

# e-GRO Edible Alert



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Volume 5 Number 10 May 2020

## Grow Food, Not Pests: Some Common (and Uncommon) Greenhouse Pests

About the furthest thing from anyone's mind starting out in greenhouse or high tunnel production is pest management, given all the other issues that understandably take precedence. However, waiting in the wings are pest insects and mites easily capable of destroying a crop (or rendering it unmarketable, which is almost the same thing) and with management options far more limited than for outdoor production, familiarity with some of the more troublesome characters might be in order. Some are quite common while others may be occasional, regional, or incidental.

Aphids are near the top of the list of trouble. High numbers leave sticky honeydew deposits followed by sooty mold. It matters which species is present especially if using biological control, as natural enemies can be selective about their hosts. Green peach and melon aphids are both common, but foxglove aphid is the species most often seen on early spring greens as it is very comfortable in cool conditions. It tends to disappear with the heat of summer. They are fairly easy to distinguish by the very pale green color and small darker green blotches centered around the base of the 'tailpipes,' which are most easily seen on adult aphids. Potato aphid is often seen on tomatoes but will feed on a variety of other crops. Bean aphids are nearly black and oddly one I've seen most often on nasturtiums grown for edible flowers, but they are also fond of spinach. Onion aphids have sneaked in on greenhouse chives, a distinctive species that can be on roots as well as above ground. Mint aphids operate that way as well, in one case introduced on young cuttings being forced in a warm range, and rice root aphid is similarly notorious on variety of greenhouse plants including industrial hemp. Speaking of which, we've encountered cannabis aphid on two occasions associated with vegetatively propagated plants.

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There are many other aphid species which may be determined by the crops grown, the location and other aspects of a particular situation, but the above covers the majority.

A milestone many experienced greenhouse growers recall best in rear view, thrips infestations can be among the more difficult and frustrating to manage. Western flower thrips cause plenty of damage on their own, but sometimes vector certain viruses - such as tomato spotted wilt - that take destruction to a new level. Despite the virus name, many more crops can be affected (e.g. peppers, lettuce, ornamentals) than just tomatoes. Populations of western flower thrips have developed resistance to insecticides that were once effective and biocontrols generally don't work well as 'rescue' treatments, so a good deal of prevention is called for. In tomatoes feeding causes a gold flecking on red fruit. Pepper fruit may have a kind of bronze flecking and small halo spots or dimples. Cucumbers can be scarred and distorted. Lettuce leaves may have rusty or dark scars or areas. Leaves of these and other plants, such as herbs, may have pale flecks or areas (if older leaves are attacked) or become distorted and even stunted (if young unexpanded leaves are attacked). Onion thrips is another species some increasingly encounter that is also capable of transmitting some viruses.

Sweetpotato and especially greenhouse whiteflies have a long history of association with greenhouse crops in both ornamental plant and food production. Heavy infestations can be annoying to work around and, like aphids, also leave sticky honeydew and sooty mold on foliage and fruit. Whiteflies have been known to cause huge losses in crops like greenhouse tomatoes.



Mint leafhopper (circled and inset) and damage to rosemary. (Photo used with permission)



Mint leafhopper damage to rosemary. (Photo used with permission)



Foxglove aphids have a distinctive green blotch at the base of each cornicle



Twospotted spider mites



Damage to lettuce from red-legged winter mite

One of the newer species we've encountered is cabbage whitefly, especially troublesome for organic kale production and an annoyance in pansies grown for edible flowers. Some biologicals can control whiteflies fairly well if started early.

With the popularity of high tunnels, twospotted spider mite has become a more serious pest, as warm, dry conditions and well-fed host plants meet all its requirements perfectly. This mite has a wide host range, including strawberries, raspberries, tomatoes, cucumbers, melons, eggplant, many herbs and ornamentals. Problems often start on weeds or crops overwintered in the same greenhouse or on cutting-grown plants introduced to the range. Under favorable conditions infestations grow exponentially, resulting in comments about how populations 'exploded overnight.' Damage appears as pale flecking or bronzing on leaves and can even extent to fruit, with webbing formed when levels are high. Biological controls, introduced early, can be used but very dry, warm conditions may be inappropriate for some of the beneficials used to control mites. Broad and sometimes cyclamen mites are pests on indoor crops, but in a group different from spider mites; they are sometimes problems in peppers. Broad mite is not known to overwinter outdoors in the Northeast US and seems to be most associated with herbaceous ornamentals. Broad mite can be moved around by whiteflies, an important consideration in management. Symptoms of injury include a kind of scabby russet of stems and (peppers, eggplant) fruit; leaves can be stunted, dark in color and have a bronze color. Cyclamen mite can overwinter in the region and is occasionally a pest in peppers causing stunted leaves and terminal growth as well as a similar russet or rough brown scabbiness on pepper fruit. 'Red-legged winter mite' is an unusual pest seen on Long Island, NY and parts of Maryland damaging high tunnel leafy greens (spinach, bok choy, lettuce) in winter and very early spring during 2018 - 2019. Damage appears as white areas on foliage, some eventually turning brown. We also saw some dark spots on leaves. Expanding young leaves on spinach were severely stunted and distorted. It is adapted to surprisingly cool conditions and was thriving in the high humidity under rowcover placed over the crop to retain heat. Improving air circulation seemed to help discourage infestations from moving from the soil up onto plants.

Just over a decade ago I started to get reports of leafhoppers damaging greenhouse herbs, specifically lavender, rosemary and mint. Leafhoppers are uncommon as pests indoors, but the sage (aka mint) leafhopper has taken readily to the indoor environment to become a year-round pest of plants in the mint family (and one or two others). Feeding causes small, pale blotches on foliage and some leaf stunting and distortion as well. We also see it as a pest on the same plants outdoors, as well as some ornamentals like *Nepeta*. It is not very amenable to biological control. A very similar species, Ligurian leafhopper, affects many of the same herb plants but has a more limited US distribution.



Cabbage whitefly has broader wings than other common species, each with two pale gray spots



Red-legged winter mites and damage to spinach

The above is just a starter list of some of the pests observed in high tunnel and greenhouse food production. If new to growing, work with other growers and/or Extension specialists to include pest management in the production plan. If biological control is to be included build in a way to verify quality control as shipments arrive and make adjustments as needed. Keep a list of labeled insecticides and miticides on hand, organic or conventional, to be prepared just in case, and learn what to expect with any biological or insecticide treatment. Most of all, try to build in strategies that minimize risks of damaging infestations, such as providing a crop-free break in the production cycle, avoiding introduction of cutting-grown material and older plants from outside, being and training staff to be observant, cleaning up old crops and residue promptly, and keeping areas free of weeds that can be alternate hosts for pests and disease organisms.



Onion aphid on garlic chives



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