

# Pest Alert

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## RED RUST ON SPINACH!

The wet spring and continued moist weather is giving rise to a disease that we do not see every year. Red rust on spinach was found in both the Fort Collins area and the Arkansas Valley this last week. Red rust shows as yellow spots with red centers on the upper leaf surface of spinach. It is called "red" rust to differentiate it from white rust (not a rust at all) which is more common on spinach. Red rust was first found in Colorado in 1944 and has made sporadic appearances since.

Red rust is a true rust caused by *Puccinia aristidae* (syn. *Puccinia subnitens*). The pustules on the tops of the leaves contain the spermogonia. Later pustules that develop on the undersurface contain the aecia. Pustules are 1-3 mm in diameter and frequently appear as somewhat concentric circles.

The alternate host is saltgrass (*Distichlis spicata*) on which the uredia and telia develop. Infection of spinach appears to occur for a limited time in the spring, but there has not been any research on this.

In a survey done in 1959, the uredial stage was found on saltgrass in 14 Colorado counties (Adams, Alamosa, Bent, Cheyenne, Crowley, Delta, Elbert, Kiowa, Larimer, Lincoln, Huerfano, Otero, Pueblo, and Weld). Cultivated aecial hosts were not always present for the fungus to complete its life cycle. It was concluded at that time that wild plants in a variety of families were available as aecial hosts in most parts of Colorado.

A study done in 1952 showed the disease increases rapidly during transit. On the third morning after packing in Denver, undetectable levels of infection increased to the point that the entire shipment was lost. Though much progress has been made in shipping technology since then, the disease is still difficult for packers to detect and can develop rapidly during transit.

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating.  
Cooperative Extension programs are available to all without discrimination.

The red rust pathogen also causes a seedling rust on sugar beets. It infects the cotyledons and first leaf on sugar beet. With this much infection on spinach, sugar beet growers should to see if there is a high incidence of seedling rust on sugar beets.

So little is known about this disease that it is difficult to recommend control measures. Salt grass eradication will help as both hosts are needed for completion of the life cycle. Plowing down infected spinach is a means of getting rid of unmarketable spinach, not a means of managing the disease. (Skoglund and Brown).

### **FABRIC VERSUS TRADITIONAL TREE CONTAINERS**

Questions occasionally arise concerning fabric containers for trees and shrubs. The following information was extracted from the thesis entitled '**Fabric container versus traditional tree production methods: a post-transplant study**' by Roberta Tolan, summer 1996, Colorado State University.

"The objectives of this research were to determine if trees growing in fabric containers were more or less vigorous than trees grown in the more traditional balled and burlapped and plastic container methods. Another objective was to determine if fabric container grown trees required more irrigation than balled and burlapped trees after transplanting.

Research was conducted during the 1994 and 1995 growing seasons at the Horticulture Research Farm northeast of Fort Collins, Colorado. The three species studied included Patmore green ash (*Fraxinus pennsylvanica* March. 'Patmore'), bur oak (*Quercus macrocarpa* Michx.), and Austrian pine (*Pinus nigra* Arnold.). Vigor was determined by measuring aboveground growth including change in height, caliper, and incremental growth over the two growing seasons. Visual evaluations of tree vigor and health were also made.

Analysis of growth data over the entire two growing seasons showed that production method effect was species specific. There were not significant differences in growth due to production method in ash or oak. In pines, fabric container and plastic container trees outperformed B&B trees in height and incremental growth, but not in caliper." "This research suggests that if a conifer is desire, fabric or plastic container trees might be a better choice. "

"Water stress was determined by measuring pre-dawn leaf water potential. Measurements were taken at the end of the first growing season and throughout the second growing season. Ash leaf water potential was more negative than oak throughout the two year period. Within species, however, there was no significant difference between fabric container and balled and burlapped trees by the end of the first growing season and throughout the second growing season. "

"When trees are planted in Colorado's heavy clay soils and in an irrigated turf, B&B trees can easily be over watered. FC (fabric container) trees initially require more irrigation and might be a better choice for this location."

"If trees are planted after bud break when leaves are actively transpiring PC (plastic container) trees might be the better choice since their root system has not recently been dramatically reduced and can more immediately supply sufficient water to the plant." Curtis Swift, Tri-River Area Extension Agent, Grand Junction)

### **NWGRN ListServe - Up-To-Date Information for the Northwest 'Green Industry**

A new ListServe designed for the 'Green Industry\* in Northwest Colorado is now on line. This ListServe can be used to ask questions, request information, announce job opportunities, announce workshops, or disseminate other important 'Green Industry\* information.

To utilize NWGRN, address your email to [nwgrn@colostate.edu](mailto:nwgrn@colostate.edu)  
(Brown)

### **NEMATODE TESTING**

This is just a reminder that the CSU Plant Clinic does not test for nematodes. Some laboratories that do are listed below. Be sure to call before sending samples. Each lab will have a preferred way in which they want the samples collected, packed and mailed. Also our list of fees has yet to be updated. There are a couple of new labs that we will alert you to as soon as we get the specifics.

Plant Clinic phone (913) 532-5810  
Department of Plant Pathology  
Kansas State University  
414 Throckmorton Hall 4032  
Manhattan, KS 66506-5502

Plant Clinic phone (402) 472-2559  
448 Plant Science Bldg.  
Dept. Plant Pathology  
University of Nebraska  
Lincoln, NE 68583-0723

Nema-Test phone 402 465-2446  
8049 Lowell Ave  
Lincoln, NE 68506

Nematology Diagnostic Laboratory phone (208) 722-6701  
University of Idaho  
SW Idaho R & E Center  
29603 U of I Lane  
Parma, ID 83660

(Brown)

### **PERENNIAL PEPPERWEED & WHITETOP MANAGEMENT**

Perennial pepperweed (tall whitetop) and whitetop (hoary cress) are creeping perennial mustards that infest pastures, rangeland, and non-crop areas in Colorado. Perennial pepperweed is a significant problem in and around riparian areas; the plant may be allelopathic and often forms monocultures. Whitetop tends to invade ground where the plant community is degraded. Because of this, ground infested with either weed should be seeded with perennial grasses after weeds are controlled. Neither weed is readily grazed by livestock and like many mustards, may be poisonous to livestock. No biocontrol is available for perennial pepperweed or whitetop and the prospects for classical biocontrol development (search for predators in the weed's origin) are not promising because some scientists believe both perennial mustards are too closely related to valuable crops.

Telar and Escort at 1 oz/A will control either weed. Telar at 1 oz or Escort at 0.75 oz will control perennial pepperweed. Use a surfactant at 0.25% v/v with Telar or Escort. CSU research showed that Campaign (formulated product of glyphosate plus 2,4-D) at 40 to 54 fl oz/A controlled perennial pepperweed for at least one season. The experiment was destroyed by flooding and long term control could not be determined. Herbicides should be applied in spring at flowering for 2 consecutive years then seed perennial grasses in the fall of the second year. Amber also is a sulfonylurea herbicide and should control perennial pepperweed or whitetop but data are not available to define activity on the weeds or rates. For more information contact George Beck (970) 491-7568. (Beck)

### **CSU MONITORS BALANCE AND EPIC CORN INJURY SITUATION.**

Calls with reports of Balance and Epic injury to corn have come in to the CSU weed science program from various areas of Colorado this first year of commercial use. Several patterns for injury have been noted by various people who have evaluated fields with injury. Injury appears to be more severe on fields where corn was planted shallow rather than deeper. Clean tilled fields appear to show more injury than fields with plant residue on the surface. Sandy soils or sandy knolls appear to exhibit more injury. Where higher rates of herbicide were used, more injury may occur. The wet spring, combined with frequent showers to "recharge" the soil water with Balance may have contributed to a unique year for the introduction of this new chemistry in the corn market. In general, weed control with these products has been good to excellent. In some cases, with warm weather and irrigation, the corn may outgrow the injury. CSU specialists and others will continue to monitor the progress of this issue over the next several weeks (Westra).

### **SOME CRICKET FACTS**

A friend of mine called last weekend about a cricket, ensconced under the refrigerator, that was driving her to distraction. I tried to help her out but, during our conversation, several points came up that suggested cricket misperceptions that may be widespread. So I thought some information on these fascinating insects is perhaps in order.

First of all, the most common singing crickets that are encountered in homes are the black "field crickets", *Gryllus* spp. Two species are found in the state, almost identical in appearance but with shifted life cycles. *G. veletis* predominates in spring and over winters as an adult; *G. pennsylvanicus* is the late summer species.

Only male crickets "sing". The sound is produced by rubbing together specialized enlarged veins on the wing. (*Not* by rubbing their legs as promoted by Jiminey Cricket.) The primary vein is known as the **file** with numerous small raised points; the **scraper** on the other wing runs across this. About 95% of the crickets are "right-winged" with the file on the right wing. Crickets detect the sounds through organs (typanum) located on their front legs - in a sense hearing "with their elbows".

Several different songs can be produced, most commonly the "calling song", which may be produced loudly and for long periods to attract mates. The intensity of the calling song increases as nonmated males age. Other songs that may be produced include the "courtship song", "staying together song", and a "rivalry song".

As cold-blooded animals, chirping rates can be affected by temperature. In one case, involving the snowy tree cricket (a pale green species related to katydids and found on shrubbery) temperature can be estimated using **Dolbear's Law**. Dr. Dolbear, a professor at Tufts University developed the following formula:

$$T = 50 + (N-40)/4$$

where:

T = Temperature (F); and

N = Chirps/minute.

Regarding how I discussed the situation with my friend, I first pointed out that field crickets do not reproduce in homes and that the cricket was a misplaced wanderer that will die without reproducing. (I also let her know that the recent increased intensity of the singing was indicative of a serious sexually frustrated male and that would die soon. This explanation appeared to provide quite a bit of solace.) Sticky "roach motel" traps or, if in an appropriate location, dusts of boric acid I also recommended to hasten its demise.  
(Cranshaw)

### **YELLOWJACKETS ARE SETTING UP HOMES**

At least locally yellowjackets (*Vespula* species) seem to have made it through the winter quite well and are now in the process of setting up new colonies. Only the fertilized queens survive winter, as the workers die out and the colonies are abandoned at the end of the year. The queens are substantially larger than the typical workers and are now poking around looking for wall voids, abandoned rodent nests, and other sites to nest. (The closely related baldfaced hornets and "aerial yellowjackets", *Dolichovespula* species, create the large exposed paper nests in dense vegetation and under eaves.) As the queen does all the chores of establishing the colony (construction of the paper nesting cells, egg laying, hunting for food and providing it to the brood) colonies are quite small at first and often the first workers are runty from insufficient diet. However, when the workers do become adults they will help out and take over much of the work, allowing the queen to concentrate on egg laying. Colonies exponentially increase in size over the summer, usually peaking in late August or early September at which time there can be hundreds of yellowjackets and severe nuisance problems.

If possible, now is an excellent time to avoid later yellowjacket problems as the colonies are very small and easily destroyed. If queens or workers are observed entering some hole then that is likely a incipient nest and should be destroyed. Also, although only a small percentage of the queens are successful in establishing a colony, killing queen yellowjackets when encountered will have some effect on the number of colonies that will develop over the season.

This is also a good time to use yellowjacket traps, a product I see increasingly on garden center shelves. Our most common local species, the western yellowjacket, *Vespula pensylvanica*, is attracted to 2,4-hexadienyl butyrate which can be used to lure them into funnel types of traps. Later in the season, when yellowjackets are much more visible, trapping is much more problematic since colonies are much larger in size.  
(Cranshaw)

### **GIANT CONIFER APHIDS**

Recently I have received several samples and inquiries regarding large aphids on junipers and spruce. Some of these incidents also involved massing of aphids on adjacent buildings. These incidents involved giant conifer aphids:

## GIANT CONIFER APHIDS

*Cinara* spp. Homoptera: Aphididae

**Hosts:** Most species of conifers, including pines, fir, Douglas-fir, and particularly spruce. Each *Cinara* species is specific to a particular genus of tree, some even to a particular species. Winged stages are sometimes produced but no alternate hosts are known. Approximately three dozen species occur in the region.

**Damage and Diagnosis:** The giant conifer aphids feed on the sap from twigs and branches, often in large groups. Heavy infestations cause a yellowing of foliage, needle drop and occasionally cause dieback of shoots. Heavy deposits of honeydew are often produced, promoting sooty mold growth and attracting ants. Populations usually are highest in late spring.

This group includes some of the largest aphids (up to 1/4 inch), exceeded in size only by the giant willow aphid. Adults are long-legged, generally reddish-brown to brown. Eggs are shiny and black, resembling miniature jelly beans, laid conspicuously in rows on twigs and needles. The juniper aphid, *Cinara sabiniae* (Gillette and Palmer), is very common on juniper and is usually the most destructive member of this genus in the state.

Nuisance problems with giant conifer aphids are sometimes reported, as they mass on sides of buildings adjacent to infested plantings. The reason for this behavior is unknown but seems to follow periods of heavy rainfall that may dislodge many from their host plant.

**Associated Species:** Large aphids associated with pines can be found in the genera *Essigella* and *Eulachnus*. These feed on needles, are generally gray and can be extremely active and quick moving.

**Life History and Habits:** In the fall, females lay several eggs each and these overwinter on the host tree. Eggs hatch in the spring. Throughout spring and summer only females are produced, which bear live young. Males and sexual-form females are produced in late summer that mate and produce the egg laying generation.  
(Cranshaw)

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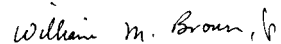
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Where trade names are used, no discrimination is intended, and no endorsement by the Cooperative Extension Service is implied.

Sincerely,

  
William M. Brown, Jr.  
Extension Plant Pathologist