WASHINGTON STATE UNIVERSITY
WALLA WALLA COUNTY EXTENSION
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http://extension.wsu.edu/wallawalla

Newsletter

November 2018

Announcements

November

7, 8 Pacific Northwest Ag Industry Expo, TRAC Center Pasco, WA 8 a.m.—5 p.m. For more details visit: http://washingtonagnetwork.com/pnw-agie/ .

18 4-H Achievement Night, Walla Walla County Fairgrounds Community Building, 5:00 p.m. Celebrate the achievements of our 4-H youth. Bring a hot dish and a salad, serving utensils, plates, and silverware for your family and guests.

If you would like to donate an item or a service to the 4-H silent auction, please bring it to the WSU Extension Office at 328 West Poplar Street by November 15th. No used items, please.

20 Walla Walla County Noxious Weed Board Public Meeting, WSU Extension Office, 328 West Poplar at 1:30 p.m. Open to anyone who would like to add their input to the 2018 county weed program.

27, 28 Pesticide Training & Recertification Kennewick, Three Rivers Convention Center, 8:00 am – 4:30 pm. Classes for the 2017-2018 WSU Eastern Washington Pesticide Education will be held in Pasco. Class fee is $60/ day (not including license and testing fee) with up to 6 credits/day available. Registration for the courses online at: http://pep.wsu.edu. Internet Recertification One-Credit Classes are available at: http://pep.wsu.edu/recertonline/. For questions, call 509-335-2830.

December

5 Last Chance Pesticide Recertification Class Walla Walla Regional Airport, 8:30 a.m. to 3:30 p.m. 3-5 WSDA Credits available. Call 509-524-2685 for questions. Fee of $25 includes lunch. Register online at https://www.brownpapertickets.com/event/3819965 .

6 WSDA Private Applicator License Class and Exam, Columbia County Fairgrounds, Youth Building. $10 pre-registration fee includes lunch and class. Private Applicator Education Manual (EM020) is required and is available at WSU Publication Store or at the Extension Office. Additional $58 (check or money order only) license and exam fee is due the day of class. Call 509-382-4741 for more information.

11, 12 Wheat Academy, Pullman, WA Vogel Plant Biosciences Building. Registration cost $125 for ag professionals and $75 for growers. Visit http://smallgrains.wsu.edu/2018-wheat-academy/ for schedule and registration information.

January

15 Cereal Grain Seminar, Walla Walla Regional Airport, 8:30 a.m. to 3:30 p.m. 4-6 WSDA credits will be available. Call 509-524-2685 for questions. Fee of $25 includes lunch.

4-H

Congratulations to all of our 4-H state fair participants. Please make sure to thank **Platt Electric** for shipping all our state fair exhibits!

4-H Contest Participants
Fashion Revue: Rem McBride– *Overall Intermediate Champion,* Lucy Perkins, James Perkins, Marissa McBride, Sarah Hong, Nannette Cooke, Alicia Newcomb; *Creative Consumer:* Nannette Cooke, Marissa McBride; *Public Presentation*: Gracie Olmstead, Alicia Newcomb, Sarah Hong, Timothy Daves, William Hong, Nanette Cooke; *National Equine Contest:* Amy Farley; *Kitchen Activities*: Alicia Newcomb, Sarah Hong, Timothy Daves, William Hong.

Union Bulletin Supports 4-H Program
A special thank you to the Union Bulletin for the gracious donation of advertising space to celebrate *National 4-H Week!*

Updates

SPRING VARIETY TRIAL PRELIMINARY RESULTS

Walla Walla SW: Overall the trial averaged 78 bu/ac. Ryan, Seahawk and Tekoa were the top yielding commercial cultivars. View the results at: https://s3.wp.wsu.edu/uploads/sites/2070/2018/10/2018_Walla-Walla_barley.pdf.

Walla Walla HR: Overall the trial averaged 73 bu/ac . WB7202CLP was the top yielding commercial cultivar. View the results at: https://s3.wp.wsu.edu/uploads/sites/2070/2018/10/2018_Walla-Walla_HRSW.pdf.

Walla Walla Barley: Overall the trial averaged 5,560 lbs./ac . LCS Opera, LSCS Sienna, Champion, LCS Vespa and Lyon were the top yielding commercial cultivars. View the results at: https://s3.wp.wsu.edu/uploads/sites/2070/2018/10/2018_Walla-Walla_SWSW.pdf.

VALUE OF WASHINGTON AG TOPPED $10.6B IN 2017

By Glenn Vaagen, Washington Ag Network

According to NASS, the value of Washington's agricultural production totaled $10.6 billion in 2017, a 4% year-over-year increase, but just shy of the record set in 2015 of $10.7 billion. Apples remained the leading commodity in the state with a value of $2.43 billion last year. That figure is up 3% from 2016, but short of the record recorded in 2012 (of $2.48 billion). Apples represented 23% of the total agricultural value, virtually unchanged from the percentage in 2016.

Milk remained in the second position and had value of production totaling $1.19 billion dollars in 2017, up 8% from 2016. All wheat value of production moved up two spots to take the third position in the state rankings. Wheat value in 2017 was $691 million, up 5% year.

Potatoes, valued at $687 million, fell one spot to fourth. This represents a 16% decrease from the previous year. Cattle and calves rounded out the top five with a value of $664 million, down 6% from the previous year.

These five commodities had a combined value of $5.66 billion, or 54% of the 2017 value for all commodities (excluding government payments). The same five commodities in 2016 had a combined value of $5.62 billion, 55% of the total 2016 value.

Record high values of production were established for hops and pears. Value of hop production in 2017 was up 28% from the previous year record, while all pear value of production was up 5% from 2016 and up 1% from the previous record high value in 2014. There were other commodities outside the top ten that showed significant increases in value from the previous year.

- Egg production, with a value of $141 million in 2017, increased 21% from the previous year.
- Blueberry value increased 22% from 2016 to $115 million in 2017.

- Canola value $15.1 million, increased 64% from the previous year.

Four of the top 10 commodities declined in value from the previous year, including potatoes, cattle and calves, cherries and grapes. Other notable commodities that declined in value in 2017 were onions, down 30% to $130 million; lentils, down 31% to $18.4 million; and dry edible peas, down 40% to $15.7 million.

Farming & Livestock

TIMING IS EVERYTHING WITH STUBBORN PASTURE WEEDS

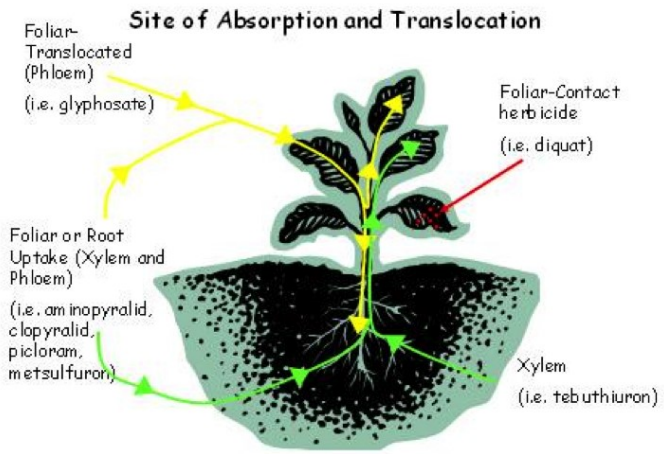
by Debbie Williams, Walla Walla County WSU Extension

Reducing stubborn pasture weeds requires correct timing no matter which method of control you consider. Effective methods include grazing management, mechanical and chemical control. Proper grazing management provides a good stand of forage that competes against weeds and reduces bare spots where weeds can take hold. Mechanical control can help. Timing of mowing, clipping, and hand pulling is critical to eliminate seed production, especially in annuals and biennials. Mechanical control can also help with some perennials around the time of prebud to early bud because it taxes the energy the roots need.

Chemical control is usually needed for most of our tough pasture weeds. The best control is through a specific plan for each problem weed. However, follow label directions and do not overtreat a specific area. If you delay herbicide application beyond the optimum growth stage, weeds will become increasingly competitive with grasses and harder to control. Conditions such as herbicide sensitivity, adequate spray coverage, decreased herbicide absorption due to stressed plants or not using the proper surfactant will decrease effectiveness.

For annual weeds, you get the best control when herbicide is applied to small plants growing under good environmental conditions when products are applied in enough water to adequately cover plants. Typically, you don't mow within three days before or after spraying to ensure adequate movement of the herbicide through the plant. If possible, irrigate the weeds to ensure active growth and that they are dust free before spraying. Multiple applications may be necessary to control repeated flushes of annual weeds. Some annuals will behave like biennials in the right conditions. Common troublesome summer annual pasture weeds include mustards (spray before bolt), pigweeds (spray when very

small, can accumulate N to toxic levels, resistance to some herbicides has been reported), and spikeweed (spray when rosettes are less than 3" in diameter). Troublesome winter annuals include yellow starthistle (spray seedling to mid-rosette stage), puncturevine (spray when small and often), and hare barley (spray in the fall or spring prior to heading).



For perennial weeds, your best control is often obtained when systemic herbicides are applied to taller plants that are in the reproductive growth stage, just prior to bloom. At this time the herbicide will be translocated or moved throughout the plant resulting in more complete control than just burning off the tops with earlier applications. Simply burning off the above ground foliage is usually not adequate to kill root and other plant parts that can re-emerge. For perennials, herbicides are least effective during rapid growth in the spring. However, spraying the regrowth of some weeds during the late fall period can provide some of the most effective control. Weeds that are particularly vulnerable to fall applications include Canada thistle (spray fall rosettes or wait until prebloom), curly dock (spray before bolt), plantains (spray before seed stalk bolt), and field bindweed (multiple applications are needed, best during flowering).

For biennial weeds, you get the best control when herbicides are applied to rosettes in the fall and spring. Pasture weeds such as scotch thistle, bull thistle, and common mullein are problematic biennial weeds. Fall is the preferred time to spray biennial plants but anytime prior to bolt can be effective. Mallow (spray before 3 inches wide, tolerant to many common herbicides) is considered an annual but frequently acts like a biennial in pastures.

Make sure you have correctly identified your weed and then explore the correct timing and herbicide products for the best control plan. Carefully follow herbicide label directions. Keep up with your plan until the weed is controlled. In most cases, control must be uninterrupted for more than three years to eliminate the weed.

FUNGUS PROVIDES POWERFUL MEDICINE IN FIGHTING HONEY BEE VIRUSES

Adapted from Steve Sheppard, WSU Department of Entomology

PULLMAN, Wash. – A mushroom extract fed to honey bees greatly reduces virus levels, according to a new paper from Washington State University scientists, the USDA and colleagues at Fungi Perfecti, a business based in Olympia, Washington.

In field trials, colonies fed mycelium extract from amadou and reishi fungi showed a 79-fold reduction in deformed wing virus and a 45,000-fold reduction in Lake Sinai virus compared to control colonies.

Though it's in the early stages of development, the researchers see great potential in this research.

"Our greatest hope is that these extracts have such an impact on viruses that they may help varroa mites become an annoyance for bees, rather than causing huge devastation," said Steve Sheppard, a WSU entomology professor and one of the paper's authors. "We're excited to see where this research leads us. Time is running out for bee populations and the safety and security of the world's food supply hinges on our ability to find means to improve pollinator health." The research was published in the journal Scientific Reports.

The hope is that the results of this research will help dwindling honey bee colonies fight viruses, that are known to play a role in colony collapse disorder.

"One of the major ways varroa mites hurt bees is by spreading and amplifying viruses," Sheppard said. "Mites really put stress on the bees' immune systems, making them more susceptible to viruses that shorten worker bee lifespans."

Partnership with Fungi Perfecti, LLC

This is the first research paper to come out of a partnership between Sheppard's lab and Fungi Perfecti. Their co-owner and founder Paul Stamets is a co-author on the paper.

"Paul previously worked on a project that demonstrated the antiviral properties of mycelial extracts on human cells," Sheppard said. "He read

WSU entomologist Steve Sheppard

about viruses hurting bees and called us to explore the use of the extracts on honey bees. After two years, we demonstrated that those anti-viral properties extend to honey bees."

Limited supplies

Members of the WSU bees team collect bees that were tested for viral

Right now, the mycelium extract isn't currently available in levels for beekeepers to purchase for their hives.

"We are ramping up production of the extracts as rapidly as is feasible, given the hurdles we must overcome to deploy this on a wide scale," Stamets added. "Those who are interested in being kept up to date, can sign up for more information at www.fungi.com."

Sheppard said he and his colleagues plan to do more work to refine their now-published results. That way beekeepers will have the best information when supplies are more available.

"We aren't sure if the mycelium is boosting the bees' immune system or actually fighting the viruses," Sheppard said. "We're working to figure that out, along with testing larger groups of colonies to develop best management practices and determine how much extract should be used and when to have the best impact."

Mites and viruses

Over the last decade, beekeepers have seen a disastrous decline in the health of honey bee colonies, often averaging over 30 percent loss annually. Varroa mites, and the viruses they proliferate, play a major role in those losses. Deformed wing virus, which causes shriveled wings on bees, greatly reduces the lifespan of worker bees.

Lake Sinai virus is also associated with varroa mites and is widespread in bee colonies around the United States. While the virus has no obvious or overt symptoms, it's an important virus to fight because it was found at higher levels in bees from collapsing colonies. It is closely related to chronic bee paralysis virus and it likely makes bees sick and weak, according to WSU assistant research professor Brandon Hopkins.

Treating with fungi

The treated bee colonies in this experiment were fed an oral treatment of mycelial extracts in dozens of small WSU bee colonies infested with varroa mites.

"It's a really easy treatment to apply," Sheppard said. "After we follow larger colonies for a full year, we can develop recommendations for how to use the extracts. Then it is expected that Fungi Perfecti will ramp up production."

There is currently no timeline for when the extract would be available at a scale large enough for beekeepers.

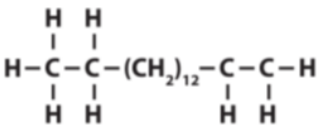
A portion of this project was funded by USDA-NIFA project WNP00604.

Home & Garden

PESTICIDE INGREDIENT: HORTICULTURAL OIL

Adapted from Linda Chalker-Smith and Catherine Daniels

Horticultural oils are manufactured using either petroleum or vegetable oils. They are produced by extracting and distilling (boiling, then condensing the vapor) the petroleum or vegetable source. In the past, it was difficult to use horticultural oils because they often damaged plants, even under perfect application conditions. The culprit was impurities, mainly naphthene and sulfur. In modern times, the distillation process is much improved and removes these impurities, making oils much safer to use on plants.

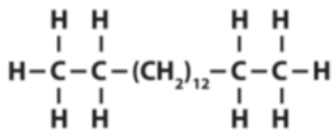


Olefin

Both petroleum and vegetable oils are made up of mixtures of different compounds. Petroleum oils most often contain the two compounds, olefin and paraffin, whose chemical structure is pictured above. Vegetable oils, such as canola or soybean, contain mixtures of triglycerides, or unsaturated fatty acids. The amount and type of compounds in any horticultural oil depends on how extraction and distillation were done. The same is true for impurities contained in the oil.

The labels on horticultural oils often list ingredients such as paraffin oil, petroleum oil, or mineral oil/ petroleum distillates. Gardeners may find it confusing to try to pick an oil based on its active ingredient name because names have changed over time. For example, paraffin is an old term that means the same thing as mineral oil in this circumstance. Whether the ingredient is called paraffin oil, petroleum oil, or mineral oil/petroleum distillates it will produce the same result.

Labels may also list summer oil, superior oil, dormant oil, or year-round oil. These terms also present historical



Paraffin

problems. Dormant oils used to mean for winter application to woody plants only. They were thicker and beaded up on the plant, so they evaporated more slowly, thus staying on the plant longer. Dormant oils typically contained impurities that would burn summer foliage. Newer refining processes have made these oils lighter, with fewer impurities, so the term dormant oil now refers to the time of application, not the physical characteristics of the oil.

Summer oils may also be called superior oils. This is an older term that previously meant highly refined oils. Like dormant oil, the definition has changed. Now, summer oil just means the time of application.

Whether gardeners are looking at the current contents of their garden spray shelf or shopping for new horticultural oils, it is important to read the labels carefully. Regardless of its age or the name used for its active ingredient, its label will always tell you how to use the material correctly. Also, check to see if the label lists the plants you have and addresses your pest problem at the appropriate time of year.

How it Works as a Pesticide Regardless of the source, petroleum or vegetable, these oils kill eggs, larvae, and nymphs of insects and mites by smothering them. It also works on all life stages of soft-bodied insects. Insects with waxy exoskeletons or dense body hairs are harder to kill because the oil cannot cover their body surfaces uniformly.

As a fungicide, oils work by interfering with fungal attachment to the host plant and by suffocating spores. Oils will also deter some insects from laying eggs, if the plant is sprayed while females are looking for good egg-laying sites, and it may deter other pests from feeding.

Because oils are only effective when applied directly to the pest, good plant coverage (top and underside of leaves) and correct application timing are critical. Never apply horticultural oil as a preventative: oil does not provide residual control if the pest is not present. Oils do not work as soil drenches either; they must be applied to aerial plant parts.

Remember, only apply pesticides to crops or sites specified on the label. Always store these oils out of the reach of children and pets, preferably in a locked cabinet. Keep pesticides in their original containers so you will always have access to instructions on personal protective gear and other precautions. Carefully dispose of these oils by contacting your local Hazardous Waste collection facility.

How to Use it Successfully If you choose to use horticultural oils, your chances of success are increased if you keep these precautions in mind:

- Apply the correct product concentration in the correct season.
- Spray only when conditions minimize drift.
- Avoid application to already stressed plants (i.e., those affected by drought, winter injury, or severe insect feeding).
- Make sure plants are thoroughly watered before oil application (to avoid drought stress), and do not apply oils when leaves are wilted.
- Keep the spray mixture properly agitated. If the spray mix separates, the chances of oil burn increase.
- Resist applying oils to wet leaves because oils will not adhere effectively.
- Avoid application right before it rains or when there is overhead irrigation as the oil will wash off more quickly.
- Avoid applying oils within two weeks of a sulfur spray since this can damage plants.
- Check product labels to see if mixing with sulfur or certain fungicides is prohibited. Read and follow the label instructions carefully.
- Avoid spraying oils during a plant's active shoot growth. The oil damages tender new growth.
- Apply oil only when temperatures are between 40 and 90 degrees.

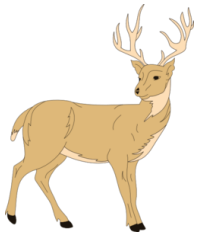
To avoid possible plant damage, test a small part of the plant first and wait a few days to see if burn symptoms appear.

Potential Drawbacks It is fairly easy to accidentally damage your plants or nearby environments when applying horticultural oils. Here are some important points to consider before using these oils:

- Horticultural oils are non-specific so if beneficial insects get sprayed, they will die along with the insect pest. Only spray plants with confirmed pest problems in order to conserve the beneficial insects in your garden and landscape.
- Be aware that junipers and spruce often lose their blue color when oil is applied. (See Figure 1.)
- Oil and water do not mix: horticultural oil will inhibit oxygen transfer, which can kill fish. Keep applications and their airborne oil drift out of waterways.

Family Living

MAKING JERKY FROM VENISON
Janet Hackert, University of Missouri Extension



Deer-hunting season is in full swing. Making jerky is a popular way to preserve venison. Here are some tips on doing it safely, including specifications for ground meat.

First, be sure that everything is clean and that cross contamination does not occur. This means washing hands thoroughly with soap and warm, running water before and after handling raw meat. It is important to scrub hands for at least 20 seconds. Make sure knives, cutting boards and any other utensils are also clean before use, and wash them in hot soapy water before using them with other foods.

To keep the meat safe, follow temperature recommendations. Refrigerate the meat and store at 40 degrees Fahrenheit or colder for no more than 3-5 days for whole cuts of meat and only 2 days for ground meat. If it will take longer than that to process it all, store in the freezer and remove just what can be worked in a timely fashion. Thaw meat in the refrigerator to keep any foodborne pathogens from growing. Likewise, when marinating meat, do so in the refrigerator and do not reuse or save the marinade.

As with any raw meat, disease-causing microorganisms such as E. coli may be present with venison, making it crucial to heat the meat to an internal temperature of 160° F. This can be done before drying by heating the meat strips in their marinade or after the jerky is dried. For details on how to do this, go to the National Center for Home Food Preservation's website at http://nchfp.uga.edu/ and click on "Dry" (link in the left sidebar) and then click on the link for "Jerky".

If making jerky from ground meat, be especially careful since the grinding process exposes far more surface area of the meat to contaminants.

To dry the marinated meat strips or extruded ground meat strips, place on racks so that they are close but do not touch or overlap. Dry at 140° F in a dehydrator or oven until a test strip cracks but does not break when bent. If the meat was not heated before drying, the process should take 10-24 hours. The process will be faster if the meat was preheated to 160° F.

Here are some reliable resources on the topic:

Drying Jerky, National Center for Home Food Preservation: http: nchfp.uga.edu/how/dry/jerky.html.

Food Safety of Jerky, University of Nebraska Lincoln & Food Safety and Inspection Service: http://dwb.unl.edu/Teacher/NSF/C10/C10links/www.fsis.usda.gov/oa/pubs/jerky.htm

Financial Fitness

IS AN EMERGENCY FUND IMPORTANT? HOW MUCH SHOULD I HAVE IN IT?

Yes, this fund should contain enough money to cover your expenses for 3 to 6 months if an emergency should occur in your family. If you have an emergency fund, when something unexpected does come up, you will not have to run up a large debt or tie up funds that should be used for something else. Being prepared for a financial emergency can help get you through a tough time with relative ease.

Source: Bozworth, Carole, University of Missouri, Getting Started-Saving and Investing. Human Environmental Sciences Publication GH3520.

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Celebrating 100 Years of Extending Knowledge and Changing Lives.

Debbie M. Williams
County Extension Director