



Crop Pest

Japanese Beetle

Popillia japonica



Japanese Beetle, *Popillia japonica*
Photo Credit Katja Schulz

Description

The Japanese Beetle is an invasive pest that arrived from Japan and was first discovered in the US in New Jersey in 1916. Since then, it has established in the eastern US which has a favorable climate and slowly spread Westward across the United States. The USDA currently has a Japanese Beetle Quarantine in the West to protect the agricultural crops and stop the spread of this destructive pest.

Adult Japanese beetles are 7/16" long with shiny metallic green bodies covered with bronze outer wings and tufts of white hair along the sides and back. They emerge from the ground in early summer and feed for 4-6 weeks. The soil-dwelling larvae or grubs are about an inch long when fully grown, C-shaped, white to cream-colored with a distinctive tan-colored head.

Target Crops

Adult Japanese beetles feed on hundreds of plant species, eating the foliage between the veins and giving the plant a skeletonized appearance. The adults are serious pests of flowers, trees, shrubs, fruits, vegetables, and field crops, while the grubs feed mainly on the roots of grasses and are a threat to lawns, golf courses and pastures. Especially prone to damage are roses, grapes, lindens, sassafras, Norway maple, Japanese maple, and plums.

Life Cycle

Adults emerge from the ground in early summer, mate and the females lay their eggs in the top 2-3 inches of soil several times over the summer for a total of up to 60 eggs. Dry soil conditions can decrease the egg survival and because of this, females are attracted to moist grassy areas. The

developing larvae or grubs spend the next 10 months in the soil feeding on roots. When the soil cools to around 60°F in the Fall the grubs move deeper into the soil to overwinter. When the soil temperatures rise above 50°F in the Spring the grubs move back to the root zone. After feeding for 4-6 weeks, they pupate and surface in June or July, hungry and ready to attack susceptible plants. Adult Japanese Beetles are highly mobile and can infest new areas several miles away.



The Japanese beetle life cycle (Illustration by APHIS employee Joel Floyd)

Beneficial Insect Control

Beneficial nematodes—Both *Steinernema carpocapsae* and *Heterorhabditis bacteriophora* are effective for beetle larvae. These parasitic roundworms actively seek out grubs in the soil. The [3-way blend](#) is a good option. These parasites can be applied to the soil to infect and kill soil dwelling pests. While nematodes will not kill adult stages, they will lower Japanese beetle populations by decreasing the larval stages. Nematodes can be used in an irrigation system. Refer to our [Beneficial Nematode Tech Sheet](#) for rates and further information.

Insecticide Options- Use in rotation for best results.

For adults on foliage

- Azadiractin or neem oils act as insect growth regulators, antifeedants and ovipositional deterrents. These include [AzaGuard](#) and [Molt-X](#).
- For a quick knockdown, use [Pyganic](#) with Pyrethrin for an organic adulticide.
- Surround WP is another option. This contains kaolin clay which acts as a mechanical barrier, irritant and disrupts the beetle's ability to find host plants.

For larvae/grubs below ground

- Mycoinsecticides containing entomopathogenic fungal spores. These include [Botanigard](#), [Mycotrol](#), [NoFly](#) and [PFR 97](#). [LalGuard M-52 OD](#) used as a drench is especially good for the soil dwelling grub stage.
- Milky Spore contains the bacterium *Bacillus papillae* and was developed specifically for Japanese Beetle control. Milky spore disease builds up in turf slowly over 2-4 years as grubs ingest the spores. Works best when applied in a community-wide treatment program.

Cultural Control Tips

Removing Japanese beetles by hand may help to control beetle infestations in small plantings. The presence of beetles will attract more beetles. An easy way to remove beetles is to shake them off the plants in the early morning when they are sluggish. Brushing them into a bucket of soapy water will kill them. High value plants such as roses can be covered with a fine netting during peak beetle activity for protection.

Use traps with caution. Japanese beetle traps have proven to attract more beetles than are actually caught, thus causing increased damage to plants.

Selecting the right plants can go a long way in controlling Japanese Beetles. Some species are highly prone to damage, while others are resistant to attack. Following is a list from the [USDA](#) on best and worst plants for Japanese Beetle. Most evergreen ornamentals are not attacked (*Abies*, *Juniperus*, *Taxus*, *Thuja*, *Rhododendron*, *Picea*, *Pinus* and *Tsuga*)

20 Herbaceous Plants Resistant to Adult Japanese Beetle Feeding

1. *Ageratum*, *Ageratum spp.*
2. *Columbine*, *Aquilegia spp.*
3. *Dusty Miller*, *Centaurea cineraria*
4. *Begonia*, *Begonia spp.*
5. *Lily of the Valley*, *Convallaria majalis*

6. *Coreopsis*, *Coreopsis* spp.
7. *Larkspur*, *Delphinium* spp.
8. *Foxglove*, *Digitalis* spp.
9. *California Poppy*, *Eschscholzia californica*
10. *Coral Bells*, *Heuchera sanguinea*
11. *Hosta*, *Hosta* spp.
12. *Impatiens*, *Impatiens* spp.
13. *Lantana*, *Lantana camara*
14. *Forget-me-not*, *Myosotis* spp.
15. *Pachysandra*, *Pachysandra* spp.
16. *Poppy*, *Papaver* spp.
17. *Moss Rose*, *Portulaca grandiflora*
18. *Showy Sedum*, *Sedum*, *spectabile*
19. *Nasturtium*, *Tropaeolum majus*
20. *Violet*, *Pansy*, *Viola* spp.

Herbaceous Plants Susceptible to Adult Japanese Beetle Feeding

1. *Hollyhock*, *Alcea rosea*
2. *Dahlia*, *Dahlia* spp.
3. *Hibiscus*, *Hibiscus moscheutos*
4. *Common Mallow*, *Malva rotundiflora*
5. *Evening Primrose*, *Oenothera biennis*
6. *Rose*, *Rosa* spp.
7. *Grape*, *Vitis* spp.
8. *Sweet Corn*, *Zea mays*
9. *Sunflower*, *Helianthus annuus*
10. *Peony*, *Paeonia* spp.

It's always a good idea to check with your state department of agriculture for regional Japanese Beetle information, control options, quarantine protocols and pest levels in your specific area.

Sources

Animal and Plant Health Inspection Service, USDA, Japanese Beetle

https://www.aphis.usda.gov/plant_health/plant_pest_info/jb/downloads/JBhandbook.pdf

Japanese Beetles in the Urban Landscape, Entomology, University of Kentucky

<https://entomology.ca.uky.edu/ef451>

Japanese Beetles in Yards and Gardens, University of Minnesota Extension

<https://extension.umn.edu/yard-and-garden-insects/japanese-beetles#life-cycle-1057360>