Montana IPM Bulletin

MONTANA STATE UNIVERSITY | EXTENSION

Spring 2017

FIGURE 1. Scalloped pea leaves from adult weevil feeding (Photo courtesy of MSU Crop Entomology)

INSIDE:

Pea Leaf Weevil (PLW): *Sitona lineata*

Kevin Wanner, Extension Cropland Entomology Specialist

The 2016 growing season saw widespread and abundant populations of the pea leaf weevil (PLW; Figure 2). Pea leaf weevil was introduced to the west and east coasts of North America from Europe or North Africa in the 1920s. Adults feed on the leaves of legume plants (Family Leguminosae) in the spring and fall, but feeding is limited and does not cause economic damage. Damage results from the larval stage that feeds within nodules on the roots. Root nodules are characteristic of legume plants and contain symbiotic bacteria (rhizobia) that fix nitrogen in the soil. Inside the nodules bacteria convert nitrogen gas from the atmosphere into ammonia that can be utilized by the plant. The roots of the plant provide organic acids to the rhizobia, an exchange that completes the symbiotic relationship between the bacteria and the plant. While the adults feed on a variety of legume species, the larvae can only complete their development in root nodules of field pea *(Pisum sativum)* or faba bean *(Vicia faba)*. In Montana, PLW has expanded its range eastward, following the increased field pea acreage that has been planted during the last decade. When I moved to Montana in 2008, PLW was established in the Gallatin Valley but was not found in the central region of Montana. A few years ago PLW began damaging field peas planted at the MSU Central Agricultural Research Center near Moccasin in Fergus County. In fall 2016, North Dakota State University reported an infestation of PLW in the western region of North Dakota that borders Montana. The PLW most likely "hitched a ride" to make such a large jump in geographic range. The PLW is here to stay and with time will colonize field pea crops grown throughout the MonDak (eastern Montana and western North Dakota) region.

FIGURE 2. Adult pea leaf weevil, (Photo courtesy of MSU Crop Entomology).

Figure 3 (page 2) illustrates the life cycle of PLW. During spring, adults move into emerging pea fields from surrounding overwintering grounds such as alfalfa fields, roadsides or sheltered areas. Adult weevils feed on the leaves, creating characteristic half-moon shaped notches. As you approach, weevils drop off the plants onto the ground for protection. During the middle of the day, if you patiently watch for movement (they are small at ⅕th inch), you can see weevils crawling near the notched pea plants, and you will also spot some mating pairs. During a warm spring, immigration into the field may be completed within 2-3 weeks. Cool spring temperatures prolong immigration to 6-8 weeks. After mating, females lay eggs on the soil surface and the newly emerged larvae crawl through the soil in search of root nodules. The larvae feed within the root nodules for 4-8 weeks, pupate, and then emerge as adults in late July to August. From late summer to fall the adults fly and migrate to their overwintering sites.

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(Pea Leaf Weevil, continued from page 1)

The degree of yield loss from larval feeding has not been well quantified, however producers report that yield loss of 30% is not uncommon. Yellowing of the pea plants giving the appearance of a nitrogen deficiency does not appear to be a symptom of larval feeding damage. Scouting for PLW should start at the 2- to 3-node stage as by the six-node stage the plants become more tolerant to PLW damage. Foliar insecticide treatments using the active ingredients lambda cyhalothrin, zeta cypermethrin, carbaryl and others may be warranted when ¼ to ⅓ or more of plants have feeding injury (one or more feeding notches appear on the clam leaf pairs) at the 2- to 3-node stage. A row of 10-20 seedlings should be examined at several locations (including the interior of the field) to establish an average number of plants with feeding damage. Applications are not recommended after the 6-node stage. Timing the foliar spray and persistence of the insecticide is critical for good control, to prevent incoming females from laying eggs in the field. This is because larvae are not exposed to foliar insecticides as they burrow into the nitrogen fixing root nodules. Some results suggest seed treatments provide better control compared to foliar sprays. Systemic seed treatments such as Cruiser® 5FS are a good control option for both larvae and adults. However, the seed is treated and planted before the pest can be surveyed to determine economic levels. In this case decisions to treat seed are based on the previous year's PLW population level in the area.

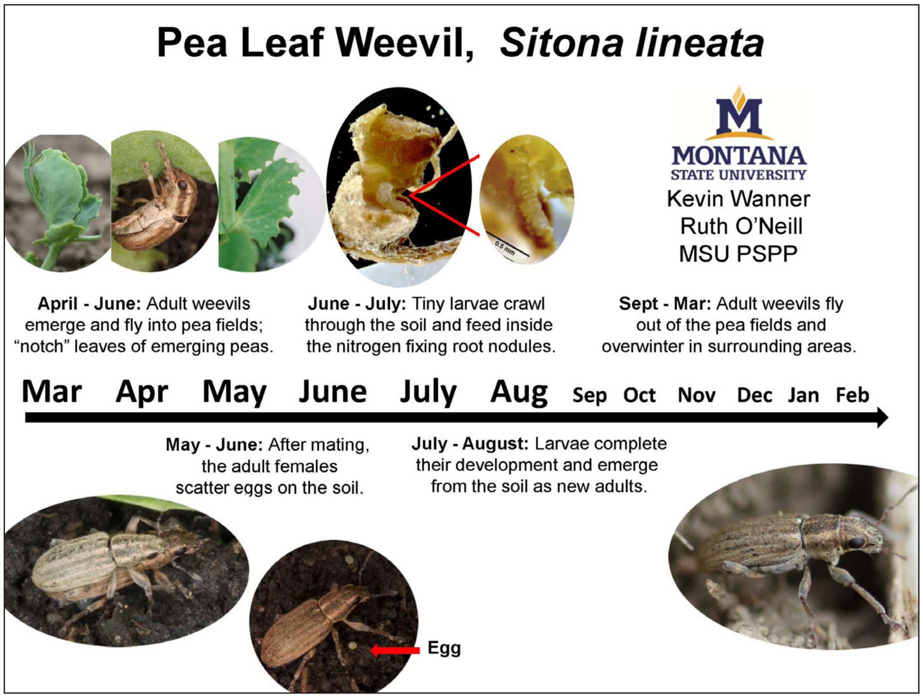

FIGURE 3: Life cycle of the pea leaf weevil (photo by Kevin Wanner and Ruth O'Neil).

Cheatgrass Suppressive Bacteria *Pseudomonas fluorescens*

Jane Mangold, Extension Invasive Plant Specialist

Years ago Dr. Ann Kennedy, a research scientist with USDA-Agricultural Research Service at Washington State University, observed the naturally-occurring soil borne bacteria *Pseudomonas fluorescens* affecting growth of winter wheat in early spring in eastern Washington. Since that time, Dr. Kennedy has been isolating and testing strains of *P. fluorescens* that target specific weedy grasses. Three strains are being developed as bio-herbicides for the invasive annual grass cheatgrass (Figure 3, *Bromus tectorum*): D7, ACK55, and MB906. All three strains are cold-loving organisms that are applied in the fall with cool temperatures, overcast skies, and rain. Strains D7 and ACK55 colonize intercellular spaces in roots and produce weed-suppressive compounds that inhibit cell membrane expansion at the seedling stage, thus stunting root growth and overall vigor of cheatgrass. Over time, this further results in a reduction in the weed seed bank. In addition to cheatgrass, the strains inhibit growth of medusahead *(Taeniatherum caput-medusae)* and jointed goatgrass *(Aegilops cylindrica)*, two other weedy grasses.

Pseudomonas fluorescens D7 was registered in 2014 as a bio-herbicide under the trade name D7® by Verdesian Life Sciences, LLC, Cary, NC. D7 is registered for the suppression of cheatgrass, Japanese brome, medusahead, and jointed goatgrass on wheat, barley, triticale, oats, and rangeland. D7 is a freeze-dried powder that is dissolved in water and applied as a spray solution. Suggested application rate is 2 grams/acre, and it can be applied up to four times in a 12 month period for a maximum application rate of 8 grams/acre. There is a 24-hour grazing restriction for rangeland applications. For crops, D7 can also be applied as a seed treatment at a rate of 2 to 4 grams/100 pounds seed. D7 was recently registered for use in Montana, although it may not be readily available until fall 2017. D7 has been shown to inhibit some native grasses when the plants are stressed due to other environmental factors.

Pseudomonas fluorescens ACK55 was submitted to the EPA for review in 2015 and remains under review. ACK55 has shown greater suppressive activity and grass selectivity than D7. Like D7, it is not on the market at this time and not readily available for widespread application. Dr.

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(Cheatgrass, continued from page 2)

Kennedy and USDA-ARS continue to work with ACK55 and additional cohorts that have greater specificity and efficacy than earlier cohorts.

Both D7 and ACK55 were initially tested and evaluated in the Pacific Northwest, Nevada, Utah, and Wyoming. To date, there are no peer-reviewed publications demonstrating effectiveness nor lack of effectiveness of *P. fluorescens* in field trials in the Northern Rocky Mountain region (Figure 4). Recently, Montana State University joined a statewide field study testing strain ACK55. ACK55 was applied at seven sites (plus one site in Wyoming) in December 2014. Plots have been monitored for two years, and preliminary data do not indicate any difference between treated and non-treated control plots. Because the bacteria suppress cheatgrass and reduce the seed bank and seedling vigor over time, effects may not be realized until three to five years post-application.

The third strain of *P. fluorescens* is MB906. Currently MB906 is marketed and sold as a liquid soil inoculant by BioWest Ag Solutions, Nampa, ID. The label indicates that MB906 enhances the biodiversity of the soil, and no herbicidal claims are made. It is labeled for "agricultural use only." MB906 is sold in 275 gallon totes at a cost of $9.52 per gallon (plus shipping). Because the product contains living bacteria, once a tote is opened it should be used within days. If not opened, totes can be stored for up to 30 days in a cool, dark location. Application of MB906 is typically made with the addition of a cheatgrass-appropriate herbicide such as imazapic. *Pseudomonas fluorescens* MB906 is currently undergoing review by the EPA to be registered as a bio-herbicide; it may be available as a bio-herbicide as early as fall 2017. It will likely remain available on the market as a soil inoculant. Similar to D7 and ACK55, no peer-reviewed field research in the Northern Rocky Mountain region has been published on the effects of this soil inoculant.

Is this Plant a Weed, a Noxious Weed, an Invasive Weed, or a "Superweed"?

Fabian Menalled, Extension Cropland Weed Specialist

Is that plant crowding your crops just a weed? Is it a noxious weed? An invasive weed? A "superweed" that requires special attention? Many times these terms are used interchangeably, yet there are similarities and differences among them. To clarify them, the Weed Science Society of America has produced a fact sheet that reviews some basic terminology. This article summarizes these definitions.

Weed: The Weed Science Society of America defines a weed as a plant that causes economic losses or ecological damage, creates health problems for humans or animals, or is undesirable where it is growing. Examples of weeds in Montana are kochia *(Kochia scoparia)*, common lambsquarters *(Chenopodium album)*, and field pennycress *(Thlaspi arvense)*. You can find information on how to manage agricultural weeds in Montana at the Cropland Weed Ecology and Management Extension website at http://ipm.montana.edu/cropweeds/.

Noxious weed: A noxious weed is any plant designated by federal, state or local government officials as injurious to public health, agriculture, recreation, wildlife or property. Once a weed is classified as noxious, authorities can implement quarantines and take other actions to contain or destroy the weed and limit its spread. Examples of noxious weeds in Montana include yellow starthistle *(Centaurea solstitialis),* rush skeletonweed *(Chondrilla juncea),* and tansy ragwort *(Senecio jacobaea, Jacobaea vulgaris)*. More information on Montana noxious weeds can be found at the MSU Extension Invasive Plants web site (http://www.msuextension.org/invasiveplants/noxioussub.html).

Invasive weed: Invasive weeds are species that establish, persist and spread widely in natural ecosystems outside the plant's native range. When in a foreign locale, these invaders often lack natural enemies to curtail their growth – enabling them to overrun native plants and ecosystems. It should be no surprise that many invasive weeds are also classified as noxious weeds by government authorities. The Presidential Executive Order 13112 prohibits federal agencies from authorizing, funding or carrying out actions likely to promote the introduction or spread of invasive weeds – unless the benefits clearly outweigh the potential harm. The order also mandates that all feasible and prudent measures be taken to minimize risk of harm. For example, saltcedar (*Tamarix* spp.) is an abundant invasive species in many counties in Montana and has been classified as a Priority 2B noxious weed. As such, management criteria requires eradication or containment where less abundant.

"Superweed": While I personally do not like this term, it is common to hear "superweed" to describe plants that have evolved characteristics that make them more difficult to manage as a result of repeated use of the same weed management tactic. The most common use of the term refers to a weed that has become resistant to one or more herbicide mechanisms of action after their repeated use in the absence of more diverse weed control measures (i.e. herbicide-resistant weeds). For example, people have used this term to refer to kochia plants that are resistant to glyphosate and growth regulators.

The Weed Science Society of America fact sheet is available at http://wssa.net/wp-content/uploads/WSSA-Weed-Science-Definitions.pdf.

Fungicide Use in Field Crops: Benefits and Risks

Mary Burrows, Extension Plant Pathologist
Jessica Rupp, Extension Potato, Sugarbeet, and Pulse Crop Pathologist

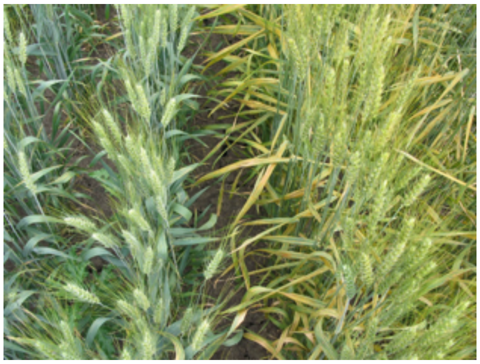


FIGURE 4. Fungicides are effective tools for disease management. Left, fungicide treated; Right, untreated. Diseases: Stem rust and stripe rest of wheat, inoculated trials in Montana. Photo by Mary Burrows.

Plant diseases are caused by many different organisms including fungi, bacteria, viruses, nematodes, and other organisms. Fungicides are pesticides used for controlling fungal and fungal-like diseases and can be applied as a seed treatment, in-furrow application or foliar spray (Figure 4). They include both synthetic and non-synthetic options such as copper, sulfur and oils. There are also biological control options and products that induce the immune system of the plant, but here we will focus on synthetic fungicides. Fungicides work, in general, by blocking a specific metabolic pathway in the fungus that prevents spore germination or hyphal growth. These different mechanisms are called "modes of action" (MOA).

Before deciding to apply a fungicide, you should ask yourself several questions:

1. Are the symptoms I'm observing due to a fungal disease?
2. Is the fungicide I'm considering effective on the plant disease of concern?
3. Do the economics of the system justify the application?

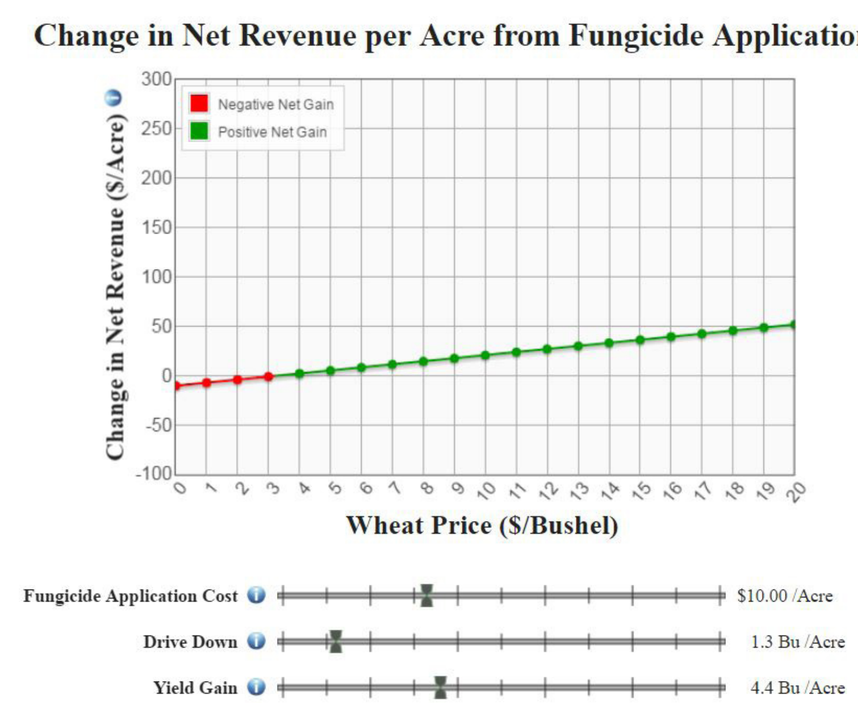
Plant diseases can be difficult to diagnose. Diagnosis is easier with experience, but comes down to a combination of familiarity with symptoms and look-alike symptoms, an investigation of the pattern and timing of symptom appearance, and, when needed, testing for the pathogen of interest for confirmation. When you need assistance with disease identification, contact your local county or reservation Extension agent or the Schutter Diagnostic Laboratory (diagnostics.montana.edu; 994-5150).

After you have identified the plant disease you are concerned with and confirm that it is fungal, treatment options can include fungicides. However, not all fungicides are effective against all fungal diseases. Good sources of information about fungicide efficacy and rates include the product label and Extension sources. We have tables that list the products that are currently registered and their efficacy or registration status on some widely planted crops in Montana such as wheat, pulses, and potatoes. These can be found on our websites at http://plantsciences.montana.edu/pulsecropdiagnosticlab/; http://www.msuextension.org/plantpath/;http://msuextension.org/pspp/; and http://montanaspud.org. Other sources for identifying what products are registered on your crop are available from CDMS (www.cdms.net), Greenbook (www.greenbook.net), the NDSU fungicide guide (www.ag.ndsu.edu/publications/), the Pacific Northwest Plant Disease Management Guidebook (http://pnwhandbooks.org/plantdisease/) and other sources. A list of products approved for organic production can be found at the Organic Materials Review Institute (OMRI, www.omri.org).

When using fungicides for disease management, the principles of Integrated Pest Management (IPM) should be used to avoid resistance development, including:

1. Preventative cultural practices: Use best management practices including using high quality, pathogen-free seed, crop rotation, using an adapted crop variety, optimal seeding rate, planting date, irrigation practices, fertilization, sanitation including breaking the 'green bridge,' etc.

FIGURE 5.Decision tool example.



(Fungicide Use in Field Crops, continued

2. Monitoring: Scout your crop for pests regularly and get pests accurately identified. Use degree-day models where available to determine when the pest is likely to reach medium-high to high risk.
3. Acceptable pest levels: Determine what level of the pest you are willing to tolerate.
4. Mechanical controls: Remove infected plants from the system to prevent reproduction and spread of the pathogen (rogueing).
5. Biological controls: Natural biological systems can mitigate pest damage. Beneficial insects that predate on or parasitize insect vectors of plant viruses and biological controls.
6. Responsible use: When a pesticide is needed, follow all label restrictions and use the best application methods possible to target the disease of interest. If lack of efficacy is suspected, leave an untreated strip to compare with treated areas. If level of disease is the same, then a symptomatic sample should be sent to a diagnostic clinic.

Other recommendations to prevent fungicide resistance include:

1. Select and use fungicides correctly.
2. Rotate the use of fungicide MOA.
3. Limit number of applications of fungicides in a particular MOA each season, including seed treatment.
4. Mix MOA in blends or tank mixes.
5. Use fungicides at recommended rates.
6. Follow all label directions.

The economic value of a fungicide application needs to take into consideration the value of the crop, the price of the application, and the expected yield benefit of the application. The MSU Extension Fungicide Decision Tool (http://msuextension.org/fungicide) can help inform the choice of whether to apply fungicide by calculating the change in net revenue from fungicide application over a range of wheat prices. An example using the decision tool is shown (Figure 5).

If you have questions about the use of fungicides on your crop, please contact your county or reservation Extension agent or one of the plant disease specialists with MSU Extension.

FIGURE 6. Ascochyta blight on chickpea (pictured) has developed resistance to strobilurin fungicides in Montana. Photo by Mary Burrows.

PEST MANAGEMENT TOOL KIT

Treatment information for the pea leaf weevil including insecticides can be found on the online High Plains IPM Guide, http://wiki.bugwood.org/HPIPM:PC_Pea_leaf_weevil

An educational video posted on YouTube provides a good overview of pea leaf weevil management: http://www.youtube.com/watch?v=5yZXnBXgMkg

New MontGuide from MSU Publications about the pea leaf weevil: http://msuextension.org/publications/AgandNaturalResources/MT201603AG.pdf

Montana Pestweb for monitoring wheat midge: https://pestweb.montana.edu/Owbm/Home/Index. Hint: Click on the chevron symbol (>>) on the left side of the map to get a menu. Under “Display Style” you can select “heatmap” and this will allow you choose an animation of the results under “time span.” The other “Display Style” is “markers.” This will display midge counts as colored balloons, clicking on the balloon will show a graph of results for each collection date.

Organic farm day. On June 13, the Montana Organic Association and MSU Extension will host an organic farm field day at the MSU Fort Ellis Experimental Farm. Visit and discuss research plots where MSU faculty and graduate students are evaluating the potential for crop-animal integration to reduce tillage intensity and the impact of climate change on crops and weeds. Famers and researchers will also discuss approaches to manage perennial weeds in organic systems. The MSU Fort Ellis Experimental Farm is located at 33336 East Frontage Road, 1.5 miles east of Bozeman. Contact Fabian Menalled at menalled@montana.edu, 406-994-4783.

MSU Extension Level 3 Noxious Weed Management Workshop, September 27-28, 2017, C’mon Inn, Bozeman. Participants must have competed Level 1 and 2 prior to attending Level 3. Visit http://www.msuinvasiveplants.org/extensionsub.html for more information.

2017 Montana Agricultural Experiment Station Field Days:

- Arthur H. Post Farm (Bozeman), July 7
- NARC (Havre): June 29
- CARC (Moccasin): July 12
- NWARC (Creston): July 13
- EARC (Sidney): July 19
- WARC (Corvallis): July 27 (also the location of DRC summer conference)
- SARC (Huntley): not hosting this year
- WTARC (Conrad): not hosting this year

Drift Watch. Drift Watch is a tool to help Montana pesticide applicators and individuals minimize pesticide drift on sensitive sites (honey bee colonies, leaf cutter bee colonies, specialty crops). This tool helps applicators easily identify sensitive sites near their pesticide application. Individuals having a sensitive site of any kind are urged to register their site on Drift Watch. View or register at https://mt.driftwatch.org/.

Purchasing and Preparing Pesticide Equipment for Spot Applications

Cecil Tharp, Pesticide Education Specialist

FIGURE 7. Photo by Cecil Tharp.

Broadcast sprays apply pesticides uniformly over wide areas to manage pests; whereas a spot application targets pest populations in non-contiguous, small areas. Pesticide applicators face various obstacles when spot spraying such as maintaining consistent pressure, calibrating equipment properly, understanding what types of pesticide equipment to purchase, and using a hand sprayer attached to an ATV or truck mounted boom / broad-jet sprayers. This article will assist applicators in preparing for a spring pesticide application using a hand sprayer for spot applications.

Purchasing a Backpack Sprayer

Pesticide applicators should purchase equipment that delivers precise pesticide applications with little inconvenience. Backpack sprayers are the most common hand sprayers used by homeowners, small acreage landowners and rangeland pesticide applicators. Many applicators are unaware of the options available on the market. Here are a few common types of backpack sprayers to consider:

Manual or Battery Powered Backpack Sprayer. Consistent pressure is key to a good backpack sprayer application. Battery-powered backpack sprayers offer consistent pressure without the potential variability of manual sprayers; however they are more expensive, heavier, and require additional maintenance. Batteries must be assessed periodically to ensure they can maintain pressure for a minimum of 3 to 5 hours.

Spray Wand. Purchasing a quality spray wand that includes a constant flow (CF) valve to maintain pressure is essential. This is especially important when purchasing a manually-operated backpack sprayer, however it also is helpful when pressures drop below acceptable levels when using a battery-operated sprayer that has lost its charge. A CF valve will only allow the wand to spray when pressure is adequate for the spray application. Constant flow valves can be purchased and installed on spray wands after purchase to maintain pressures at 15, 25 and 40 psi.

Types of Pumps. Backpack sprayers contain a piston or diaphragm pump. Piston type pumps, though less expensive, may wear out quickly when using dry-flowable, wettable powders or other dry-flowable type pesticides. Diaphragm pump sprayers offer more durability and are easier to repair than piston type pumps. Piston type pumps can reach pressures as high as 90 psi compared to diaphragm type sprayers which average around 40 psi. This can be an important factor if considering using low drift-air induction nozzles that often require 60 to 80 psi.

Pre-Calibration Steps

Cleaning Sprayers. Sprayers should be cleaned thoroughly prior to calibration, especially if changing pesticide products and target sites. The outside of a sprayer should be washed in addition to rinsing spray tanks. Spray tanks can be cleaned by circulating various additive mixes (ammonia, heavy detergent, activated charcoal, etc.) followed by a water rinse through the entire spray system. For detailed instructions on cleaning sprayers navigate to www.pesticides.montana.edu and select "Reference Material," then "MontGuides," then select "Maintenance, Cleaning and Storage of Ground Sprayers." Applicators should always read and follow all label requirements when cleaning sprayers as procedures do vary.

Leaks, Nozzles and Screens. It is not uncommon for a leaky backpack sprayer to saturate unwary applicators with pesticide product while spraying. This dangerous situation can be alleviated if an applicator takes a few minutes to inspect equipment. Check pumps, lines, hose clamps and fittings for leaks while assessing entire sprayer for rust, wear and breakage. An applicator should inspect nozzles as well. A nozzle is composed of four items including a spray tip, screen (strainer), cap, and nozzle body. Screens should be inspected for debris and replaced if necessary. Spray tip pattern should be assessed for uniformity by simply spraying over concrete in a sweeping motion (6 – 20" from surface depending on type of nozzle) and inspecting the spray pattern. Nozzle tips should be replaced or cleaned if the spray pattern seems uneven. Select nozzle tips that are rated for your application type (Table 1).

TABLE 1. Common backpack sprayer nozzles, uses, and swath width.

Nozzle Type	Site/Use	Swath
Adjustable	Tree spraying or long distance spot	Narrow
Flat Fan Spray	Paths, gardens, and general	Moderate
Hollow Cone	Spot spraying, brush and small trees	Moderate
Jet Stream	Longer range spot spraying; crevice applications	Narrow
Flood	High output nozzles	Wide Swath
Air Induction, Turbulence Chamber Flat Fan	Using systemic pesticides around sensitive areas.	Moderate

Purchasing and Preparing (continued on page 6)

Calibration

Calibration ensures that applicators are delivering the proper amount of pesticide solution (diluent + pesticide) per unit area (Figure 7). By understanding the amount of solution the equipment is delivering, an applicator can: 1) ensure they are delivering the proper amount of pesticide product for effective control, 2) minimize non-target impacts, while 3) ensuring they are delivering adequate coverage to ensure the pesticide can work properly. The required product output is often expressed as gallons per acre (GPA) on the pesticide product label. The 128th-acre shortcut method can be used to calibrate any hand sprayer. For more information on calibrating handsprayers see the MontGuide titled "Calibrating Sprayers Using Shortcut Methods; http://www.pesticides.montana.edu/documents/montguides/ShortcutMethods.pdf."

Problems with calibrating dual purpose sprayers (hand sprayer attached to boom/boomless spray rig). At times applicators must calibrate a dual spray rig; generally equipped with one spray tank supplying solution to either a hand sprayer or boom/boomless sprayer, dependent on needs. When a tank mix is used for a hand and boom/boomless sprayer in the same application, an applicator must standardize the calibrated rate. For instance, if the boom is calibrated at 30 GPA, the applicator must ensure the hand sprayer is calibrated at 30 GPA. By changing field speed or changing nozzles an applicator should be able to calibrate the hand sprayer to equal that of the boom or boomless sprayer attached to the same tank.

For Further Information

For more information on calibrating home and garden sprayers see the MontGuide *Calibrating Home and Garden Sprayers;* http://www.pesticides.montana.edu/documents/montguides/calibratinggarden.pdf. Contact Cecil Tharp if you have any other questions about this article (406-994-5067; ctharp@montana.edu).

ASK THE EXPERT

Q. Why should I read (and follow) the pesticide label?

Fabian Menalled says: At a recent Extension meeting, I was asked to explain why is it important to read and follow the label prior to spraying any herbicide. The herbicide label, as any pesticide label, is a binding legal document and it is a violation of federal law not to follow its directions. Reading and carefully following the instructions provided in the label not only improves the chances of successfully managing weeds, but it also protects you, your family, and the environment. Prior to registering a herbicide, the Environmental Protection Agency (EPA) reviews and approves the label so that it provides accurate information on how much herbicide should be used, how it should be applied for optimal weed control, and how to use in a way that reduces health and environmental risk. The label also contains information on how to handle the product, when, where and how it should be applied, and the weed species controlled or suppressed by the herbicide. Failing to carefully follow the instructions provided in the label increases the chances of crop damage, may lead to a lack of adequate weed management, and present unnecessary health risk and/or environmental contamination.

Q. Is there a real benefit to spraying crop oils on potato and when do I start?

Jessica Rupp says: Absolutely! Viruses are one of the most damaging diseases certified seed potato producers encounter. Mineral oil sprays are used to reduce the transmission of aphid-transmitted viruses, such as Potato Virus Y, (PVY). Mineral oils provide a physical barrier on leaf surfaces. While oils are an excellent value, you must apply weekly applications to keep the barrier layer intact, which increases cost. Research has shown that a program utilizing mineral sprays can reduce the incidence of PVY 40-80%. When you apply crop oils as part of an IPM program, including rogueing infected plants and insecticide applications, you may improve an additional 10-20%. Things to remember: Begin at ~50% emergence (no later!) and continue through vine kill on a weekly schedule. Avoid the hottest, sunniest part of the day when applying to avoid burning leaves. Don't let your program lapse.

Q. I heard there are many new Environmental Protection Agency (EPA) Certification and Training requirements for pesticide applicators. What new requirements should I be aware of regarding my private / commercial pesticide applicator license?

Cecil Tharp says: The EPA finalized new certification and training requirements in January 2017, and subsequently placed a stay on the final rule until May 22, 2017. This includes mandatory categories for private applicators, increased competency standards for new applicators and annual training for all workers and handlers (even family members on farms). It is undefined when Montana certified applicators will need to meet the new EPA requirements. The Montana Department of Agriculture has three years to develop an EPA approved plan, with the count down starting May 22, 2017. The timing of enforcement of the plan will be negotiated between the Montana Department of Agriculture and the EPA. For complete requirements see the MSU pesticide news release titled "EPA Finalizes New Certification & Training Requirements for Private Applicators; http://www.pesticides.montana.edu/documents/news/20170124_PN_EPA_CT.pdf."

Meet Your Specialist

Sarah Eilers, IPM Assistant

Where/when did you receive your degrees?

I received my B.A. from the University of Wyoming in 1991. I became an ISA Certified Arborist in 2006.

What is your field of interest?

My field of interest is urban horticulture. Specifically, insects and diseases which influence plant health.

When did you arrive in Bozeman?

I first came to Bozeman in the fall of 1994 to teach at the middle school. In 2010, our family moved to Helena and we just returned to Bozeman in the fall of 2016.

Where are you from originally?

My family moved to Sheridan, Wyoming, when I was ten. My father was in the Navy so my earlier years were spent on bases in California, Virginia and Hawaii. We ended up in Sheridan because it is near to where my father grew up in Campbell County, Wyoming.

Where have you worked or taught in the past?

I spent my first three years of teaching in Hawaii. In 1994, I moved to Bozeman where I taught until 2004. Since leaving teaching I have worked as an arborist for private companies in Bozeman and Helena.

What do you like to do in your spare time?

I have enjoyed gardening, going for walks and reading a good book in my spare time in the past. Currently, all spare time is taken up by raising our two boys who are eight and four.

What are some important areas of focus in your field?

With my new position, I spend a significant amount of time on educating professionals on Integrated Pest Management practices. IPM is a common sense approach to dealing with pests in an environmentally-friendly manner.

What are some of your current projects?

I am assisting with the redevelopment of the Urban IPM certification program. I am also working on fact sheets on common pests and diseases.

How can farmers use your research to their benefit?

The core elements of IPM are constant no matter if they are applied to an urban setting or an agricultural one. Monitoring, biological control, and cultural practices have been part of a farmer's world since people began to farm. I hope that what I do reinforces these principles.

What projects would you like to focus on in the future?

I would really like to keep people updated on new research and findings that could assist property owners to manage their properties.

DO YOU HAVE A COMMENT OR QUESTION REGARDING THE MONTANA IPM BULLETIN?

Send your questions or suggestions to:

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Common chemical and trade names are used in this publication for clarity by the reader. Inclusion of a common chemical or trade name does not imply endorsement of that particular product or brand of herbicide. Recommendations are not meant to replace those provided in the label. Consult the label prior to any application.

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If you wish to have the Montana IPM Bulletin emailed to you for free, contact the MSU Pesticide Education Program office: ctharp@montana.edu.