Idaho Crops & Soils News

A newsletter for Idaho crop producers

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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

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WHAT’S NEW?

Current Issues in Idaho Cereal Crops:

(1) Stripe Rust

Here is an alert sent out last week by Juliet Marshall, Cereal Cropping Systems Specialist and Pathologist, University of Idaho, Aberdeen R&E Center.

“I found stripe rust in two fields in south east Idaho today. The first location was south of Aberdeen in a field of commercial wheat (Brundage). The second location between American Falls and Pocatello was in a field of volunteer wheat (also Brundage) where stripe rust was found in November, 2015. I highly recommend that anyone with a field of Brundage examine it closely for stripe rust, looking especially at lower leaves that could have been infected last fall. Snow cover protects wheat from freezing temperatures as well as the stripe rust. Fields that have been under snow will serve as good reservoirs for stripe rust to carry into our spring wheat. All susceptible varieties should be scouted weekly from now on. Strobilurin fungicides are excellent preventative fungicides, as are triazoles. Triazoles (or triazole and strobilurin mixes) are more effective if there is a field with established infections.”

Please report infected fields locations to Juliet (jmarshall@uidaho.edu) so she can keep alerts updated as the season progresses.
Substantial numbers of Cereal Leaf Beetles (*Oulema melanopus*) (adults and larva) were found in winter wheat experimental plots at University of Idaho Parma R&E Center. The first symptoms of infestation became apparent during the last week of March. Currently, many plants have at least one leaf with some feeding damage. The cereal leaf beetle has a variety of hosts among cereals and grasses with preference to oat, barley, wheat, rye, timothy, fescue, grain sorghum and corn. Substantial crop yield loss and quality decrease can be expected due to lost photosynthetic activity resulting from the feeding damage.

Cereal leaf beetle is a quarantined insect the U.S., which means that the presence of beetles in grain restricts exports to uninfected areas. Fumigation is required to prevent the spread of beetle infestation.

Scouting of fields is vital both before and during the boot stage to assess for cereal leaf beetle presence and damage. It is recommended to scout weekly by walking through the field in a “W” pattern for best coverage. Stop at 5-10 locations depending on field size and examine 10 plants per location. Count the number of eggs and larvae per plant for smaller plants or per stem for larger plants.
Treatment thresholds: 3 larvae per plant and/or 3 eggs per plant before boot stage, and 1 larva per flag leaf after boot stage.

Management-chemical control (From PNW Insect Management Handbook)

- **bifenthrin (BrigadeÆ 2EC and WSB)** at 6.4 fl oz/a (0.1 lb ai/a). Apply in spring if one or more eggs or larvae are detected or in late summer if beetles are defoliating seedling stands. Maximum amount allowed 12.8 fl oz/a (0.2 lb ai/a) per season but no more than once every 12 days. PHI 30 days prior to harvest for forage, hay and seed.

- **cyfluthrin (Baythroid XL)** at 0.013 to 0.015 lb ai/a. PHI 0 days. REI 12 hr. Maximum amount allowed per 5 day interval is 0.022 lb ai/a. Maximum amount allowed per crop season is 0.089 lb ai/a.

- **lambda-cyhalothrin (Warrior)** at 0.02 to 0.03 lb ai/a. PHI 0 days for grazing and forage, 7 days for straw and seed crop. REI 24 hr.

- **zeta-cypermethrin (Mustang MAX)** at 0.0175 to 0.025 lb ai/a. PHI 0 days forage, hay; 7 days straw and seed screenings. REI 12 hr. For forage and hay use no more than 0.10 lb ai/a per season; make subsequent applications no closer than 7 days. For straw and seed screenings use no more than 0.125 lb ai/a per season; make subsequent applications no closer than 17 days.

For more information, please go to the University of Idaho CIS on cereal leaf beetle: [http://www.cals.uidaho.edu/edcomm/pdf/CIS/CIS0994.pdf](http://www.cals.uidaho.edu/edcomm/pdf/CIS/CIS0994.pdf)

**Barley Yellow Dwarf Virus**

Several winter wheat fields in SW Idaho have been found to be affected by the Barley Yellow Dwarf Virus (BYDV). The symptoms include: “Yellowing and/or reddening of leaves starting at the leaf tip and moving toward the base and inward from the margins”. “The affected plants exhibit stunting of both foliar and root tissues” - The description of the symptoms is taken from the University of Idaho publication - “Barley Yellow Dwarf Virus in Idaho Cereal Crops” - [https://www.cals.uidaho.edu/edcomm/pdf/CIS/CIS1210.pdf](https://www.cals.uidaho.edu/edcomm/pdf/CIS/CIS1210.pdf).

Since there are no known varieties resistant to the BYDV, proposed control options for BYDV in cereal crops include:

- Complying with the recommended seeding dates for the region
- Eliminating “green bridge” by not seeding cereals back to back
- Use insecticides to control aphids
- Minimizing stresses that make crops more susceptible to disease overall.
Winter wheat affected by BYDV (LEFT), and healthy unaffected winter wheat (RIGHT), Parma, SW Idaho. April 7, 2016.
Photo credit: Olga Walsh

Drones in Ag
Part 3 (of 3)

With increased interest of growers, crop consultants and researchers in Unmanned Aerial Vehicles (UAVs) or drones, I am putting together a 3-part article on utilization of drones in agriculture.

Part 1 (January issue) focused on economic impact, legal and safety regulations to be aware of, when considering incorporating drones in ag operations. Part 2 (February issue) described the most promising applications of drones for agriculture.

Now, in Part 3, will discuss safety issues associated with the use of drones.

If you talk to anyone who has ever used a UAV, they will tell you, with a smile, that “if you own a drone, you WILL crash it sooner or later”, and many will advise you to order original spare parts to have then on-hand. If you search “drones” on-line, you will at some point come by an article that is titled “Drone Crashes near the White
House”, or “Drone Cuts Off Top of Photographer’s Nose”, or “Drone nearly crashes into Airbus A320”, and some others.

Integration of UAVs into U.S. National Airspace is expected to bring out a number of questions in terms of safety. Current aviation safety standard is that a typical vehicle can operate for about 100,000 hours between the accidents. Recent study showed that small UAVs could fly over 95% of the country with little risk, and larger UAVs could fly over 20% of the country and successfully meet the existing levels of risk. However, the observed accident rate for small UAVs is typically a little over 50 accidents per 100,000 hours of operation, which is about 7 times greater than the general aviation accident rate and over 350 times greater than the typical commercial aviation rate (Carr, E.B. 2013. Unmanned aerial vehicles: Examining the safety, security, privacy and regulatory issues of integration into U.S. airspace. National Center for Policy Analysis).

Such a high rate of accidents is most likely due to the fact that the overwhelming majority of UAVs are being flown by individuals that has not received proper training and simply purchased the drone on-line or even received it as a gift. This recreational use of UAVs for fun without following manufacturer’s guidelines and the common sense tends to lead to UAV crashes and accidents. We also know that some of the individuals who tend to get into the newest gadgets sometimes like to “see what this thing can do”. This tends to sometimes impede the advances in adopting the technology due to increased safety concerns and requiring extensive scrutiny when developing safety regulations in order to keep the users and the surrounding public safe.

“The National Agricultural Aviation Association (NAAA) has launched a UAV safety campaign to raise awareness and prevent accidents between UAV operators and low-altitude manned aircraft. The first public outreach tool in the safety campaign is a UAV “safety stuffer” designed for aerial applicators to share with farmers and other agricultural stakeholders. Sized to fit into a No. 10 envelope, the double-sided insert illustrates the safety concerns ag pilots have about hard-to-see UAVs and provides recommendations for safe and responsible UAV operations in rural areas. NAAA has also produced a short video titled “Safe UAV Operations Around Low-Flying, Manned Aircraft,” which is available at AgAviation.org/uavsafty” (The National Agricultural Aviation Association, 2015).
James Woodhall started as the new plant pathologist at Parma in March. James previously worked as a Plant Pathologist at the Food and Environment Agency in York, UK for 11 years where he focused on research into soil-borne plant pathogens and developing molecular diagnostics for a range of plant diseases across different crops including potatoes, onion, wheat, strawberries and grapes. Prior to that James completed a PhD at Harper Adams University in Shropshire, UK.

At Parma, James will oversee the Plant Clinic and hopes to develop a range of new services to growers. This will include using a variety of new molecular diagnostic assays to detect plant pathogens in water and soil as well as plant material. James will also develop a research program focusing on using molecular tools to study the epidemiology and characterize plant pathogens. James’ first priority will be to update the existing plant pathology labs at Parma before a full range of diagnostic services can be offered. However, in the meantime he is happy to help with any diagnostic queries relating to plant disease.

You can reach James Woodhall at (208)722-6701.
GETTING TO KNOW IDAHO AG

Silicon Potential for Improved Crop Production

Cropping Systems Agronomy team at University of Idaho R&E Center is continuing work on evaluating silicon for improved crop production.

Silicon is the second most abundant element in the earth’s crust. Silicon exists in nature in a number of shapes and forms (such as quartz, clay, feldspar, talc and mica), almost always in association with oxygen (as silica, or silicate).

Silicon is taken up by plant roots in the form of silicic acid. Therefore, silicic acid is considered as plant-available silicon. The soil levels of available silicon are highly dependent on the mineral form of silica present.

Most fertilizers contain very little if any, silicon; many plants take up silicon in substantial amounts. In fact, the amounts of silicon taken up by the plants often exceeds the levels of some other essential nutrients. This may cause the depletion of plant-available silicon from the soil.

Silica has been used by some growers, especially in vegetables and grain crops like rice for many years. Many studies throughout the world has shown that various crops have positively responded to silica application in terms of plant health, nutrient uptake, yield and quality.

Some of the noted silica-related benefits include:

- Improved plant nutrient uptake and utilization, increased nitrogen and phosphorus use efficiency, thus, lower rates of N and P, in combination with Si, may result in higher yields and better quality.
- Improved overall plant health: a) improved tolerance to drought and b) improved tolerance to disease (including powdery mildew, septoria leaf blotch, foot rot, leaf spot, eye spot)
- Improved plant stand and straw strength. Silica is taken up and deposited within the cell walls, which reduced lodging and minimizes risk of insect damage, especially stem burrowing insects, such as wheat stem saw fly.

Although not considered an essential element for plant growth, silicon has been recently recognized as a “beneficial substance” or “quasi-essential”, due to its important role in plant nutrition, especially notable under stress.

One of the current project established in Fall 2015 is in winter wheat in two fields in Parma, ID, with the objectives to evaluate:

- wheat growth and development, grain yield and grain quality
- wheat disease tolerance/resistance
- wheat pest/insect tolerance/resistance,
  as affected by silica application.
This spring, in collaboration with Mike Thornton’s potato program at University of Idaho’s Parma R&E Center, MontanaGrow and the J.R. Simplot, silica treatments will be applied to potatoes.

Should the silica prove to be beneficial for improved yields and/or quality, silica recommendations could be developed for Idaho growers to advise them on silica fertilizer use depending on crop grown.

For more information on silica role in plant growth and development, please go to International Plant Nutrition Institute’s Nutri-Fact on Silicon: