

Basil is one of the most popular culinary herbs. To assist basil growers, Johnny's offers some basic information on insects and diseases affecting basil production. It is important to note that this information does not cover every problem that can occur with basil. If you notice a problem in your field or greenhouse, contact your local cooperative extension or agricultural agency and arrange to have the affected plants tested. Testing is the only sure way to diagnose the cause of a pest or disease problem.

Very few chemical pesticides and fungicides are registered for use on basil. Good cultural practices are important in preventing the onset of problems. For the best chance of having a successful basil crop, use the following guidelines:

- Use quality seed that has been tested for the presence of fusarium wilt fungus.
- Grow your crop in disease-tested soil or sanitized greenhouse conditions.
- Do not grow consecutive basil crops in the same soil.
- Inspect growing areas frequently, and remove any diseased plants immediately.
- Limit overhead irrigation, which can spread disease through the stand of plants.
- Create good air movement by increasing the spacing between plants or using fans.
- Increase the organic matter in the soil, which favors pathogen reduction.
- Consider beginning an IPM (Integrated Pest Management) program.

MAJOR INSECTS AFFECTING BASIL

Aphids: Common warm weather pest. Small, soft-bodied insects with long antennae that are generally wingless. Aphids primarily feed on tender new growth, causing the leaves to appear malformed or puckered. They are visible to the eye, and can be identified by the shiny, clear excretion called honeydew that they leave behind. Aphids can be controlled by a variety of botanical sprays, including insecticidal soap, pyrethrum, rotenone, and horticultural oil. Beneficial parasitic insects such as ladybugs, lacewings, and aphid parasites also are effective aphid controllers.

Japanese Beetles: A major problem for East Coast field growers. These 1/2", metallic green beetles can cause major crop damage in little time. Generally found east of the Mississippi, beetles are quickly spreading westward. Japanese beetle damage is characterized by large uneven holes and chew marks on a plant's foliage. Beetles spend 10 months of the year as grubs in the soil before emerging to breed in the summer. Traps are available to help control the population. Beneficial nematodes, as well as Bt and Milky Spore disease are all controls for the grub stage of Japanese Beetles.

Leafhopper: A problem for the field and greenhouse grower. There are many species of leafhopper. Generally, these insects are 1/8-1/4" long, wedge-shaped and light in color. Leafhoppers can be detected by a distinct stippled or spotted appearance on the tops of affected foliage. Besides causing cosmetic damage to the plants, leafhoppers are also responsible for spreading viral diseases. Pyrethrum, rotenone, neem and horticultural oil sprays are effective against leafhoppers.

Root-Knot Nematode: Nematodes are microscopic roundworms that damage plant roots and interfere with the plant's ability to uptake nutrients and water from the soil. Plant symptoms include wilting, low yield, discoloring and other symptoms related to nutrient deficiency. Adding organic matter to the soil and soil solarization are two possible controls for this pest.

Slug: Most apparent during wet weather. Slug damage is characterized by holes and bite marks on the leaves along with a “slimy trail” left behind by the slug. Slugs are nocturnal feeders. Limiting overhead irrigation helps to reduce slug populations. Keeping the greenhouse tidy and free of debris will reduce places for slugs to hide during the day.

Whitefly: One of the most common pests for the greenhouse grower. There are many species of whitefly, but they can generally be identified as 1/16” long with white bodies and wings. Whiteflies tend to congregate on the undersides of leaves to feed. Yellow sticky cards can be used to monitor the presence of whitefly in the greenhouse. The predatory wasp *Encarsia formosa* is an effective control in the greenhouse. Some botanical insect sprays are also effective, such as pyrethrum, rotenone and horticultural oil.

MAJOR DISEASES AFFECTING BASIL

Fusarium Wilt: A vascular wilt disease, fusarium wilt of basil is caused by the fungus *Fusarium oxysporum f. sp. Basilicum*. Other strains of fusarium attack different plants. Symptoms include wilted leaves, vertical brown streaks on stems, stunted plants, and sudden plant death. Fusarium can be spread through contaminated soil, equipment or seed. Performing a soil test and purchasing seed that has been tested for the presence of fusarium reduces the chances of crop losses. If fusarium is found during a soil test, growing a fusarium resistant basil variety such as Nufar or Aroma 2 is an option.

Gray Mold (Botrytis): A devastating disease, gray mold is caused by the pathogen *Botrytis cinerea*. The characteristic brown to gray fungal growth appears on stems cut for harvest, or on plant debris that may be near the growing area. Poor air circulation and high humidity along with moderately cool temperatures create an environment for the disease to spread. As there are no fungicides listed for use on basil, it is important to keep the growing area clean to prevent disease.

Root Rot, Damping Off (*Rhizoctonia solani*; *Pythium spp*) : Sudden wilting and plant collapse are symptoms of these diseases. Both problems are intensified by high humidity and poor air circulation. In a greenhouse environment, using sterile soil and clean pots can reduce these problems.

Leaf Spot (*Pseudomonas*; *Colletotrichum*): Black spots or lesions on leaves are often signs of a disease. Diagnosis without lab tests of a plant sample is difficult. High humidity and overhead watering can spread these diseases.

RESOURCES AND REFERENCES

Craker, Lyle and Halva, Seija. 1996. Manual for Northern Herb Growers. HSMP Press, Amherst, MA.

Miller, Richard Alan. 1992. The Potential of Herbs as a Cash Crop. Ten Speed Press, Berkeley, CA.

Shores, Sandie. 1999. Growing and Selling Fresh Cut Herbs. Storey Books, Pownal, VT. 1999

ATTRA - www.attra.org

University of Hawaii Cooperative Extension – www.extento.hawaii.edu/kbase/reports/specialty.htm

Australian New Crops Newsletter – www.newcrops.uq.edu.au