

Management of Japanese Beetle Adults

Tom Eickhoff, Research Technician III, Entomology
 Chelsey Wasem, Graduate Research Assistant, Entomology
 Fred Baxendale, Extension Specialist, Entomology
 Kim Todd, Extension Specialist, Agronomy & Horticulture

The appearance of and damage by Japanese beetle adults are described in this NebGuide.

The Japanese beetle was introduced into the United States from Japan in 1916 on infested nursery stock. Since that time it has become established throughout the Eastern United States where it is one of the most destructive plant pests in urban landscapes. In Nebraska, Japanese beetles were introduced on infested nursery stock in the early 1980s. The beetles were found trapped during the 1980s and 1990s, although positive reports were typically small and widely scattered. However, in the early to mid-2000s, isolated outbreaks were observed, and Japanese beetles now are an established pest in two counties in eastern Nebraska.

Description and Life Cycle

Adult Japanese beetles have a metallic green head and thorax with coppery brown wing covers and five tufts of white

hair on each side of the abdomen. The beetles are broadly oval, and about 0.3 to 0.5 inches long and 0.25 inches wide (*Figure 1*). Soon after emergence, beetles mate and females seek moist, well maintained areas of turf, often a lush golf fairway or irrigated home lawn, to deposit their eggs. Eggs are laid in the upper 2 to 3 inches of the soil in clusters of one to four eggs. A female Japanese beetle can lay a total of 40 to 60 eggs over her 30- to 45-day lifespan.

Japanese beetle grubs are readily distinguished from other white grubs by the distinct “V” shape patterns of hairs on the underside of the last segment of the abdomen (*Figure 2*). They feed on the roots of a wide variety of plants including cool season grasses, weeds, woody ornamentals and other ornamental plants.

Most Japanese beetle grubs feed in the upper 2 inches of the soil by consuming roots below the soil surface. The majority of grub damage occurs during late summer and early fall. Japanese beetles overwinter as third stage grubs beneath the soil surface. (For further information on Japanese beetle grub biology and control, see NebGuide G1619).

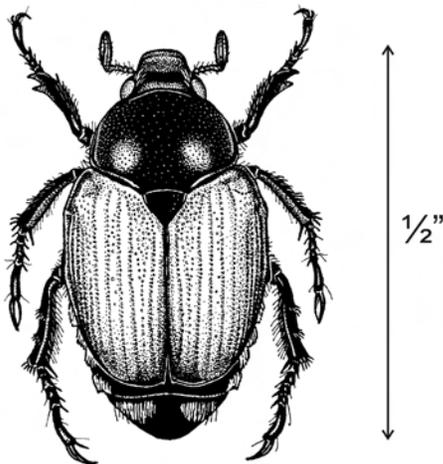


Figure 1. Adult Japanese beetle.

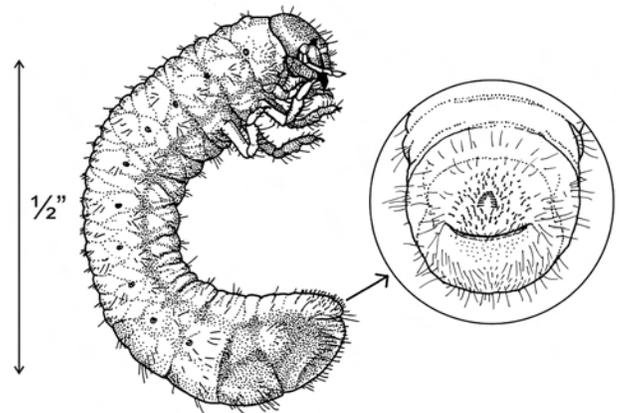


Figure 2. Japanese beetle grub.

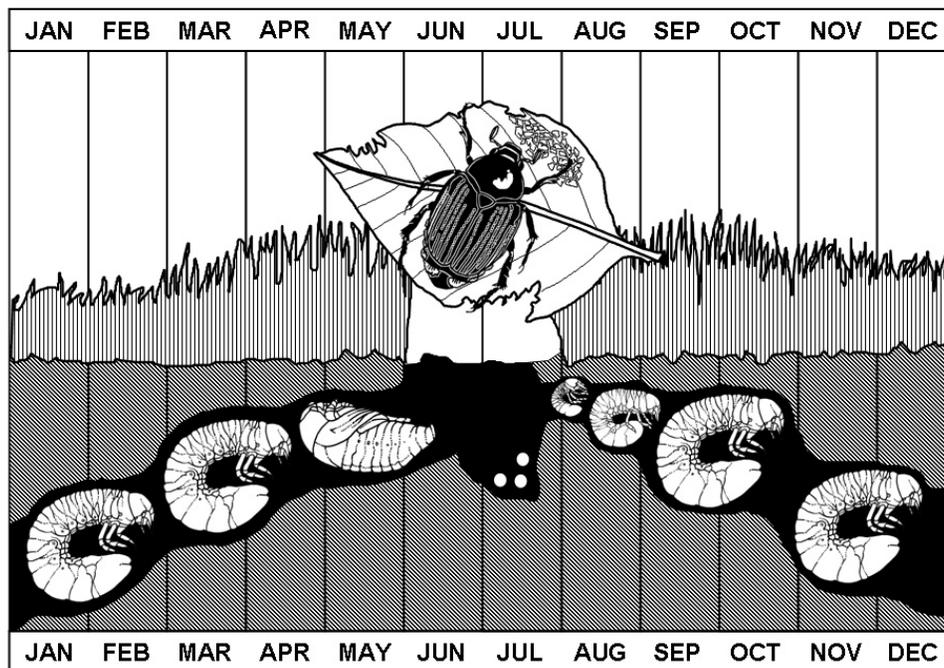


Figure 3. Japanese Beetle Life Cycle.

Table I. Resistant and susceptible landscape plants.

Resistant Plants		Susceptible Plants	
Silver maple	<i>Acer saccharinum</i>	Roses	<i>Rosa</i> spp. and hybrids
Red maple	<i>Acer rubrum</i>	Purpleleaf sandcherry	<i>Prunus x cistena</i>
Flowering dogwood	<i>Cornus florida</i>	American elm	<i>Ulmus americana</i>
Common boxwood	<i>Buxus sempervirens</i>	Summersweet clethra	<i>Clethra alnifolia</i>
Border forsythia	<i>Forsythia x intermedia</i>	Arrowwood viburnum	<i>Viburnum dentatum</i>
White ash	<i>Fraxinus americana</i>	Pin oak	<i>Quercus palustris</i>
Green ash	<i>Fraxinus pennsylvanica</i>	Norway maple	<i>Acer platanoides</i>
Paperbark birch	<i>Betula papyrifera</i>	Japanese maple	<i>Acer palmatum</i>
Saucer magnolia	<i>Magnolia x soulangiana</i>	Pussywillow	<i>Salix discolor</i>
Eastern redbud	<i>Cercis canadensis</i>	Crabapple ^c	<i>Malus baccata</i> hybrids
Crabapple ^a	<i>Malus baccata</i> hybrids	American linden ^d	<i>Tilia americana</i>
Crabapple ^b	<i>Malus hupehensis</i> hybrids	Littleleaf linden ^e	<i>Tilia cordata</i>

^acultivars: Harvest Gold, Strawberry Parfait

^bcultivars: Liset, Royalty, Dolgo, Radiant, Velvet Pillar, Hopa, Red Splendor, Weeping Candied Apple

^ccultivars: Jewelberry, Golden Raindrops, Lousia

^dcultivars: Legend, Redmond

^ecultivars: Chancellor, Fairview, Glenleven, Greenspire, Olympic, Prestige

Adult Feeding Habits

Shortly after leaving the soil, newly emerged beetles seek out suitable food sources and begin to feed. Japanese beetles are aggressive feeders on foliage and fruit of nearly 300 species of landscape plants. Japanese beetles feed on the upper leaf surface, removing the soft tissue of the leaf and leaving the veins in a lacelike or skeletonized pattern. Japanese beetles release a strong aggregation pheromone that attracts additional beetles to a potential food source.

Management of Adults

Adult Japanese beetles can be managed using an Integrated Pest Management (IPM) approach. As with most landscape pests, a combination of tactics including appropriate plant selection, proper landscape management and pest monitoring are the first lines of defense. When these approaches fail to achieve acceptable control, additional methods may need to be used.

Mechanical Control — Hand Removal. By monitoring adult activity, beetles arriving in your landscape can be detected and removed by hand before they attract additional beetles. Picking beetles from plants and dropping them in a bucket of soapy water early in the morning or late in the afternoon when they are less active and easier to grab may help reduce populations.

Cultural Control — Trapping. Traps that use both a floral lure and sex attractant are available for monitoring Japanese beetle adult activity. However, these traps are ineffective for managing beetles.

Cultural Control — Plant Selection. Japanese beetles have been documented to damage a wide range of landscape plants. By selecting resistant or less-preferred plant material, Japanese beetle infestations can be reduced and damage

minimized. *Table I* lists some common landscape plants with known resistance or susceptibility to Japanese beetles. For further information on this subject refer to the *Guide to Selecting Landscape and Garden Plants Based on Susceptibility to Adult Japanese Beetles* published by David Held, Mississippi State University Extension Service.

Insecticidal Control. Adult Japanese beetles can be controlled through the use of several insecticide products. For a current listing of registered insecticides refer to the Department of Entomology Web site at www.entomology.unl.edu/turfent/. Sprays may be needed every five to 10 days during periods of heavy adult activity. Insecticidal grub control in a residential lawn will not eliminate the potential for adult Japanese beetles in the landscape the following year. Adults can travel up to several miles to a food source and can move from untreated lawns.

Always read, understand and follow all label directions and precautions. Keep insecticides in original containers with the label intact. Do not contaminate food, water or dishes. Keep insecticides out of reach of children and uninformed adults and do not allow children or pets near treated surfaces until dry.

To simplify terminology, trade names sometimes may be used. No endorsement of products is intended nor is criticism implied of products not mentioned.

UNL Extension publications are available online at <http://extension.unl.edu/publications>.

Index: Insects and Pests
Turf
Issued May 2006

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

University of Nebraska–Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.

© 2006, The Board of Regents of the University of Nebraska on behalf of the University of Nebraska–Lincoln Extension. All rights reserved.