

Japanese Beetles

Information Compiled from UMN Extension, BFG Supply Company

Quick facts

- Japanese beetles are an invasive species.
- Japanese beetles feed on the leaves, flowers or fruit of more than 300 species of plants.
- Japanese beetle grubs are pests of turfgrass. They chew grass roots, causing the turf to brown and die. Grub-damaged turf pulls up easily from the soil, like a loose carpet.
- Japanese beetle infestations in Minnesota are mostly found in the Twin Cities metropolitan area and southeast region of the state.
- There are both nonchemical and insecticide options for managing Japanese beetle adults and grubs.
- Feed in large groups, only in sunny areas of the yard. Wooded/shady areas will not be significantly affected.
- You may not see them if you're gone during the day – they may only see the damage.
- Plant favorites: anything in the rose family, birch, linden, basil, white and yellow flowers, native evening primrose

Japanese beetles (*Popillia japonica*) were first found in the United States in 1916, after being accidentally introduced into New Jersey. Until that time, this insect was restricted to Japan where it is not a major pest. This pest is considered to be an invasive species. It is now found throughout the eastern U.S., except for Florida, and continues to move westward.

How to identify Japanese beetles:

Adult

- Approximately 1/3 to 1/2 inch long.
- Metallic green head and thorax (the area behind the head) with copper-brown wing covers.
- Sides of abdomen have five white patches of hairs, and tip of abdomen has two patches of white hair.

Larva (white grubs)

- C-shaped, white to cream-colored grubs with a distinct tan-colored head.
- Legs are easy to see.
- From 1/8 inch up to about one inch long.
- Japanese beetle grubs look like other white grubs and can only be positively distinguished by examining the pattern of spines and hairs on the underside of the tip of the abdomen.

Damage caused by Japanese beetles

Japanese beetles are a serious pest of flowers, trees and shrubs, fruits and vegetables, field crops and turf. Adults feed on more than 300 plant species, whereas the grubs feed mainly on the roots of grasses.

Adult Japanese beetle damage

Adult Japanese beetles feed on the leaves, flowers and fruits of many different plants. Preferred plants include rose, grape, linden, apple, crabapple, cherry, plum and related trees, birch, elm, raspberry, currant, basil, Virginia creeper, hollyhock, marigold, corn silks and soybean.

They skeletonize leaves by feeding on tissue between the major veins giving them a lace-like appearance. Damaged leaves turn brown and may fall off.

Adult Japanese beetle damage usually affects only the appearance of plants.

- Healthy, mature trees and shrubs can tolerate a lot of feeding without significant, long-term injury.
- Young or unhealthy plants may be stunted, injured or even killed from severe, persistent feeding.
- Healthy flowering plants such as roses can survive Japanese beetle feeding. But the blossoms are often ruined by the insects.
- Fruits, vegetables and herbs can tolerate limited leaf feeding, but severe damage may affect plant growth and reduce yield.
- Regular harvesting during July and August can decrease feeding on edible parts of the plant.

Japanese beetle grub damage

Grubs chew grass roots and reduce the ability of grass to take up enough water and nutrients to remain healthy. When grub feeding is severe, dead patches of grass develop.

These dead patches can be rolled back like a carpet due to the lack of roots. If grubs are not found, examine still living turf at the edges of damaged areas for their presence.

Healthy turf grass can typically tolerate up to 10 grubs per square foot. Follow recommended lawn care practices to promote a healthy lawn.

Moles, skunks, crows and other insect-feeding animals may dig up grubs, further damaging the turf.

Managing adult Japanese beetles

Japanese beetles can be very abundant in some years and less in others.

Japanese beetles are not the end of the world. There are many ways to deal with them.

In most cases, Japanese beetle damage is cosmetic only and will not kill plants.

When to manage: Start early!

Look for beetles in your yard and garden starting in late June and early July. Start management when they first appear. Damaged leaves attract more beetles so minimizing beetles on plants should mean fewer beetles will be attracted to them.

Japanese beetles feed for six to eight weeks so it is important to continue management until their numbers decrease. Once they are present in large numbers, managing them becomes more difficult.

Most feeding is finished by mid to late August.

Non-chemical management options

Physical removal

- Physically removing adults can be a good non-chemical option. Physically removing beetles can be a practical and effective management practice for smaller landscapes or a few plants, especially when only small numbers of Japanese beetles are present. Handpick or knock the beetles into a bucket of soapy water to kill them.
- Check your plants daily and remove any beetles that you find to minimize feeding damage. Remember beetle-damaged leaves emit air-borne chemicals that attract more beetles. By physically removing them, you'll reduce the number of new beetles attracted to your plants.
- The best time to remove Japanese beetles is in the evening or in the morning when beetles on the plants are still cool and sluggish. However, anytime that it can be done is still useful.

Physical barriers

- Netting can help keep Japanese beetles off plants
- In some cases, it is possible to protect plants with fine netting to prevent beetle damage. However, do not cover plants in bloom that require pollination (i.e. fruits) as this will prevent pollinators from reaching them. Instead, handpick beetles until the plant is done blooming and starting to set fruit, then cover it.

Traps

- Some love, others hate them. Will draw beetles from a larger area. Place away from the plants you're trying to protect. Best to use in conjunction with sprays/drenches. Will take beetles out of circulation, preventing them to cause more damage and from reproducing – without the use of pesticides.
- The traps attract beetles using synthetic female sex pheromone and a blend of chemicals with a strong floral odor. They were developed by researchers to monitor for the presence of Japanese beetles so that management strategies could be implemented.
- While these traps can collect an impressive number of beetles, research at the University of Kentucky has demonstrated that more beetles fly toward the traps than are caught. This usually results in more damage to nearby gardens and landscape plants than would have happened if no traps were present.

Using less preferred plants

- Plant a catch crop or plants the beetles prefer that you don't mind them damaging (e.g. native evening primrose).
- Although Japanese beetles feed on many different kinds of plants, there are some that they seldom damage. When choosing new plants for your landscape, consider using a less preferred plant.
- Plants usually not damaged by Japanese beetles include boxwood, clematis, chrysanthemum, conifers (e.g. arborvitae, spruce, fir, pine), daylily, geranium, ginkgo, Japanese tree lilac, forsythia, common lilac, magnolia, red and silver maple, oak, white poplar, redbud, rhododendron and yew.

Biological control

- Two natural enemies of Japanese beetles have been released in Minnesota. The fly *Istocheta aldrichi* lays eggs on adult Japanese beetles in summer, whereas the wasp *Tiphia vernalis* parasitizes grubs in the spring. Although both natural enemies became established here, neither is very abundant and they have little impact on Japanese beetle populations.

Chemical options

If physical removal and barriers are not practical or you wish to supplement non-chemical management, you may choose to use an insecticide to protect valued plants. Remember that insecticides can pose significant risks to beneficial insects, including pollinators, as well as birds, fish and mammals.

Low risk insecticides

- Products containing pyrethrins (e.g. Pyola®) are somewhat effective contact insecticides provided they are sprayed directly on the insect. Repeat applications are necessary. Avoid spraying bees and beneficial insects as these products are toxic to these non-pests as well.
- Neem oil is effective for several days but repeat applications are necessary. Neem oil helps deter Japanese beetles but is less effective when large numbers are present. This product is low risk to bees and other beneficial insects.
- *Bacillus thuringiensis galleriae* (e.g. BeetleGone, BeetleJus), derived from soil bacteria, is moderately effective against Japanese beetle adults, giving one to two week's protection. This product is not toxic to bees and other beneficial insects. *Bacillus thuringiensis galleriae* is only available from online sources.

Residual insecticides

- Several effective, longer lasting insecticides are available for treating Japanese beetles. Chlorantraniliprole (Acelepryn®) provides two to four weeks protection and is low risk to bees. Pyrethroids, including bifenthrin, cyfluthrin, lambda cyhalothrin, and permethrin, last about two to three weeks. Carbaryl or acephate will provide one to two weeks' protection
- Caution: pyrethroids, carbaryl, and acephate are toxic to bees and other pollinators.

Systemic insecticides

- A systemic insecticide is absorbed by the plant and moved through its tissues and is applied as a soil drench or injection, a trunk spray or a trunk injection. This can be useful to avoid pesticide drift, especially when treating large trees.
- Trunk injections should be done by a certified tree care professional.
- Imidacloprid and dinotefuran, both neonicotinoids, are available to residents. They are applied to the soil and only one application is needed per year. Do not apply to soil within 4-5 feet of pollinator attractive plants.
- Caution: Imidacloprid and dinotefuran are very toxic to pollinators. Either avoid applying these insecticides to bee attractive plants or wait until the plants have finished blooming before treating them.

- Professional pesticide applicators have access to chlorantraniliprole (Acelepryn®). This product is long lasting and is a low risk to bees. Professional pesticide applicators can also apply acephate (Lepitech) systemically as a soil drench. Acephate is toxic to bees so applications should not be made near bee attractive plants until after bloom.

CAUTION: Mention of a pesticide or use of a pesticide label is for educational purposes only. Always follow the pesticide label directions attached to the pesticide container you are using. Be sure that the plant you wish to treat is listed on the label of the pesticide you intend to use. And observe the number of days between pesticide application and when you can harvest your crop. Remember, the label is the law.

Options at Hanson's Garden Village

For adults, spray:

- Bonide Captain Jack's (natural) – beetles will stop feeding immediately but will be alive for a couple of days
- Bonide Eight (conventional) – fast kill

Grubs:

- BioAdvanced Season Long Grub Control (apply July-August)
- BioAdvanced 24hr Grub (apply fall or spring but only when a large # of grubs are observed – lift grass in a 1 sq ft area and count grubs)
- Bonide Eight Granular

Roses:

- BioAdvanced All in One Rose Drench (will protect leaves) + spray a contact insecticide on the buds (e.g. Bonide Eight)

Trees & Shrubs:

- Bonide Annual Tree & Shrub Insect Control (imidacloprid)