is a hose-drag unit with a 6-inch hose conveying 500 gpm from a well on site. The irrigation system has a diesel generator on the control tower that supplies power for an electric propulsion motor on each of the eight towers. Water is applied using Nelson rotators with 20 pounds per square inch (psi) regulators on flexible drops spaced at 18 feet and approximately 5½ feet above the ground.

Experiments at the site include the following studies by North Dakota State University researchers:

- Gary Secor and Neil Gudmestad are conducting plant pathology trials for potatoes. These include a study of early blight, a study of seed treatments for Rhizoctonia and silver scurf, a study of pink rot control and control methods, and a study of black dot.
- Susie Thompson is using the site for the potato-breeding program. Research topics include a study of dual-purpose Russet seedlings, a processing

yield trial and a metribuzin (Sencor herbicide) screening trial. Of special note is a study of sugar end susceptibilities of various advance selections and named varieties to water stress at the tuber initiation stage.

- George Kegode is conducting a weed control demonstration for potatoes.
- Harlene Hatterman-Valenti is conducting studies to determine the effects of nitrogen fertilizer timing and amounts on sugar end defects in potatoes, the effects of various water stresses on sugar ends, and the use of soil additives to improve soil moisture conditions to reduce the incidence of sugar end defects.
- Hatterman-Valenti is also conducting a study of the effects of calcium treatments before harvest on the storage characteristics of onions and a study of various planting configurations (beds, raised rows, flat planting, mulches, etc.) for onions.
- Dean Steele is conducting a study of furrow versus hill planting configurations for potatoes.
- Hatterman-Valenti and Steele are using the site to evaluate a portable soil moisture sensor.
- Martin Glynn from the USDA Agricultural Research Service's Potato Research unit in East Grand Forks is conducting research on sugar end defects in potatoes.

The soils at the site are Maddock loamy fine sand and Arvilla sandy loam, two of the most common soils in Kidder County. According to the NRCS Soil Survey, the Maddock soil has an available water holding capacity that ranges from 0.08 to 0.12 in/in (0.96 to 1.44 in/ft) in the top 16 inches. The Arvilla soil has an available water holding capacity that ranges from 0.13 to 0.15 in/in (1.56 to 1.8 in/ft.) in the top 16 inches. If irrigation is scheduled for the potatoes when the soil moisture depletion level reaches 30% (70% remaining or available) in a 1-ft. root management depth, the moisture deficit will be 0.29 to 0.43 inch for the Maddock soil and 0.47 to 0.54 inch for the Arvilla soil. These deficits will be proportionally larger for deeper root zone management depths, but the soils allow little room for irrigation scheduling errors or mechanical breakdowns because potato water use can equal or exceed 0.30 inch of water per day on days that are hot, windy, and dry during the middle of the season.

A field day at the site is planned for 9 a.m. on August 6, 2002. The site is located at the Pettibone exit (No. 217) of Interstate 94, on the north side of the freeway.

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Spraying onto a Road is Against the Law

In 1989, the North Dakota Legislature passed a law concerning irrigation systems and roads. Section 61-14-16 of the North Dakota Century Code states:

"No person may place, erect, or operate a sprinkler irrigation system, center pivot irrigation system, or other irrigation works or equipment upon or across a highway, street, or road or in such a manner as to willfully allow water from the irrigation works or equipment to flow or fall upon any highway, street, or road."

The purpose of the law is to protect vehicle occupants. Several accidents have been attributed to water from sprinklers splashing onto windshields and obstructing the drivers view. If you have noticed that the roads near your pivots get wet after irrigation, then it would pay to make sure the endgun shutoffs are working and set correctly. If you use a "big gun" for irrigating, make sure it doesn't get close to the road and watch the wind direction. The penalty for a cited violation is a Class B misdemeanor. More importantly, not spraying roads will prevent lawsuits.

Incidentally, the law does not apply to the transportation of irrigation works or equipment upon a highway, street or road. This means a pivot or big gun can be run across a road or highway as long as it is not spraying water.

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Calibrating a Center Pivot for Chemigation in Five Easy Steps

Chemigation is the addition of any chemical to the water used for irrigation. In the past, this practice has been called fertigation for adding fertilizer, herbigation when herbicides were added, fungigation for fungicides, etc. Now it is just called chemigation.

Chemigation is a very efficient and effective irrigation management tool when used properly. It is recognized as a best management practice (BMP) for irrigated agriculture. When chemigating, the irrigation water delivery system and the chemical injection equipment must conform to state laws regarding backflow prevention. In addition, pesticide label must state that it can be used for chemigation and can be applied through a center pivot irrigation system.

Center pivot systems are used on over 75 percent of the irrigated land in North Dakota. With the cost of pesticides and liquid fertilizer increasing every year, it's important to properly calibrate a center pivot irrigation system for chemigation. Below are five easy steps to follow to ensure that a center pivot chemigation system is properly calibrated.

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1. **Calibrate the injector pump.**
   Determine the injection rate of the chemical injection pump for a particular setting of the injection rate control knob. This must be done with the irrigation system running so the injection pump is working against the water pipeline pressure. Do this by letting the injection pump draw from a calibrated container on the suction side of the injector pump. Determine the time in minutes to inject 1 gallon of liquid, then use this equation to determine the injection pump rate in gallons per hour:

$$\text{Injector Pump Rate} = \frac{60}{\text{Minutes to Pump 1 Gallon}}$$

2. **Determine the number of hours to make one complete revolution around the field at the speed the center pivot will be operated and the total number of acres the pivot covers:**
   Time for one complete revolution in hours
   Total area the center pivot covers in acres

3. **Determine the total gallons to be injected. Multiply the injection pump rate (step 1) by the total hours to cover the field (step 2). Use the following equation:**
   Total Gallons Injected =
   (injector pump rate) x (hours to cover field)

4. **Determine the amount of chemical required to cover the field.**
   Multiply the field acreage by the chemical rate as specified for the particular chemical and crop. For nitrogen, it would be the pounds N per acre and for pesticides, it would be the rate that is recommended on the label for the particular crop. Use the following equation:
   Total Chemical Volume =
   field acres (step 2) x chemical volume/acre

5. **Add the total chemical (step 4) to the injection supply tank.**
   For nitrogen in the form of UN-28 the supply tank should contain the amount calculated in step 3. However, for most pesticides add water to the supply tank until you have the necessary total volume to be injected (step 3).

When working with many pesticides and dry chemicals, make sure you have a method to agitate the injector supply tank to keep the chemicals in solution. Many chemicals will settle out if not agitated.

For more information on chemigation and calibration of center pivots, contact me and request publication FS-863, Chemigation: Calibrating Systems for Center Pivot Irrigation by Hal Werner, South Dakota State University Extension Agricultural Engineer.

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