

Greenhouse Pest Posse

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Puttine Knowledge to Work

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“What’s current on the pest, disease and production scene”

RALSTONIA ON GERANIUMS - USDA ANSWERS QUESTIONS

USDA has “compelling evidence” that Goldsmith Plants Inc., unintentionally imported *Ralstonia solanacearum* race 3 biovar 2 into the United States during the time period of July 27, 2003 through January 3 2004 from Guatemala. As a result USDA ordered the destruction of Americana Bright Red, Americana Coral and Americana Cherry Rose II/ Americana Cherry Rose geraniums shipped from Goldsmith Plants, Inc. in Guatemala to the United States during the time frame listed above.. Other potentially exposed plants (e.g. plants on a shared water irrigation system with suspect geraniums) are also being destroyed. On January 23, USDA released answers to commonly asked questions regarding its actions.

Why are three varieties of Goldsmith Plants, Inc geraniums being destroyed? “USDA is working to minimize the extent of destruction and the effect on the industry while also protecting U.S agriculture. *R. solanacearum* race 3 biovar 2 is a quarantine pest because it does not occur in the United States; it is also listed as a select agent under the *Agriculture Bioterrorism Act of 2002*. As a quarantine pest, USDA requires specific measures to prevent its importation and also to eradicate it when found in the U.S. It could cause significant economic impacts if it were to become established here. Worldwide damage caused by this pathogen in potatoes is estimated to exceed \$950 million annually.

In late December 2003 and early January 2004, *R. solanacearum* race 3 biovar 2 was confirmed on plants collected from a greenhouse in New York. The confirmations were made on two varieties, Americana Bright red and Americana Coral. One was direct-shipped through one of our Plant Inspection Stations to the greenhouse from the Goldsmith facility in Guatemala. The second also originated in Guatemala but came through a rooting station. Based on this evidence and conversations with Goldsmith representatives, where they indicated that there might be a problem in one of their Guatemalan greenhouses, USDA was convinced the *R. solanacearum* race 3 biovar 2 was present at the

Goldsmith production facility and was being imported into the United States on these two geranium varieties.

The third suspect variety—Americana Cherry Rose II— was implicated and held because it was grown in the same greenhouse with the two other suspect varieties. Goldsmith voluntarily halted shipments of plants from Guatemala and USDA informed the Guatemalan government that the United States would not accept plants from the Goldsmith facility. USDA placed a hold on the



Geraniums infected with *R. solanacearum* race 3 biovar 2

New York nursery and four rooting stations that received suspect plants. Because Goldsmith had not implemented a method to track the identity of its cuttings they could not further refine the identity of potentially infected plants to less than the three varieties with shipping dates between July 27, 2003 and January 3, 2004. A bar-coded inventory system was not in place until mid-December. In addition, there was no compelling evidence that could conclusively link the infection of the greenhouse to a particular shipping week.

USDA extended the destruction order to all greenhouse in the United States receiving the three suspect varieties. At Goldsmith’s request, the order was temporarily suspended until USDA staff could evaluate the situation in Guatemala. Based on their findings, the destruction order was reinstated. Water samples collected in one greenhouse were tested for *R. solanacearum* race 3 biovar 2, and its presence was confirmed.”

More on the USDA response, page 2.

Tulip bulb rots

Bulb rots on tulips can be caused by several different disease organisms. This past month, blue mold or bulb rot caused by the fungus *Penicillium spp* was most prevalent. Bulbs have a bluish-colored fungal growth on the surface. In severe cases, the fungus was able to colonize and infect tissue between the scales. The best control measures involve purchasing clean planting material. Purchase fungicide treated bulbs and make sure not to plant diseased material. Fungicides such as Banner Maxx (propiconazole), Chipco 26019 (iprodione) and Medallion (fudioxonil) will help protect bulbs. Watch for bulb mite infestations— there may be a chemical attraction between mites and bulbs infected by fungi (see pg 3).



USDA RESPONSE TO DESTRUCTION OF GERANIUMS (CONTINUED FROM PAGE 1)

Can the USDA test for *Ralstonia* before destroying plants? "One of the most difficult issues that USDA has had to face is the destruction of apparently healthy plants. As lack of wilt symptoms does not mean there is not infection. Last year, USDA tried using a time and temperature regime as a means to predict when most plants would begin expressing wilt symptoms. USDA has since leaned through recent research that infected plants that appear healthy may carry the bacteria, and release bacteria back into the soil. Therefore, the time/temperature regime could not reliably be used as the only indicator of potential infection.

At this point there are no available testes for the large scale nondestructive sampling needed to reliably determine if stock is free of *R. solanacearum* race 3 biovar 2. The immunological tests can only identify the *R. solanacearum* group, not the specific race and biovar USDA is targeting. The tests work best on symptomatic plants, not wilt-free plants. To be 100 percent certain suspect plants do not contain this pathogen would require the testing, and therefore destruction, of all the plants. Therefore, as the immunological tests are currently applied, a very large number of plants would likely need to be destructively sampled for us to be reasonably confident the stock is free of bacteria.

Based on the lack of useful and reliable testing methods, the evidence USDA has gathered in Guatemala, and because USDA and Goldsmith cannot produce a more precise determination of potentially infected plants, USDA must conclude that all Americana Bright Red, Americana Coral and Americana Cherry Rose II (also marketed as Americana Cherry Rose) cuttings produced in Guatemala between July 27, 2003 and January 3, 2004 are potentially infected.

Because water and unsanitary greenhouse practices are the most efficient methods of dispersing the pathogen, any plants exposed through shared water or these practices must also be included in the category of potentially infected plants.

The only option available to us at this time is to find all potentially infected plants, prevent their movement, and destroy them. USDA does this fully understanding the potential effect on the geranium industry as a whole, from the large producer to the smallest retail nursery but USDA has not other available approach.

USDA is diligently working with Goldsmith's cooperative to develop a water effluent (waster water) testing system to quickly and accurately determine the presence or absence of *R. solanacearum* in the greenhouse. This system may be available for use in offshore geranium production facilities in the near future, but it will require further testing and development before it can be used in U.S. greenhouses because of different soils/media and watering systems."

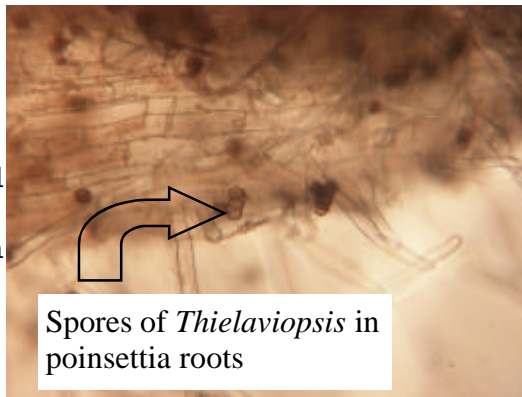
Under what authority is APHIS taking the action to order destruction of these plants? "The Plant Protection Act of 2000 (Statute: 7 USC 7701-7758, Regulation: 7 CFR 330) gives USDA the authority to take action on pests, including diseases, and on potentially infested plants that have moved, or are moving through interstate commerce. Under section 414 of the Act, if the Secretary considers it necessary, in order to prevent the spread of a plant pest or disease that is new to or not known to be widely prevalent within the U.S., USDA may hold, seize, quarantine, treat, destroy or disposed of any plant, plant pest, plant product or article. (7 USC 7714). *R. solanacearum* race 3 biovar 2 is a bacterium considered to be a pest under the Act, because it can directly or indirectly injure, damage, or cause disease in plants or plant products. (7 USC 7702(14)). This bacterium is known to have originated in Guatemala, and is not known to be in the general environment of the U.S., nor is it known to be widely prevalent in the U.S. Since USDA believes that plants may also become infected by exposure to the bacteria through other mechanisms, these exposed plants are also considered to be at risk of spreading the bacteria to other non-infected plants. USDA has also determined that there is no way to adequately test exposed plants to determine whether or not they harbor the bacteria, and there are no knowr treatments for the disease. Therefore, USDA had concluded that destruction or disposal action of these plants is the necessary least drastic action feasible to prevent possible further spread of the bacteria. (7 USC 7714(d))."

THIELAVIOPSIS-THE FORGOTTEN ROOT ROT PATHOGEN

Too often growers assume that root rots are caused by the organism *Pythium* and never investigate further. Fungicide applications then begin- often with poor results. Having a sample tested at a diagnostic lab will alleviate the unnecessary expense that can accompany this practice. A case in point- Black root rot caused by the fungus *Thielaviopsis basicola* can cause tremendous damage to root systems of many floriculture crops including poinsettias, pansies, petunias and other bedding plants. Unlike *Pythium*, black root rot won't show up until a plant is stressed.

This disease is encouraged by the following factors:

- Media pH of greater than 5.5
- Soil temperatures between 13 and 17 C (55 - 62 F)
- Media moisture holding capacities of 70% or greater.



Spores of *Thielaviopsis* in poinsettia roots

The disease can be managed with good sanitation, a decrease in media moisture holding capacity, a decrease in media pH (if appropriate) and use of fungicides, such as: Cleary's 3336*, Systec 1998*, Fungo* (Thiophanate methyl), Terraguard (Triflumizole), and Medallion (Fludoxonil).

*Same chemical class.

QUESTIONS OR COMMENTS?

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Bulb Mite Problems

Many growers in Colorado are experiencing problems as a result of receiving poor quality tulip bulbs. Bulb mites are on the increase in many of these greenhouses. Information on these pests is not comprehensive due to a lack of research. Here's what is commonly known.

Most of the time bulb mites are "out of sight- out of mind". They do, however, have the ability to cause injury on many bulb crops including, tulip, Easter lily, gladiolus, freesia, onion and garlic. There does seem to be a connection between the mites and plant pathogenic fungi. Infestations apparently develop faster when bulbs are also infected with fungi (see tulip bulb rots pg 2).

The best (registered) bulb mite control seems to be obtained with drenches of Avid, Hexygon or Kelthane. It appears that bulb mite infestations and pathogens must be managed together. But not much is known about how, at this time. Predatory Hypoaspis mites may also be effective against bulb mites.

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Greenhouse Pest Posse

A newsletter designed to keep greenhouse growers informed of current pest, disease and production information. Produced by Laura Pottorff, Regional Greenhouse Specialist, Colorado State University

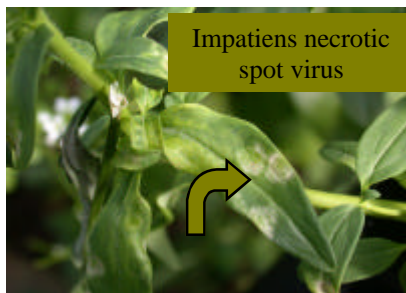
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PICTURE GALLERY- CUT SNAPDRAGON PROBLEMS



Impatiens necrotic spot virus

Symptoms of manganese and ammonium toxicity due to over steaming of soil



Distortion due to aphid feeding



Distortion due to Downy mildew—arrow points to sporulation