



Fall 2023  
Vol. XVII

# UTAH PESTS QUARTERLY

Utah Plant Pest  
Diagnostic Laboratory

USU Extension

N E W S L E T T E R

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Centers for Disease Control

Rocky Mountain wood tick is the most commonly seen tick in Utah.

Ticks are small arachnids (related to spiders and mites) that feed on the blood of animals. They are most known for their potential to transmit disease to humans and other animals. Many species of ticks occur in Utah, but most live in close association with their hosts and would never encounter humans.

In Utah, the Rocky Mountain wood tick (*Dermacentor andersoni*), which has the ability to transmit Colorado tick fever, is the most commonly encountered tick for humans and pets. The brown dog tick (*Rhipicephalus sanguineus*) may occasionally be brought into homes on infested dogs or animals. Less frequently encountered ticks include the winter fern tick (*D. albipictus*) and the western blacklegged tick (*Ixodes pacificus*).

While many people fear ticks for their ability to transmit Lyme disease, the only human-attaching tick capable of this in Utah is the western blacklegged tick. This tick species is not commonly encountered in Utah and recent surveys found no presence of Lyme in any collected ticks.

Ticks are commonly found in Utah from the time of snowmelt through mid-July, and they can become active again in the fall. Ticks are usually found at ground level to 3 feet above in grass, low plants, and brush along the edges of fields and woodlands. They do not jump or fly; instead, they climb vegetation and wait for a host to pass by. To protect against tick-borne illnesses, check yourself carefully after being in tick habitats. Pay close attention to the armpits,

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The western blacklegged tick is one of the least-commonly seen ticks in Utah.

waistline, belly button, scalp, and crotch. Ticks may take a few hours to find a feeding site, which will allow you to detect and remove them promptly.

Proper removal of ticks is crucial to reduce the risk of disease transmission. For larger hard ticks, use tweezers to grasp the tick as close to the skin as possible, targeting the mouthparts. Pull the tick straight upward without twisting or crushing it. Use steady pressure until it releases. Smaller hard ticks can be scraped off with a knife blade or credit card edge. If the tick's head breaks off and remains in the skin, use a sterile needle to carefully lift or scrape it. Wash the wound with soap and water after the tick is removed. Apply an over-the-counter antibiotic ointment to help reduce the chance of catching a disease or secondary infection.

After removal, save the tick in rubbing alcohol for identification in case symptoms develop. Seek medical attention if you develop any tick-borne disease symptoms, including fever, chills, headache, fatigue, muscle and joint aches, swollen lymph nodes, and a target-shaped rash at the tick site. Visit the Centers for Disease Control web page on [Diseases Transmitted by Ticks](#) for more information.

Prevention is the best way to avoid ticks and their potential pathogens. Consider these tips.

- Avoid grassy, bushy, and sage-brush areas along edges of woodlands and fields, especially from March to mid-July.
- Wear long pants and long-sleeved shirts. Tuck shirts into pants and pants into socks. Apply tick repellent to clothing before entering tick habitat.
- Wear light-colored clothing to make it easier to detect and remove ticks. Always complete a thorough check for ticks after being in tick habitat.

If you discover a tick bite, contact the Utah Plant Pest Diagnostic Lab at Utah State University. The lab can provide identification through photos submitted via email or phone. (Physical samples of ticks cannot be accepted due to safety protocols.)

For more information check out the full fact sheet on [Ticks and Tick-borne Diseases of Utah](#).

——— Kate Richardson, Invasive Species Extension Associate

# Changes in the Utah Pests Team

## We Bid Farewell to a Legend – Diane Alston, Entomologist



Diane Alston retired from USU in July 2023, and left a large hole in our hearts and in her discipline. Diane joined the Department of Biology in 1989 and became highly-respected in her field and a friend to all of those she worked with, including farmers, graduate and undergraduate students, employees, and colleagues. She was driven by the goal of helping her clientele maximize profits and reduce pests.

Diane was tireless in her career. She delivered hundreds of presentations and field demonstrations, wrote over 150 publications, produced 6 pest management videos that have over 100,000 views, was a popular guest on UPR's The Zesty Garden and Bug Bytes, served as President of the Entomological Society of America's Pacific Branch, Plant-Insect Ecosystems Section, and dozens of committees, received numerous national awards, and at the end of her career, was appointed Head of the Department of Biology.

The successes of the Utah IPM Program and the Utah Plant Pest Diagnostic Lab are credited to Diane's visionary leadership style where she inspired others to do their best. Her innovative research is too expansive to list, but she is especially well-known for her work on onion thrips, codling moth, western cherry fruit fly, and brown marmorated stink bug. Examples include the no-spray "killing stations" for fruit fly and a multi-disciplinary program for U.S. producers to manage onion thrips.

With everything on Diane's plate, she always made time for anyone who knocked on her door, called her, or sent an email. She treated each encounter as if that person and that question were of the utmost importance. Diane was genuinely concerned that no questions were left unanswered and that the clientele she is served could never ask for more.

We will miss Diane and wish her well, but are happy that she will have more time for her passions of family and pets, travel, gardening, hiking, and trail-running.

## Utah Plant Pest Diagnostic Lab Welcomes New Arthropod Diagnostician



Dr. Alex Knudson comes to Utah State University from North Dakota State University, where he was the Entomological Diagnostician for four years. Alex is an ecologist, systematic entomologist, and extension professional with broad entomological interests. For a decade, he has been identifying insects for different state and national agencies and conservation groups. He is originally from southern Minnesota, but spent the last 12 years in the Red River Valley of North Dakota, so he is used to cold and snowy weather!

We are excited to welcome Alex to the Utah Pests team, as he has great experience in Extension education and providing outreach for people of all ages. He teaches integrated pest management and alternative control options to farmers, gardeners, and homeowners to safely manage pests with fewer pesticides. He says his favorite interactions with clients are those light bulb moments when he provides a new piece of information and it just clicks! Alex can be reached at alexander.knudson@usu.edu, or 435-797-2435.

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# Winter Injury of Trees and Shrubs

**JayDee Gunnell** is the Horticulture Agent for [Cache County Extension](#) and oversees the [Varga Arboretum](#) at the USU Extension Botanic Garden.

**Taun Beddes** is the Horticulture Agent for [Utah County Extension](#) and hosts the KSL [Greenhouse Show](#).

The last few fall seasons in northern Utah provided warm weather that extended into October. These abnormally warm temperatures were followed by a sudden and severe cold front, where temperatures abruptly dropped to well below freezing. As result, the normal plant process that induces cold dormancy was delayed and many trees and shrubs were damaged or killed. In some cases, the damage did not show up until late the following summer.

All woody plants have differing levels of cold hardiness, primarily determined by genetics and environmental conditions. The process of complete dormancy can take multiple weeks and involves plant hormones and environmental cues such as shorter daylength and decreasing temperatures. The internal process begins in the upper canopy where photosynthesis (the process of creating energy via sunlight) slows down and green pigment (chlorophyll) gives way to others such as yellow/orange (carotenoids), red/purple (anthocyanins), and dull brown (tannins).

Because water, sap, and other liquids expand as they freeze in woody plants (rupturing conductive tissue cells), the next stage of dormancy involves a process that actively pumps these liquids outside of the cells. Sugars then concentrate within the cells, acting much like antifreeze, lowering the freezing point. This allows the tissues to withstand freezing temperatures without being damaged.

During our recent cold-injury events, the cells of many woody species still contained sap, resulting in the conductive (water-transport) and cambium tissue being damaged or killed. The trees most affected included marginally-hardy species such as magnolia, cherry, and plum. Other trees, normally adapted to cold climates like English walnut, Norway maple, and some oaks, experienced significant crown dieback.

Another issue arose in some areas of northern Utah—abnormally cold winter temperatures. For example, in Cache Valley, temperatures dropped below  $-25^{\circ}\text{F}$  in December 2022. As a reference, the fruiting buds of most stone fruits (peaches, cherries, plums) are reported to be



Most Norway maples in Cache County looked like this in summer 2023 – with newly dead branches (*top*).

English walnut is a somewhat hardy tree, but can be affected by cold-temperature injury (*bottom*).

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Dessication on conifers (*above*) is common, but only needles are killed, not twigs. Trees usually heal over sunscald damage (*right*).

hardy down to approximately  $-13^{\circ}\text{F}$ , with the trees themselves being damaged at  $-20^{\circ}\text{F}$ . Because of these subzero temperatures, there was very little stone fruit set in these mountain valleys.

In spring 2023, some trees failed to leaf out and were discovered to be dead. Other plants leafed out but then within a month to six weeks, the leaves showed symptoms of chlorosis (yellowing) and later dried up and dropped. We have also witnessed trees and shrubs that leafed out but experienced branch dieback or major portions of the canopy dying.

The question commonly posed to Extension faculty is if the trees that were damaged will recover. Instead of a simple yes, the honest answer is "maybe". Recovery depends on a lot of factors, most importantly being the extent of tree damage. For example, if 75% of a tree's canopy is dead, the other 25% may stay alive, but the tree will likely never regrow its full canopy. If only 25% of the canopy is damaged, it will likely regrow the canopy.

Another aspect that may affect recovery is that stressed and damaged tissues are much more susceptible to diseases. For example, in Utah County, reports of cytospora cankers have been higher this summer in peach and sweet cherry orchards and in Cache County, Norway maples have shown an increase in the percentage of branch dieback associated with verticillium wilt. Our advice is to "control what you can". Three tips that



Splitting or cracking bark occurs when sap inside the tree freezes (expands).

can help reduce tissue damage and increase plant survival include:

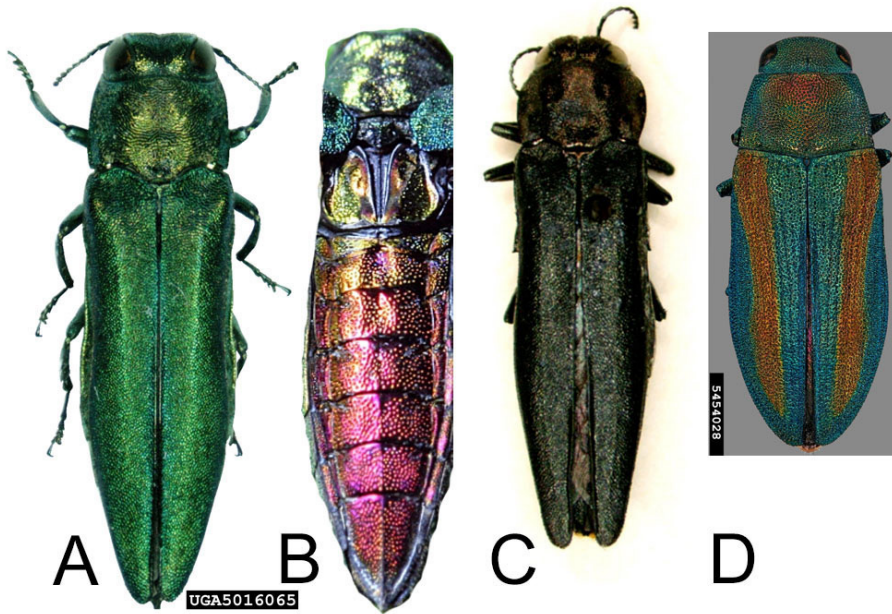
1. Follow sound, local management practices. Avoid pruning or fertilizing woody plants during fall months. Both of these practices stimulate new growth during a time when the plants should be slowing down and can delay the dormancy process.
2. Protect young trees. Wrap the trunks of young trees (less than 5-8 years) with white tree wrap from December to March. The wrap reflects winter sun and heat, allowing the bark to remain dormant and preventing bark sunscald. Woody species with dark trunks (linden, crabapple) or thin bark (beech, maple) are exceptionally susceptible to sunscald.
3. Keep trees hydrated. Assure that trees and shrubs receive regular, deep irrigation throughout the growing season and into early fall. Evergreen trees never fully go dormant, so late fall irrigation (especially in dry fall months) is crucial.

In conclusion, trees and shrubs are important, long-term investments in our landscapes. Contact your local USU Extension office if you have questions regarding selecting adapted plant species, irrigation needs, sound management practices, insect and/or disease control measures, or any other horticultural/landscape-related topic.

# Invasive Insect Look-Alikes

Several invasive insect pests have become established in Utah over the past two decades. Invasive species arrive to the U.S. through global trade or travel and damage crops, forests, and natural resources, or invade homes. To date, we have not found emerald ash borer, Asian longhorned beetle, northern giant hornet, or spotted lanternfly in Utah. Vigilant observation and proper identification can find early introductions, which can help local, state, and federal agencies manage or even eliminate new pest populations. If you see anything that looks suspicious or extraordinary, please reach out to the Utah Plant Pest Diagnostic Lab.

**Emerald ash borer (EAB)** was first introduced on wooden shipping pallets from China and then spread across the eastern U.S. through the transport of ash firewood. EAB is a small (0.3-0.5 inch) metallic emerald-green beetle with the top of the abdomen always a bright red (sometimes appearing bronzed). The elytra (wing covers) are smooth without ridges. Most other metallic wood-boring beetles that look like EAB are much smaller or larger. There are a few species that may be emerald green, but no other species have a red-topped abdomen. Similar species may have ridges on the elytra. The bronze birch borer and *Chrysophana placida* are similar species that can be confused with EAB.



**A:** Emerald ash borer (EAB) adult.  
Courtesy PA Department of Conservation & Natural Resources

**B:** EAB elytra removed showing reddish abdomen.  
Courtesy David Cappaert

**C:** Bronze birch borer can be mistaken for EAB but has no reddish color.  
Courtesy PA Department of Conservation & Natural Resources

**D.** *Chrysophana placida* resembles EAB but is much smaller.  
Courtesy Steven Valley

All photos in same scale, but enlarged.

**The northern giant hornet (NGH)** is a large (1.5-2 inches) wasp with smoky amber wings, a large head that is deep pumpkin-orange, a dark body with two small orange spots on the back, and an abdomen with alternating black and orange stripes. Cicada killer wasps are most commonly confused with NGH and can be found throughout the state. These large wasps parasitize cicadas and create solitary nests in the ground where they feed their young. Cicada killers are similarly sized, but have smaller heads, the wings are lighter in color, the body will have larger patches of orange, and their abdomens usually have three colors or have markings with bands of alternating colors.

The western cicada killer (*near right*) is a common look-alike for the northern giant hornet (*far right*)



USDA: Hana Royals

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The **spotted lanternfly (SLF)** is originally from Asia and was first detected in Pennsylvania in 2014. It has now spread to 15 states and is poised to become a formidable pest nationwide. SLF can feed on over 70 species of plants including grapes, apples, stone fruits, and native tree species. Adult SLF are about 1 inch long and have distinctive gray to cream-colored forewings with large black spots near the base and many small black spots near the tips. The hind wings are red with black spots near the base. The youngest nymphs are black with white spots and older nymphs are black and red with white spots. Adults are so distinctive in appearance that they are rarely mistaken for other insects, but the young black nymphs can be mistaken for ticks or spiders.



Spotted lanternfly adult (*far left*).  
Courtesy Emelie Swackhamer

Younger nymphs are black with white dots (*upper middle*).

Older nymphs are black with red patches and white dots (*upper near left*).

Egg masses can be found on a variety of surfaces (*lower near left*).

Top three images, courtesy Lawrence Barringer, Pennsylvania Department of Agriculture

**Asian longhorned beetles (ALB)** are large (0.75-1.5 inch) black or black-blue beetles with black and white striped antennae. The legs also have bands of black-blue and white. The scutellum (triangular plate at the base of the elytra) is solid black and the wing covers are dark black-blue with a few white patches but no prominent hairs or scales. *Monochamus* species are most commonly confused with ALB throughout the U.S. They can be separated from ALB by the white hairs on the head, the white scutellum and the usually more marked elytra. The whitespotted sawyer is quite variable and can look shockingly similar to ALB. Other similar native beetles are more marked, hairy or lack the alternating black and white antennae.



Asian longhorned beetle adult (*far left*).  
Courtesy Steven Valley

The whitespotted sawyer is a common look-alike due to its similar size and coloration. Notice the white scutellum (circled in red) (*near left*).

— Alexander Knudson, Arthropod Diagnostician

**Resources**

Spears, L., Davis, R., & Ramirez, R. (2015). [Invasive Insect Look-Alikes - Mistaken Insect Identity](#). [Fact Sheet] Utah State University.

Contact UPPDL to report or request pest identification: [extension.usu.edu/pests/upddl/submission-form](https://extension.usu.edu/pests/upddl/submission-form)

USDA Animal and Plant Health Inspection Service [resources on invasive pests](#).



# Grasshopper Apocalypse: Conditions for Survival

Many of us saw a big increase in grasshopper populations this summer, especially in urban areas adjacent to undisturbed open lands. The outbreak is correlated to recent climate conditions, population sizes from the prior year, and unmanaged breeding land reservoirs from which grasshoppers migrated into urban gardens.

Grasshoppers spend the winter as eggs in the soil, unaffected by cold air temperatures. The high snowpack we had in winter 2023 provided insulation, keeping soils evenly moist and consistently cool, which provided perfect conditions for grasshopper eggs to survive. Spring conditions were also ideal—warm and not too wet—allowing for successful egg hatch and growth of nymphs.

Most grasshopper species in Utah produce one generation per year. After eggs hatch, grasshopper nymphs develop through five stages before becoming winged adults. Because there are several species that develop under different timings, a mix of nymphs and adults may be present all season.

Grasshoppers feed on agronomic crops, rangeland plants, weeds, fruits and vegetables, and ornamental plants. Their chewing mandibles wreak havoc as they consume



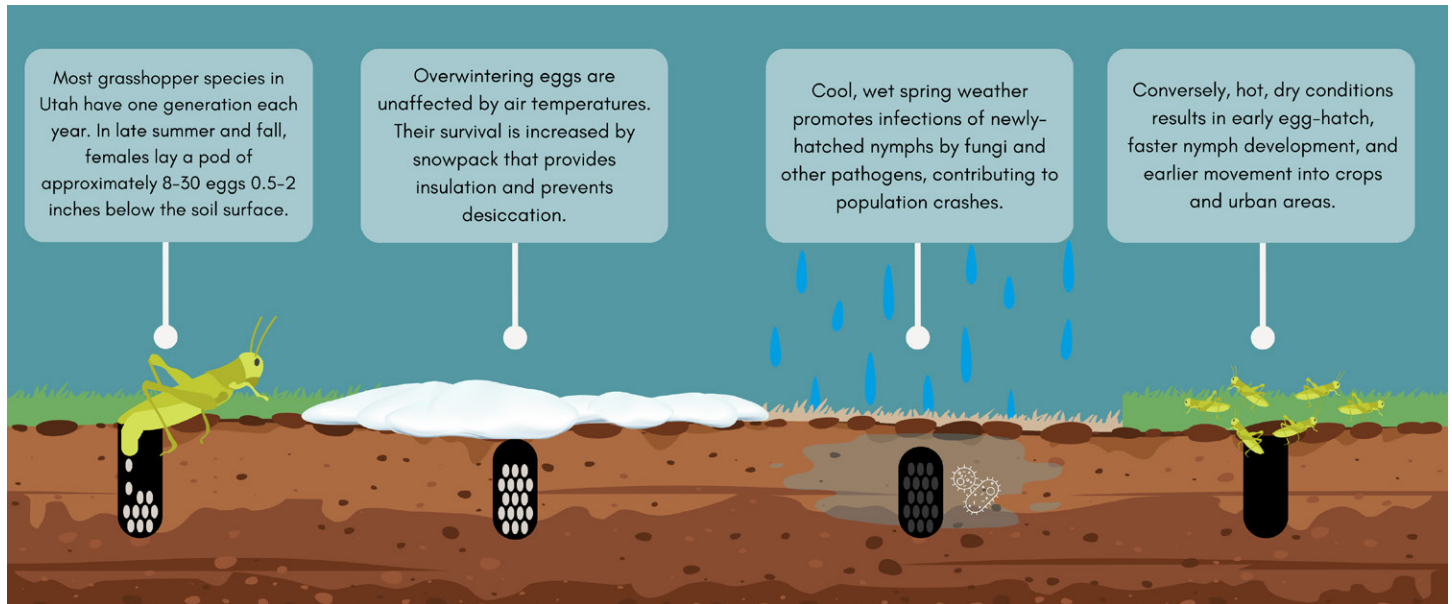
Grasshoppers not only feed on foliage, but also feed on fruit, bark, buds, and flowers, such as this dahlia.

foliage, flowers, fruits, seed heads, and stems — essentially all above-ground plant parts. If populations are high enough, this feeding can lead to economic setbacks, and farmers in some areas are reporting economic loss due to grasshopper damage.

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### Grasshopper Life Cycle and Conditions for Survival



Populations are likely to be high again in 2024 before falling due to natural diseases or adverse weather conditions. To prepare for the next outbreak, consider these tips:

- Monitor for nymph emergence early in the season in weedy areas along fences and roadsides. The non-flying nymphs are less mobile and easier to treat.
- In small gardens, grasshoppers can be excluded using row covers with insect netting or a lightweight spun-bond material. They can also be hand-removed (during early, cool mornings) and placed into soapy water. Natural predators such as kestrels, reptiles, mammals, and other arthropods feed on grasshoppers, but unfortunately not usually enough to mitigate damaging numbers. Some farmers have had success with guinea hens in managing grasshoppers.
- In high populations, an insecticide might be needed and should be used on nymphs. Unfortunately, organic bait products containing the microsporidium *Nosema locustae* (such as NoLo Bait and SemaSpore), may still be in short supply or unavailable, but check in spring 2024. Other bait products using active ingredients such as zeta-cypermethrin + bifenthrin, malathion, permethrin, and carbaryl are labeled for grasshopper use in home gardens. Consult your local garden center about what products are currently in stock and verify that the target crop and grasshoppers are listed on the label.



Under high populations, grasshoppers may need to be treated with an insecticide to prevent losses. Target the nymphs soon after hatching for best results.

For additional grasshopper information, see our video series on grasshoppers on the USU Extension YouTube Channel:

[Overview of Grasshoppers](#)  
[Utah Grasshopper Species](#)  
[What Do Grasshopper Eat](#)  
[Grasshopper Control](#)

— Nick Volesky, Vegetable IPM Associate

# Cover Crops for Plant and Soil Health

Wikimedia:  
User:Cassville

Want to avoid lugging manure or compost to the garden bed or field? Try using a cover crop instead, without taking any space out of production. A cover crop is easy to grow if you choose the right species or mix, and plant and terminate it at the right time.

A fall-planted cover crop can:

- Conserve and enhance beneficial organisms, by providing habitat, moisture, and food (insect prey, nectar, pollen, and insect honeydew).
- Increase organic matter to the soil when it is incorporated.
- Increase nitrogen balance in the soil, especially if a legume cover crop is used.
- Suppress weeds via shading, smothering, and out-competing.
- Increase soil physical properties.
- Enhance the population of beneficial soil microbes.
- Lessen impact of high phosphorus in soils caused by yearly applications of manure (no more than  $\frac{1}{8}$  to  $\frac{1}{4}$  inch of manure, every other year, should be applied to the garden).

Seed a fall cover crop by early to mid-October, depending on location. If the crop is planted late, increase the seeding rate. Most crops need about 30 to 40 days to germinate and grow before a killing frost. Some species will survive the winter and continue growth in the spring, such as winter rye or hairy vetch. Oats, buckwheat, and mustards will not survive the winter in northern Utah.

## Hairy Vetch (shown above)

*Description:* A hardy, viney, moderately drought-tolerant legume that fixes nitrogen. Vetch will survive winter temperatures to  $-20^{\circ}\text{F}$ . Vetch will grow a small amount in fall, with the majority of growth in the spring. The longer it is allowed to grow, the more nitrogen it adds to the soil. Hairy vetch residues decompose rapidly and release nitrogen more quickly than most other cover crops.

*Planting:* Vetch should be planted in early September at a rate of 1-2 lb/1000 sq ft. The seed requires inoculation by *Rhizobium* sp. bacteria, which comes as a dry peat-based powder and is shaken with the seeds just before sowing.

*Termination:* The downside of vetch is that it may be difficult to remove or till. Its heavy, viney growth may clog a rototiller. Several low mowings or cutting the tops off at the crown with a sharp hoe or machete can also kill the vetch. It must be killed before it seeds or it will become weedy. Leave the cut top growth as mulch and the roots as organic matter and nitrogen.

## Austrian Winter Pea



Wikimedia:  
User:J.hausstueck

*Description:* Also known as field pea or Canadian field pea, this is an annual that is only hardy to  $10^{\circ}\text{F}$ , and may die in winter in northern Utah.

*Planting:* This plant will establish quickly (planted at 2-4 lb/1000 sq ft) in fall, and produce a significant amount of residue. They vine and travel, so are best when combined with an upright winter grain.

*Termination:* In spring, if the plant has not been winter-killed, pull up plants when they are about 2 feet high, and compost or turn under.

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### Winter Rye

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*Description:* This is an annual grain that is cold-hardy and vigorous. Rye's deep and fibrous rooting system helps to build soil organic matter and is excellent for breaking up soil particles and preventing compaction. It is a non-host plant for most root and crown diseases and may help to reduce pathogen populations in the soil. Decomposing rye not only smothers weeds, but also chemically suppresses weed seeds through allelopathy.

*Planting:* Rye seeds are cheaper than legumes, and tolerate a later planting at 2.5 lb/1000 sq ft. Rye germinates quickly, and grows longer in fall and earlier in spring than other grains.

*Termination:* In spring, rye should be dealt with when it is about 6-8" tall (with removal or herbicide) or at flowering (with mowing or removal). Do not let it go to seed or it will become a weed. To kill by mowing, wait until the anthers are extended, and pollen falls from the flower heads when shaken. The residues are high in nitrogen and can be left on the ground or composted. Because of the allelopathic effects and nitrogen tie-up, residue left in the garden should be allowed to decompose for 3 weeks before planting the next seed or transplant crop.

### Mixing Rye and Legume

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Some farmers mix rye with a legume to get the properties from both crops. The grain will provide an upright support, allowing for better growth of the legume and easier killing by mowing in the spring. A little trial and error may be necessary to optimize the seed ratio because grasses can outcompete legumes in the fall. In general, the grain rate could be about 40% of full rate and the legume rate could be closer to 80% of the full rate.

#### Resources

Creech, E., Cardon, G., & Yost, M. (2018) [Cover Crops for Utah](#). [Fact Sheet] Utah State University.

Clark, A. (2015). [Cover Crops for Sustainable Crop Rotations](#). SARE Outreach.

Clark, A. (ed.) (2012). [Managing Cover Crops Profitably Third Edition](#). (Handbook Series Book 9). SARE Outreach, College Park, MD

### Forage/Tillage Radish

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*Description:* Forage radish are available as various cultivars such as 'GroundHog', 'Nitro', 'Sodbuster', and 'Bio-till'. It will die in northern Utah winters, but it grows quickly in the fall, "trapping" soil nutrients for release the following spring, thus preventing nutrient leaching and adding soil organic matter. Because the radish dies back, there is no worry about killing it in the spring, or waiting for it to decompose. In addition, its long taproot breaks through compacted soil, leaving it in friable condition and improving water and root penetration for the next crop.

*Seeding:* If burying seed ½-inch into the soil, seed at ¾ lb. to 1 lb. per 1,000 square feet. Seed can also be broadcast on the soil surface, and in this case, seed about 50 per cent more thickly. Germination occurs within 3-4 days when environmental conditions are favorable.

*Termination:* None needed, as radishes will die over the winter during several nights of temperatures in the low 20s.

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Winter cover cropping is not for every farmer or field, but in the right situation, can be an important tool in nutrient management, and indirectly, pest management. First-timers should start small with a cover crop to discover possible pitfalls such as generating an unintended weed problem if the cover crop is allowed to go to seed. Keep in mind that in small gardens, winter cover crops should be used in beds that will be planted with warm season crops (tomato, pepper, summer squash, etc.) so that spring crops won't be delayed in planting.

——— Marion Murray, IPM Specialist

# Lilac Leaf Chlorosis Virus - A New Virus in Utah and the United States

In mid-July 2023, the Utah Plant Pest Diagnostic Lab received a lilac sample with chlorotic ringspots on the leaves. The symptoms matched Lilac leaf chlorosis virus, a virus that had not been reported from Utah. A sample was sent to a USDA APHIS lab for confirmation. The virus was confirmed by the lab, and the sample from Utah is now the first official report of this virus in the U.S. It has been reported from England and the Netherlands in the 1970s. There is little information on this virus. The virus is graft-transmitted but not seedborne, and there are no known insect vectors. At this time, the recommendations for management is removing and double-bagging symptomatic plants before placing them in the trash. If you have any concerns that symptoms on your lilacs could be caused by Lilac leaf chlorotic virus, feel free to email pictures of the symptomatic lilac leaves to [claudia.nischwitz@usu.edu](mailto:claudia.nischwitz@usu.edu).



— Claudia Nischwitz, Plant Pathologist

## Utah Pests Staff Changes, continued

### Two Utah Pests Faculty Members Get Their Dream Jobs

The Utah Pests team lost two other bright stars. **Dr. Lori Spears** was USU's Invasive Species Specialist. She went above and beyond in her efforts to teach farmers to recognize unwanted insect pests through workshops, webinars, field days, and inventive tools such as billboards, calendars, and t-shirts. She also had a strong research program on brown marmorated stink bug and initiated a national program to monitor for incidental bee catches in pest traps. Her work was so successful that USDA Animal and Plant Health Inspection Service (APHIS) recognized her efforts, and used her programs as

examples for other states. And then they stole her from us! She now works for APHIS as a risk analyst.

**Dr. Ricardo Ramirez** was USU's Extension Entomologist and worked on programs with farmers and colleagues across the West, from billbugs in turf, to spider mites in corn, and recently, evaluating how pesticides impact predatory insects in alfalfa. He is now the Department Head for Entomology, Plant Pathology, and Weed Science, located at New Mexico State University in Las Cruces. Although he switched schools, he is still an Aggie!

UTAH PESTS people and programs are supported by:



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