

Agricultural Newsletter

UW-Madison College of Ag & Life Science
University of Wisconsin-Extension



April-May-June
2015

Volume 21 Issue 2

Table of Contents

- 1 Agriculture is an Important Contributor to WI Economy
- 2 New Ag Faculty at UW-River Falls
- 2 Remote Sensing Use in Agriculture on the Rise
- 4 Growing Double Crop Forage After Small Grains
- 5 Crop Management Highlights From Northern Safari
- 6 Frost Seeding of Forages: Easy Pasture Improvement
- 7 Recent History of the Northern Safari
- 7 New NRCS Conservationist at the Spooner Office
- 8 This Quarter's Events

Agriculture is an Important Contributor to Wisconsin Economy

Dr. Steven Deller
University of Wisconsin, Madison -
Department of Agriculture and Applied Economics

Agriculture remains an important part of the Wisconsin economy. Using the data from 2012, this study updates prior analysis of the contribution of agriculture to the Wisconsin economy (Deller 2004; Deller and Williams 2009). In the most recent study, Deller and Williams (2009) found that:

- ◆ Wisconsin agriculture contributes \$59.16 billion to total business sales/revenue (about 12.5% of Wisconsin's total business sales); 353,991 jobs (10% of total Wisconsin employment) and \$20.2 billion of total income (about 9% of Wisconsin's total income).
- ◆ In 2012, on-farm activity contributed 153,900 jobs, \$5.7 billion to labor income (wages, salaries and proprietor income), \$8.9 billion to total income, and \$20.5 billion to industrial sales.
- ◆ Food processing activity contributed 259,600 jobs, \$12.9 billion to labor income (wages, salaries and proprietor income), \$21.2 billion to total income, and \$67.8 billion to industrial sales.
- ◆ Total agricultural activity contributed 413,500 jobs, \$18.6 billion to labor income (wages, salaries and proprietor income), \$30.1 billion to total income, and \$88.3 billion to industrial sales.
- ◆ Dairy remains a strong cluster industry for Wisconsin with growing strength in dried-condensed evaporated milk and butter production. Cheese remains a strong area, but the sector is growing more slowly than national production. Dairy in aggregate (farming and processing) contributes 78,900 jobs, \$3.9 billion to labor income, \$7.2 billion to total income, and \$43.4 billion to industrial sales.
- ◆ Drought conditions for many parts of Wisconsin in 2012, the study period, caused a downward tick in grain farm activity further complicating the dairy and other livestock feeding challenge.
- ◆ The lingering effects of the recession also placed downward pressure on agricultural processing not only in Wisconsin, but across the nation. Despite the combined effects of the drought of 2012 and lingering effects of the recession, agriculture has risen in importance for the Wisconsin economy accounting for 11.9% of employment, 10.9% of labor income, 10.9% of total income, and 16.1% of industrial sales.



UWEX Area Agricultural Agents
Spooner Ag Research Station
W6646 Highway 70
Spooner, WI 54801
715-635-3506 or 800-528-1914
<http://spooner.ars.wisc.edu>
www.facebook.com/spoonerag

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UW-Madison College of Ag & Life
Sciences*

**Representing Burnett, Sawyer,
and Washburn Counties:**

Kevin Schoessow
Area Ag Development Agent
715-635-3506 or 800-528-1914

Richard Otto Wiegand
Area Ag Agent
715-635-3506 or 800-528-1914

Phil Holman
Spoooner Ag Research Station
Superintendent
715-635-3735

Rusty Burgett
Spoooner Ag Research Station
Sheep Researcher
715-635-3735

**Representing Ashland,
Bayfield, and Douglas
Counties:**

Jason Fischbach
Matt Cogger
Area Agricultural Agents
715-373-6104

Jane Anklam
Horticulture & Agricultural Agent
715-395-1515

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UWEX Area Agricultural Agent, Spoooner Ag
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Agricultural Agent, Ashland Ag Research
Station, 68760 State Farm Road, Ashland, WI
54806.

Introducing New Ag Faculty at UW- River Falls



Dr. Yoana Newman is the new Forage Management Specialist and an Assistant Professor at UW-River Falls in the Department of Plant and Earth Science. She is a native of Venezuela and received her graduate degrees in agronomy from the University of Florida focusing on forage physiology (MS) and grazing management (PhD). In addition to her professional tropical background, her experience as forage specialist includes the north-central area of Texas and the north-central region of Florida with particular emphasis in grazing dairies, traditional ranchers and small farmers. Her focus will be to teach forage courses, and provide programming for

sustainable pasture and forage management. Yoana has a 67% teaching and 33% extension appointment. You can contact Yoana by email at Yoana.newman@uwrf.edu.



Dr. Simon Jette-Nantel is a farm management specialist and an assistant professor in the Department of Agricultural Economics at the University of Wisconsin – River Falls. Simon started his position on February 2nd, 2015 with a 38% teaching appointment and a 62% extension appointment for the Center for Dairy Profitability. He is originally from Quebec, Canada and completed his undergraduate studies at McGill University in Agricultural Economics. He received his Ph.D. in Agricultural Economics from the University of Kentucky where he looked at the growing importance of off-farm income in farm households' decision

making and its potential impact on farm risk management decisions. His interests' center around farm structural changes and their impact on managerial needs, including financial and human resource management. Simon can be reached by phone at 715-425-3188, by email at simon.jettenantel@uwrf.edu.

Remote Sensing Use in Agriculture on the Rise

Unmanned Aerial Vehicles

*Adapted from Dr. Brian Luck
UW-Madison Biosystems Engineering*

Unmanned aerial vehicles (UAVs), also called “drones”, are increasingly being used in precision agriculture to remotely measure a phenomenon without being in direct contact with it. UAV sensing includes reflectance of electromagnetic energy from objects in addition to common photography. Existing remote sensing technologies include satellite imagery, machine-mounted crop sensors, and cameras. The term “drone” should be avoided here because of its negative connotation with military and other intrusive uses.

UAVs in agriculture are often used for crop scouting. Common applications are for detecting nutrient deficiencies, disease, water deficiency or surplus, weed infestations, insect damage, or other plant stress, and yield predictions. Current machinery can only pass over the crop so many times (too tall, compaction issues, etc.). UAVs could provide measurements weekly, for example, without impacting the field or the crop. Additional benefits would include minimizing environmental impacts, labor savings and increased profitability.

Regulations:

FAA Regulations: Currently any UAV use is limited to hobbyist parameters without Section 333 exemption. Proposed commercial or non-recreational uses will require a UAV pilot’s license that includes familiarity with the National Airspace System.

Hobbyist Rules: These require a maximum altitude of 500 ft., maintaining visual line of sight, flight only outside of a 5 mi. radius of airport, no autonomous flight, and no fee for hire. Most agricultural uses will fall under hobbyist rules.

Small UAV Proposed Rule: Released February 15, 2015 and currently in a 60-day public comment period. Full implementation goal of late 2015 for UAV’s smaller than 55 lbs. More information is available at www.faa.gov.



Types of UAVs:

Fixed Wing: Fly high and fast and can collect a ‘macro’ view of the field with lower resolution.

Rotor/Copter: Fly low and slow and collect high resolution data and imagery at the leaf level.

Large UAV’s: Provide the potential to apply low volume pesticides and other inputs in areas where traditional crop dusting was not previously possible.

Growing Double Crop Forage After Small Grains

*Adapted from Nick Schneider
UW-Extension Agricultural Agent - 2012*

From 2006 to 2010, Wisconsin averaged 282,000 acres of harvested wheat (USDA-NASS, 2007-2011). After harvest some of these fields are planted with late summer alfalfa and a few more receive manure, but many sit fallow for the rest of the growing season. Fields that are tilled late summer to control weeds are left vulnerable to erosion. If farmers take action after harvesting wheat or other small grains, they can utilize the approximately 40% of growing season precipitation and Growing Degree Units (GDUs) that remain as of July 31. This 40% rule of thumb applies throughout the state. Planting timing is important because 20% of annual GDUs accumulate in August. On average between the end of July to the end of October, Wisconsin receives 975 to 1,300 GDUs (corn base) and nine to eleven inches of precipitation. This amount of heat and precipitation leaves the potential to grow more forage.

A new strategy in Wisconsin for building forage inventories is to raise double crop forages after small grain harvest. Double crop forage is a sound strategy in Wisconsin because of the need to store large forage inventories for winter. Rather than growing emergency forages to build inventory during weather stressed years, planned double crop forage can increase the likelihood of success.

What are double crop forage options? A wide range of forage crops can potentially be planted after small grain harvest, however weather conditions will influence which forages will be more successful. Double crop forages such as brassicas, small grains, ryegrass, legumes, sorghums and millets, and even corn silage can be sources of late season forage. Many studies have been conducted on emergency forages and fall small grain forage. Yield results vary from 0.5 tons of dry matter per acre to 4.0 tons of dry matter per acre or more in Wisconsin (Undersander, 2008).

Which double crop forages are most likely to perform well? The most well understood double crop forage option is planting fall oats near August 1. Research demonstrated oat variety selection is important for maximizing yield and quality. For example, Forage

Plus oat is a good fit for yield and quality reasons because this variety should not develop into the boot stage as quickly as others thereby allowing time to work around corn and soybean harvest. Earlier maturing oat varieties can yield well but forage quality may decrease as heading stage is reached. If fall planting is delayed, then earlier maturing varieties should be considered. Adding peas to oats can increase protein by 3 to 5%. On farms that use grazing, forage brassicas such as forage radish, turnip, kale or swedes have potential because they are fast growing and high quality. With recommended planting dates from mid-July to late August, timing of brassicas aligns well after small grain harvest. Grazing brassicas can create unexpected oats and peas planted in early August, such as livestock disorders such as bloat or nitrate poisoning. It is important to avoid abrupt changes from poor quality pasture to brassicas and continue to supplement dry hay (Undersander, 1996).

Are there unique double crop forages? One unique approach to double cropping is the potential to frost seed red clover into an existing wheat stand in spring. This practice typically is done to establish the nitrogen fixing cover crop in order to reduce fertilizer expenses the following year. However, given a timely wheat harvest and a warm August, red clover's fall growth may be sufficient to justify harvesting. Research by Stute and Shelly measured 1.7 tons of dry matter per acre with a range of 0.33 to 3.26 tons of dry matter per acre for red clover growth after wheat harvest. Be aware that some springs do not provide the right freeze-thaw conditions for frost seeding. Since it is unlikely red clover will dry for hay in the fall, plan to harvest it as haylage. If red clover is grazed or green chopped, watch out for bloat. Warm season grasses including sorghum, sudangrass, sorghum sudangrass, millets, and corn silage are riskier double crop forages. These options have the highest probability of success when small grains are harvested early and temperatures are above average. Soil dryness during midsummer may be a deterrent to planting these crops. Delaying planting past mid-July and/or cool temperatures will significantly hinder yield of these crops. Sorghum, sudangrass, sorghum sudangrass and millet typically have lower forage quality than common Wisconsin forages. If forage quality is a high priority, selecting BMR varieties may help improve forage quality. Another warm season grass to consider is planting corn silage after small grain harvest. Again, weather conditions will influence the success of this practice. University of Wisconsin corn silage planting date studies at Arlington have demonstrated a yield of 3.8 to 5.3 tons of dry matter per acre of low starch silage when planted on July 15 (Lauer, 2008).

Can there be problems? Before raising unfamiliar forages, it is important to consult with the farm's nutritionist to ensure adequate quality feed can be grown for the intended diet. Fall grown forages may have different quality characteristics from spring planted equivalents. For example, late planted corn silage will have low starch content if the ear is undeveloped at harvest. Species such as sorghums, sudangrass and millets have feed characteristics that are less ideal for milking dairy cows. If harvest is delayed into late fall, frost, lack of field drying, or even mud can become harvest problems. Access to a bagger or bale wrapper will provide the opportunity to segregate these alternative forages allowing for better use in a ration. Farmers and agronomists planning to integrate double crop forages into the crop rotation are advised to look back at the field's herbicide history. There may have been herbicides sprayed within past years that can create herbicide injury from persistence, plus feeding forage from fields with these residues may be an off label use. Since some double crop forage species are not commonly found on herbicide labels, the field may need to follow the longest rotation interval provided. Review herbicide planting restriction intervals to select products that will allow for the necessary flexibility. Plan seed acquisition early, yet have flexibility. Because of the limited use in the past, local seed suppliers may not have all seed immediately available in local warehouses. Planting double crop forages after small grains, such as winter wheat, is a strategy to utilize more of the growing season to build winter feed inventories. Be aware of the yield and quality characteristics of the forage plus potential complications that come with double cropping.

Crop Management Highlights From the Northern Safari Webinar Series

Phil Holman
Superintendent, Spooner Ag Research Station

Managing Fertilizer Cost in Corn and Soybeans

Carrie Laboski, UW-Extension Fertility Specialist, presented information on fertilizer cost and yield trials to look at the upcoming growing season. Fields which haven't had manure applied in many years can be low in P (phosphorus) and/or K (potassium). A soil test should be done to determine the amount of P and K available. High soil-testing fields will have a low likelihood of payback on fertilizer applications. Optimum-testing fields should be fertilized at approximate crop removal rates. Low-testing fields are in most need of additional fertilizer. Laboski presented information of P and K fertilizer studies on low-testing fields. Yields were lowest when a low testing-K field received no K fertilizer. Similarly low-testing soil P fields had lower yields with no P fertilizer, but the yield loss was less for P than for the K soil at the zero fertilizer levels. The take home message was that if you have low-testing P & K soils, K is more critical to achieve normal yields.

Soybean Management in Northern Wisconsin

Shawn Conley, UW-Extension Soybean & Small Grain Specialist, presented data on soybean production in Northern Wisconsin. While variety trial yields are typically greater in longer-maturity soybeans, Shawn presented a list of the top varieties in the UW trials showing that selecting the right short-season variety will yield just as much as the long-season varieties. Conley also presented several seeding rate trial results. One trial looked at late inter-seeding to improve the soybean yields. Stands with as low as 60,000 plant population yielded just as much as inter-seeding and tillage/late-replanting options. A different seeding rate trial showed no yield loss until seeding rates were below 120,000 seeds per acre.

Selecting Corn and Soybean Varieties

Both Shawn Conley and Joe Lauer, the UW Extension Corn Specialist, presented variety selection data and explained that multiple-site, multiple-year location data is best for selecting varieties with the best chance of doing well on your farm. A current difficulty; however, is that seed companies are rotating new varieties in and discontinuing old varieties more rapidly than ever before. Thus, you may only see variety data for one or two years.

Important Diseases of Corn, Soybeans, and Small Grains

Damon Smith, a Field Crop Pathologist, showed information and data on a number of corn, soybean, and small grain diseases. During the last few years, fungicides have been promoted on corn and soybeans to help protect yield and prevent yield loss. Corn-yield payback at current fungicide and corn prices shows that farmers would need 6 to 9 bushels/acre more corn yield. Break-even yields on soybeans were 4 bushel per acre to pay for fungicide applications. Compiling data from many different studies show inconsistent results for either corn or soybean fungicide application. Smith did show data where fungicides were generally economically feasible in small grains.

Frost Seeding of Forages: Simple, Economical Pasture Improvement

*Dan Undersander
Professor, Forage Specialist
University of Wisconsin*

Frost seeding is broadcasting forage seed onto the ground surface while the ground is still frozen in the spring. The principle is that repeated freezing and thawing of the soil surface causes surface cracks in the soil which allow seed incorporation.

Farmers have reported that frost seeding works 60 to 70 % of the time. They feel frost seeding is worthwhile it because of the cost saving from not needing a seeder. While frost seeding is a less expensive method of seeding forages than using seeders, it is also riskier than seeding with a drill because seed-soil contact is less good and produces less uniform stands. Frost seeding can be acceptable for pasture improvement but not for establishing pasture or hay fields.

Seed can be distributed by broadcast seeders that are either tractor- or ATV-mounted or hand-held or mixed with fertilizer and applied. The optimum is to broadcast seed early in the spring after the snow is gone but while the ground is still frozen. Frost seeding on top of snow, especially with fertilizer, is not recommended because rapid snow melting may cause the seed to be washed off the pasture. Frost seeding earlier than March will also result in seed loss to birds, rodents, etc.

Frost seeding works best if pasture residue has been removed prior to broadcasting the seed to allow the seed to reach the soil surface. Residue removal is best done by grazing late the previous fall. Residue can be removed by grazing or burning in the spring but either may delay seeding. Frost seeding is less recommended for sandy soils because the freezing and thawing does not incorporate the seed as well. Though often not necessary, any action to incorporate the seed, such as allowing cattle, sheep or horses to walk across the seeded area or disking will increase stand establishment success.

Frost seeding works best for legumes and grasses that germinate rapidly and at low temperatures. Red and white clover are the easiest to establish but we have also had some luck with birdsfoot trefoil. Frost seeding alfalfa is not recommended because it does not germinate at as low temperatures as the clovers. Frost seeded Italian (annual) ryegrass and orchardgrass have high success rates. Other grasses have been frost seeded with varying success.

The other key to successful frost seeding is to reduce competition to the new seedlings as they are starting out. It is critical to graze or mow the pasture as the seedlings begin to emerge and whenever the grass gets 8 to 10 inches tall. Some have felt the mowing or grazing would hurt the new seedlings. However greater damage is caused by the shade from the established species if it is not removed periodically during the seeding year.

Frost seeding can be an effective and inexpensive method to improve the quality and quantity of forage. Adding legumes to pastures provides higher protein forage as well as nitrogen fixing to support grass growth. The key steps are good seed-to-soil contact, early seeding at the appropriate time for your climate, proper species selection, and reducing competition. Periodic frost seeding will help maintain high quality forages.

Species	% Germ
Red clover	9.5
Perennial ryegrass	24.5
Orchardgrass	11.7
Smooth Bromegrass	8.1
Timothy	6.0
Reed canarygrass	2.2

Species	Seeding rate (lb/acre)
Alsike or Ladino Clover	1 to 2
Red or White Clover	2 to 4
Birdsfoot Trefoil	4
Perennial/Italian Ryegrass	9
Orchardgrass	2

Recent History of the Northern Safari

*Otto Wiegand
Area Agricultural Agent
Burnett, Sawyer & Washburn Counties*

The Northern Safari of Ag Specialists has been held in NW Wisconsin for 31 years. It is a 1-2 hour program held on a weekday, usually 3-4 times in a season, between January and March. Principal locations have been Spooner, Ladysmith, Ashland / Bayfield, and Maple / Superior. Phillips and Balsam Lake have also been included at times. Live speakers have rotated among sites in most years, although teleconferencing and webinars have also been used. The purpose has been to bring new agricultural ideas to NW Wisconsin.

Topics are quite variable and those since 2001 are listed in brief below:

Dairy Heifers – 2001
Feeding During Low Milk Prices – 2001
Woodlands – 2001
Pastures – 2001
Direct Marketing – 2001
Dairy Price Outlook / Reducing Risk - 2001
Livestock Diseases - 2002
Mastitis - 2002
Forages – 2002
Poultry – 2002
Nutrient Management – 2002
Market Gardening - 2002
Beef - 2003
Phosphorus - 2003
Property Taxes - 2003
Composting Livestock - 2004
Direct Marketing – 2004
Low-Cost Facilities – 2004
Energy Conservation - 2004
Livestock Vaccination - 2005
Small Grains and Soybeans - 2005

*Kevin Schoessow
Area Agricultural Development Agent
Burnett, Sawyer & Washburn Counties*

Premises Registration and Animal ID – 2005
Horse Nutrition - 2005
Forest Management - 2006
Livestock Facilities – 2006
Nutrient Management - 2006
Feeding - 2006
Agro-Forestry - 2007
Weeds - 2007
Calves - 2007
Oil-Seed Crops for Energy - 2008
Pastures - 2008
Dairy and Beef Nutrition - 2008
Fertilizers - 2009
Farm Bill - 2009
Strip Tillage – 2009
Low-Cost Parlors – 2009
Small-Scale Bio-Digesters - 2009
Winter Rye – 2010
Financial Strategies – 2010
Working Lands Initiative – 2010
Relative Grain Quality – 2010
Poultry – 2011
Forest Health – 2011
Grazing - 2011
Sheep and Goats – 2012
Cover Crops – 2012
Pigs - 2012
Climate Change – 2014
Farm Leases & Rental Agreements – 2014
Pollinators - 2014
Soil – 2015
GPS – 2015
Corn Hybrids - 2015
Diseases of Corn, Soybeans and Small Grains – 2015
Fertilizer Costs – 2015
Small Grains & Soybeans - 2015

New NRCS Conservationist in the Spooner Office

Ron Spiering is the Natural Resources Conservation Service (NRCS) District Conservationist for Burnett, Sawyer and Washburn Counties. He is a graduate of the University of Minnesota and has been with the NRCS for nearly 11 years.



He grew up near Hibbing Minnesota where his parents raised beef cattle. In his career with NRCS, he served as a Soil Conservationist in various counties throughout Minnesota.

Spiering was a District Conservationist in Michigan and in Altoona prior to coming to Spooner. Ron is an avid outdoorsman so the Natural Resources field suites him well. He has a strong commitment to public service and enjoys the various challenges and diversity that his career offers.

This Quarter's Events

Contacts: UW-Extension Ag Agents Otto Wiegand or Kevin Schoessow, Spooner Station, 715-635-3506/800-528-1914, Jane Anklam Douglas Co, 715-395-1363, or Jason Fischbach or Matt Cogger, Ashland & Bayfield Counties, 715-373-6104 for more information.

Mar 31, Tues, 10 AM, Barron, and 1:30 PM Altoona – Implements of Husbandry (IOH) Training for Farmers – contact Tim Jergenson, UWEX Barron Co, 715-537-6250

April 2, Thurs, 9-3, SNAP+ Nutrient Management Training, Spooner Ag Research Station

April 14, Tues, 6:30 PM, Apple Grafting Workshop, Spooner Ag Research Station - \$15, space is limited, prior registration required

April 17-19, Fri - Sun – Bison Conference, Rice Lake – Minnesota Buffalo Association, contact info@mnbison.org, 507-454-2828

April 25, Sat, 10 AM, Grape Pruning Workshop, Spooner Ag Research Station – free

April 25, Sat - Sustainable Living Fair, LCO College, Hayward – contact Amber Marlow, 715-634-4790, x156

April 29, Weds – St. Croix Summit, Stillwater, MN – 715-483-3300, info@scramail.com

April 30, Thurs – Wis. Dairy and Beef Well-Being Conference, Kimberly – Liberty Hall, keynote speaker Temple Grandin, registration \$45 before April 16, on-line contact uwex.edu/animalhusbandryconference

May 16, Sat – Prairie Fling Festival, Hunt Hill, Sarona – contact Anna DeMers, 262-352-3299, or Nikki Nelson program@hunthill.org

June 8, 9, 11, Mon, Tues & Thurs – Tractor Safety Training, Spooner Station – for youth aged 12-16, contact Lorraine, Otto or Kevin at UWEX-Spooner, 715-635-3506

June 13, Sat, AM – Washburn County Dairy Breakfast, Spooner – Fairgrounds

June 20, Sat, AM – Burnett / Polk Dairy Breakfast – Tentative; location tba

June 27, Sat, AM – Sawyer County Dairy Breakfast, Hayward – Fairgrounds



Inside

This Issue

Agricultural
Newsletter

April
May
June

2015

Meet the new ag faculty at UW-River Falls

Learn about the use of unmanned aerial vehicles (UAVs) in Agriculture

The Northern Safari Webinar Series offered useful info on crops



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Kevin Schoessow
UWEX Area Agricultural Agent