The goal of this monthly newsletter is to serve the best interests of Idaho crop producers. Correspondence and inquiries should be addressed to: Olga Walsh, Cropping Systems Extension Specialist, Southwest Research and Extension Center, 29603 U of I Lane, Parma, ID 83660, Phone: (208)722-6701 (ext. 218), Fax: (208)722-6708, Email: owalsh@uidaho.edu

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University of Idaho Extension improves people’s lives by engaging the University and our communities through research-based education. Our areas of expertise are Agriculture, Community Development, Family and Consumer Sciences, Natural Resources, and Youth Development.

To enrich education through diversity the University of Idaho is an equal opportunity/affirmative action employer and educational institution.
WHAT’S NEW?

Upcoming Precision Agriculture Field Tour

Date and Time

Wednesday
July 8th 2015
8:00 am - 4:00 pm

Description

REACCH and University of Idaho Extension will be hosting a tour of North Idaho farms in Genesee, Kendrick and Troy featuring farmers who are using various precision practices and technologies on their farms.

Location

Meet at UI Kambitsch Farm to board tour busses.
Kambitsch Farm is located about 14 miles south of Moscow and 2.5 miles north of Genesee, off of Highway 95.

Event Schedule

7:00 - 7:30 Registration
7:45 Load Busses
8:00 Busses Leave Kambitsch Farm, Moscow, Idaho
8:30 - 9:30 Oberg Farms, Genesee, Idaho
  • Variable rate nitrogen application
  • Yield maps
  • Technical support
10:30 - 11:30 Blair Farms, Kendrick, Idaho
  • Unmanned Aerial Systems (UAS)
  • Remote sensing
  • UAS regulations
11:30 - 1:00 Lunch at Blair Farms
2:00 - 3:00 Jones Farms, Troy, Idaho
  • Getting started with precision agriculture on your farm
  • Variable rate liming
  • Soil health and low pH soils
4:00 Return to Kambitsch Farms

We welcome anyone to attend, but to help us accommodate lunch and seating on busses we request that you please RSVP before Monday July 6 if you are interested in joining the tour.

Contact: Kristy Borrelli kborrelli@uidaho.edu, 208-885-1220

To enrich education through diversity, the University of Idaho is an equal opportunity/affirmative action-employ employer and educational institution. Persons with disabilities who require alternative means for communication of program information or reasonable accommodations need to contact Kristy Borrelli by July 1.
Upcoming Cereal Field Day

July 15, 2015, Aberdeen, Idaho

Contact: Dr. Jianli Chen at 208-240-0277 and jchen@uidaho.edu
Dr. Juliet Marshall at 208-390-4859 and jmarshall@uidaho.edu

8:30 - 9:00 Registration
9:00 - 9:10 Introduction
9:10 - 9:20 Travel to field 522

9:20 - 9:50 Winter wheat and barley variety trials, Dr. Marshall et al.
9:50 - 9:55 Travel to field 509

9:55 - 10:10 Traits for increasing yield of winter wheat, Drs. Chen and Liang
10:10 - 10:15 Travel to field 520

10:15 - 11:10 Spring wheat and barley variety trials, Dr. Marshall et al.
11:10 - 11:15 Travel to field 309

11:15 - 11:35 New Spring Wheat Cultivars, Dr. Chen and Mr. Curtis
11:35 - 11:40 Travel to field 304

11:40 - 11:55 USDA-ARS Barley Breeding Program, Dr. Hu
11:55 - 12:00 Travel to field 301

12:00 - 12:15 Barley nutrient management study, Dr. Roger
12:15 - 12:20 Travel to field 201

12:20 - 12:30 Wheat-based crop system, Dr. Liang

12:30 - 1:30 Lunch with special talks and Stone Gold Vandal Wheat Beer

Special Program (Optional):
1:30 - 2:30 Tour breeder and foundation seed fields, Dr. Chen
1:30 - 2:30 Tour Cereals Program disease plots
9:00 - 2:30 Poster and booth display

Speakers:
Dr. Juliet Marshall, Cereal Extension and Agronomist, Associate Professor, UI
Dr. Jianli Chen, Wheat Breeder and Associate Professor, UI
Mr. Frank Curtis, Executive Vice President & COO, LCS
Dr. Arash Rashed, Entomologist and Assistant Professor, UI
Dr. Christopher Roger, Barley Agronomist and Assistant Professor, UI
Dr. Xi Liang, Cropping Systems Agronomist and Assistant Professor, UI
Dr. Gongshe Hu, Barley Breeder and Plant Geneticist, USDA-ARS
Dr. Olga Walsh, Cropping Systems Agronomist and Assistant Professor

Sponsors:
Limagrain Cereal Seeds, Lansing Trade Group LLC, Idaho Wheat Commission, and Idaho Barley Commission
New Extension Bulletin on Crop Sensors

Nitrogen Management in Field Crops with Reference Strips and Crop Sensors

Olga S. Walsh

Introduction
Scientists and crop producers around the world are using crop canopy sensors to evaluate crop nutrient status, estimate crop biomass production and yield potential, detect crop stress and disease infestation, breed and select new crops, make fertilizer recommendations, and prescribe variable-rate fertilizer and chemical applications.

The purpose of this publication is to improve growers' knowledge and understanding of how crop canopy sensors and in-field reference strips can be utilized for effective nitrogen (N) management. The overall goal is to improve the use efficiency of N fertilizer resources and increase producers' competitiveness and sustainability. The publication provides information about how crop sensors work, their benefits, and proper methodology for use and gives examples from growers who succeeded in incorporating sensors into their nutrient management decisions.

Why Is it So Difficult To Manage N?
It's all about variability! Do farmers produce the same yields in the same field from one year to the next, even when they use the same variety, seeding and fertilizer rates, and application timing? The answer, of course, is—No! Temporal variability in yield (variability over time) is usually caused by the combined environmental effects of rainfall frequency, soil and air temperatures, precipitation/temperature and landscape interactions, and soil characteristics. Variability in these conditions from one growing season to another has an incredibly significant impact on both crop yield potential and the amount of N required by the crop.

Because it is difficult to predict temporal yield variability, fertilizer recommendations are often made using yields from previous years. Research by the Oklahoma State University precision agriculture team, however, has revealed that the chance of N need in one year being the same as in the previous year is only about 1% (Smith, 2008).

The concept of precision agriculture evolved from the idea that it may be beneficial to vary agricultural inputs to address variability in plant growing conditions (Robert, 1993). What if growers could know precisely what their crop yield will be, and what if fertilizer management decisions could be made using real-time knowledge of the crop's need for N? There is an "app" for that! Precision crop sensors, in combination with reference strips, are an excellent tool for efficient N management.

What Is So Special About Crop Sensors?

Using sensors versus visual evaluations
In the everyday world, the word "sense" refers to the five human senses, and "making sense" describes our efforts to absorb and understand information that may seem confusing or conflicting. Field scouting and visual crop evaluations are routine for the majority of crop producers and provide invaluable information about crop growth, development, and nutrient status as well as about pest, weed, and disease pressures. This information is very effectively utilized to prescribe management practices such as herbicide treatments and irrigation water applications. Severe stress due to nutrient deficiencies, water shortage, or plant disease or pest infestations is easily identified with the naked eye. However, more subtle or just-developing plant stress issues may not be as obvious and could go unnoticed or misinterpreted.

Remote sensing literally means "sensing from a distance." Precision crop sensors are tools that allow us to acquire information about a plant's vigor and nutrient status by detecting from a distance—sensing—the amount of energy reflected or emitted by that plant. In other words,
Michael Flowers, Assistant Professor, Extension Cereals Specialist, Oregon State University, discussed winter wheat variety trial.

Juliet Marshall, Cereal Cropping Systems Agronomist and Pathologist, Aberdeen R&E Center, University of Idaho, updated on cereal disease challenges and control options.

Cathy Wilson, Director of Research Collaboration, Idaho Wheat Commission, provided an update on IWC research priorities.

Xi Liang, Cropping Systems Specialist, Aberdeen R&E Center, University of Idaho, gave an overview of alternative crops such as quinoa.

Arjun Pandey, Graduate Research Assistant, Cropping Systems Agronomy Program, Parma R&E Center, reported on current water and nitrogen use efficiency research.

Jim Klauzer, Agronomist, Clearwater Supply, discussed potential benefits and application of subsurface drip irrigation systems for efficient water use in field crops.
Idaho Mint Commission
Field Day - Parma, ID

Idaho Mint Commission members and guests met at the University of Idaho Parma Research and Extension Center on June 10 to tour mint research plots and the McKellip Mint Research Distillery housed at the station.

Dr. Jim Barbour lead a tour of the mint irrigation trial plots, where his group is investigating water use and mint oil yield in replicated plots of drip, furrow and sprinkler irrigated peppermint to determine the potential of drip irrigation for production of peppermint in southwestern Idaho. Despite a lack of electricity from a brown-out that turned into a black out, the group had a great time, a great lunch and there was a great exchange of information between the researchers, mint growers and other mint industry representatives attending the tour.

Dr. Saad Hafez’s team discussed different nematode species that effect mint growth, lesions, root-knot, pin and stem. An overview of current trials focused on evaluation of a variety of insecticides and nematicides such as Vydate, Nimitz, and DiTera was given. The attendees viewed newly treated microplot field trials and greenhouse trials for evaluation of lesion, root-knot, and stem soil nematodes. A field trial evaluating subsurface drip irrigation and in-furrow irrigation systems in combination with various nematicides. Irrigation, fertilization, and harvest plans were also discussed.

Mint plants treated with different types of nematicides. Photos by Christeen Sevy, Graduate Research Assistant, Nematology Program, Parma R&E Center.

Dr. Hafez’s and Dr. Barbour’s research is funded by the Mint Industry Research Council and the Idaho Mint Commission.

Mint is being grown in Idaho commercially since the 1960’s. In the early years, geese and sheep provided effective weed and pest control. Later on, the animals acquired a taste for mint, and other methodologies had to be developed. Recognizing the need to consistent research and development of best management practices, mint growers had established the Idaho Mint Commission. The Mint Commission, overseen by growers, who set standards and allocate funding for plant and biotechnology research to benefit the mint industry. There are currently about 100 mint growers in the state of Idaho, who take pride in producing pure, additive-free mint oil.
Western Society of Crop Science Meeting Update

The Western Society of Crop Science comprises the states and provinces of Alaska, Alberta, Arizona, American Samoa, Baja California, Baja California Sur, British Columbia, California, Chihuahua, Colima, Colorado, Durango, Guam, Hawaii, Idaho, Jalisco, Montana, Nayarit, Nevada, New Mexico, Northwest Territories, Oregon, Saskatchewan, Sinaloa, Sonora, Utah, Washington, Wyoming and Yukon Territory.

The annual WSCS meeting was held June 16-17 in Logan, Utah. The meeting was an opportunity to network with colleagues and students from around the West and exchange scientific information. The theme of the 2015 WSCS meeting was the same as that of 2015 ASA, CSSA, and SSSA Annual Meetings, "Synergy in Science: Partnering for Solutions".

Participants arrived on Monday, June 15. The program included a tour on Tuesday morning (June 16) to highlight issues important to the local agriculture as well as sites of historic interest. This year’s tour featured two locations, which included a visit to the production facility of Bailey Farms International, one of the largest forage exporters in the United States, and to the Golden Spike National Historic Site, the spot where the Union and Central Pacific Railroads joined in 1869 to complete the transcontinental railroad.

A professional presentation session occurred Tuesday afternoon. Student oral presentations were held Wednesday morning and additional professional presentations in the afternoon, followed by a business meeting, poster presentations, and an awards barbecue Wednesday evening. The meeting ended Wednesday evening and participants left Thursday morning (June 18).

Olga Walsh, Cropping Systems Agronomist and Extension Specialist, Parma R&E Center, University of Idaho, represented the state of Idaho at the WSCS and presented current research on seed coating treatments and water and nitrogen use efficiency in winter wheat.

Olga Walsh will continue to serve as the Western Crop Science Society of America, Secretary/Treasurer for 2016.

Teryl Roper, Western SARE Regional Director, presented an overview of Western SARE programs.
WSCS offered the A.K. Dobrenz Student Paper contest, which provides cash awards for the three best student presentations at the meeting. Congratulations to the 2015 A.K. Dobrenz Student Presentation Competition Winners!

- First place: **Erika Kruse**, Washington State University (QTL Analysis of Snow Mold Resistance in Soft White Winter Wheat Cultivar 'eltan')
- Second place: **Sukhbir Singh**, New Mexico State University (Simulating Growth and Yield of Spring Safflower Using CROPGRO Model in Semiarid New Mexico)
- Third place: **Craig Rigby**, Utah State University (A Comparative Evaluation of Cool-Season Rangeland Grasses for Establishment, Yield, and Forage Quality)
- Third place: **Carlos Romero**, Montana State University (Long-Term Effects of Land Use and Cropping System on Soil Quality in a Semi-Arid Climate)

Student winners received $200 (1st), $175 (2nd), and $150 (3rd) place. Erika also receives a $500 travel stipend to attend the CSSA Annual Meetings. For the PDF version of the meeting program, please go to: [https://www.crops.org/files/membership/branches/western/2015-wscs-annual-meeting-program.pdf](https://www.crops.org/files/membership/branches/western/2015-wscs-annual-meeting-program.pdf)

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**GUEST CONTRIBUTION**

*Misconceptions of Organic Pesticides*

-by Kelli Belmont

Research Technician, Cropping Systems Agronomy Program, University of Idaho Parma R&E Center

Conventional and organic farming are the two main agricultural systems used. The systems have similarities that incorporate agronomic practices such as tillage, crop rotation, cover crops, and integrated pest management. A major difference between conventional and organic farming is the source of fertilizers and pesticides. Organic producers use the term “natural” rather than “synthetic” to describe the pesticides they apply. These terms sound as though they are different products. A pesticide is a chemical with the intended purpose of killing pests (weeds, insects, disease, nematodes, etc.), and this is true for “natural” and “synthetic” pesticides. The general assumption is that if something is “natural” - is good for us, and if something is “synthetic” - is bad for us is not accurate. Much like synthetic pesticides, organic pesticides can be harmful or toxic at certain doses.

Organic pesticides are derived from naturally occurring substances in
plants, bacteria, and other sources. It is assumed that if a substance is naturally occurring, it is safe; however, many compounds found in nature are highly toxic. Rotenone is an organic pesticide, which attacks living cells, has caused detrimental effects in rats, and has the potential to harm many species. Even though rotenone is “natural”, it does not mean the compound is safe.

Preventing problems caused by pests is a major management challenge in organic systems, especially since fewer organic herbicides, insecticides, and fungicides are permitted. One solution is to surround an organic field with conventional fields and treat the surrounding fields to reduce to potential damage in the organic field. Furthermore, organic pesticides are relatively nonselective and can affect natural predators and other non-target organisms. Pesticides allowed in organic production include biological pesticides, botanical pesticides, spray oils, insecticidal soaps, minerals, and pheromones. Insecticidal soaps are synthetic pesticides allowed in organic production and can affect beneficial predatory mites.

Many organic pesticides are not as effective as conventional products, so organic farmers use more of them in order to control the desired pest. Although using many synthetic pesticides in conventional farming requires recordkeeping, the same is not necessarily true for organic farms. Organic growers are required to provide off-farm inputs that are used for independent organic certifiers; however, they are not required to submit pesticide records to the government like their conventional counterparts. This asymmetry in recordkeeping could be corrected if there was one uniform reporting for all types of farming.

This is not a comprehensive comparison of organic and conventional pesticides, but rather a brief overview. The main purpose behind this article is to point out the fact that organic agriculture utilizes pesticides and to highlight some of the differences between organic and conventional pesticides. Organic pesticides are not intrinsically better or safer than conventional because the end goal of either product is to kill different kinds of pests.

Please visit the Eorganics web-site (http://eorganic.info/) for educational articles, videos, and webinars.

The ISDA has been serving the state’s organic community since 1990, when the Idaho legislatures passed the Organic Food Products Law. In 2002, ISDA became one of the nation’s first accredited certifying agencies.
GETTING TO KNOW ID AG

REACCH - Regional Approaches to Climate Change - PNW Agriculture

- Develop and implement sustainable agricultural practices for cereal production within existing and projected agroecological zones throughout the region, as climate changes.
- Contribute to climate change mitigation through improved fertilizer, fuel, and pesticide use efficiency, increased sequestration of soil carbon, and reduced greenhouse gas (GHG) emissions consistent with NIFA’s 2030 targets.
- Work closely with stakeholders and policymakers to promote science-based agricultural approaches to climate change adaptation and mitigation.
- Increase the number of scientists, educators, and extension professionals with the skills and knowledge to address climate change and its interactions with agriculture.
- Develop the regional capacity for continued, long-term research, education, and extension efforts to mitigate and adapt to climate change.
- Address climate change effects with a transdisciplinary research, education, extension approach to enable researchers' stakeholders, students, the public, and policymakers to acquire a more holistic understanding of how agriculture is interrelated with climate change.

The Regional Approaches to Climate Change for Pacific Northwest Agriculture gathers over 100 scientists and students from three Land-Grant Universities in Idaho, Washington and Oregon and the USDA Agricultural Research Service. Connecting with wheat and barley farmers, and using innovative methods, we strive to ensure agriculture and grain production will endure future climate change. For more information and to read the annual report, please go to: https://www.reacchpna.org/