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182. Weevil woes: how to quickly spot and stop a black vine weevil infestation.

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Black Weevil

Weevil woes

How to quickly spot and stop a black vine weevil infestation

By Jessica Hanna

Think of any kind of plant, and there's likely a type of weevil that feeds off it. With more than 60,000 species, this beetle is a well-known, troublesome pest among growers.

One of the most common weevil species affecting greenhouse growers is the black vine weevil — a weevil that destroys greenery with a doubly damaging, two-pronged approach: the adults feeding off the foliage, while their larvae go for the plant's root system.

This pest is present on more than 200 different plant species ranging from weeds and shrubs to greenhouse

and nursery plants, says Julie Graesch, field development specialist for Becker Underwood.

Originating in Europe, the black vine weevil is now found across northern North America and is mainly spread through the transport of potted, decorative plants. Vigilance on behalf of growers both sending and receiving such plants is necessary to stop the insect's spread internally, to customers and to other greenhouses.

"Growers [receiving plants] would always want to inspect the plants before they introduce them into the rest of the crop," Graesch says. "The growers would hopefully do this anyways to look for other insect infestations.

"When black vine weevils are present in any nursery or greenhouse crop that is going to be shipped out, if they're found, they can have a quarantine put on that particular operation's crops. So it's a huge issue for anybody who has it."

Knowing how to quickly identify and manage a black vine weevil infestation is key to minimizing costly damage and hassle to your business if you have the misfortune to discover this pest pattering about your perennials.

Identifying an infestation

Signs of infestation will likely be seen first in the plants themselves. Foliage damage by feeding adults occurs in a characteristic C-shaped notching — a red flag for grow-

ers, as well as an unattractive deterrent for customers. The larvae, meanwhile, damage roots and can often girdle the crown of the plants, blocking water and nutrient movement to the foliage.

"They can stunt growth, turn leaves yellow and cause wilting," Graesch says. "Young plants often cannot stand a high larval population and are often killed, whereas mature plants can often tolerate higher populations but may die if being transplanted."

If you see signs of such damage, take steps to confirm weevils are the cause. First, pull several plants to determine if there is damage to the root system — severed roots or the girdling. If these larvae indicators exist, examine the

affected plants at night to find the nocturnal adult weevils.

"They're pretty distinctive," Graesch says. "They have a snout, and they have a rimmed back with spots on the wing casings. They are flightless."

If [growers] actually find the adult weevil, then they can find information about it online or at a university extension that would be able to easily identify it if the grower couldn't identify it right away."

How to treat

Once the culprit is confirmed, growers have several management options to combat the black vine weevil: mechanical, chemical, biological and cultural,

Bug breakdown

Scientific name:
Otiorynchus sulcatus.

Looks like: Adults measure almost half an inch long, and are gray to brownish-black with a distinct snout, elbowed antennae and spotted, fused wing covers. Larvae are cream-colored with brown heads, and grow up to 1 centimeter in length.

Most commonly found on: They prefer yews and rhododendrons but are found on a variety of plants — particularly potted, ornamental plants.

Spread by: Walking, or human transport of infected greenhouse or nursery plants.

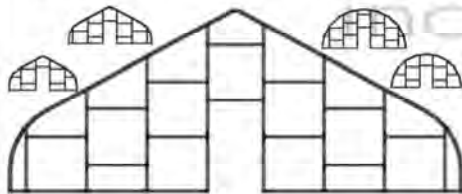
Common treatments: Mechanical removal of adults, chemical sprays and drenches, and biological control agents such as parasitic nematodes.

Treatment periods: When larvae are present in spring — March to mid-May — and autumn — August to November.



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PESTS & DISEASES

A combination is typically the best plan of attack to not only pause but permanently halt this pest.

Immediate mechanical action should be taken to stop or at least slow the spread of this flightless pest. Quarantine the affected area and either remove adult weevils at night by hand, or completely pull plants with visual damage — burning being an effective disposal solution.

Do not reuse the surrounding soil, and wash the roots of any salvaged plants.

But further treatment is needed, as it's difficult to be sure all adults have been removed and all infected plants identified. There are a variety of chemical sprays and drenches for pest control.

"Even if you just miss one adult, they're going to lay 300 or more eggs," Graesch says.

There are also multiple biological agents that are effective at controlling weevil populations — which can serve as organic alternatives to chemicals. One popular option is the application of fungi, such as *Metarhizium anisopliae*, to the soil media. The fungus will infect and kill both the adult and larval stages.

Another biological management method is the use of pathogenic nematodes — microscopic worms — usually from the families *Steinernematidae* and *Heterorhabditidae*. Graesch recommends a cold-resistant nematode such as *Steinernema krausei*, which is effective at least 10 degrees cooler than most other nematodes, since black vine weevils typically thrive best in cooler climates.

"Nematodes are safe to humans, plants and animals, so they can just be sprayed, and



Palm Weevil Larva and Adult

they go into the soil and they search out the larvae and kill them within 24 to 48 hours," Graesch says.

"Once they're applied ... [growers] want to follow up with irrigation water to wash the nematodes off the foliage into the soil," Graesch says. "It's best to apply the nematodes either in the early morning or in the late evening, where they can get onto the soil and start getting down in the soil before the sun has a chance to harm them with UV light."

Many nematodes are also compatible with certain chemical treatments, and growers often combine the two methods or combine multiple biological control agents for a multi-pronged approach.

"You could use the nematodes with the chemicals, that way whatever the nematode misses, the nematode gets, or whatever the nematodes miss, the fungus will get," Graesch says. "Using multiple control agents is obviously going to give growers better control than one by itself."

Whether going chemical,

biological or both, taking cultural steps to inhibit weevil survival will also boost management efforts. Egg and larvae survival are helped when soil moisture is moderate to high in July and August, so Graesch recommends removing excess mulch layers that help to maintain those critical moisture levels.

Keep in mind, however, that when using nematodes, plant and soil need to remain moist for at least two weeks after application.

"If it gets too hot, above 86°F, the nematodes start to either die off or stop moving because it's too hot for them," Graesch says. "[Growers] can irrigate to bring the soil temperatures back down to where the nematodes are happy."

When to do it

Black vine weevils have one generation each year, and must be treated when the larvae are present to ensure an infestation is thoroughly thwarted. There are two time periods when larvae are present, in the spring and in the autumn.

In the spring, overwintered

larvae are typically present between the beginnings of March to mid-May.

"That's when a lot of the damage to the root system is occurring, because that's when the larvae are much bigger and they're hungry after winter," Graesch says. "They're actively feeding and they can do a lot of damage."

A second application is required in the autumn when adult weevils first lay their eggs, starting in August and lasting through November. This is important as several management options, particularly nematodes, aren't going to kill the adult or the egg stages during the first treatment. Warmer greenhouse temperatures will also shelter any surviving adults from the otherwise deadly winter climate.

Paying attention to early warning signs can help growers quickly identify and address a weevil infestation, saving not only your plants, but your time and money. Take advantage of online, collegiate and commercial resources for further assistance. **GM**