

*Providing Leadership in Environmental Entomology*

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## JAPANESE BEETLE

The adult Japanese beetle (Figure 1) is a brightly colored oval insect about  $\frac{1}{3}$  to  $\frac{1}{2}$  inch long. The body and legs are a bright metallic green while the elytra (wing covers) are coppery brown. The Japanese beetle is distinguished from any other beetles with similar coloration by the white spots or tufts, five on each side and a pair at the tip of the abdomen. Females are slightly larger than the males. The larva (grub) (Figure 2.) is about  $\frac{3}{4}$  to 1 inch long when mature and usually takes on a crescent shape when exposed. It is grayish white with a yellowish brown head. The larvae can be distinguished from other "white grubs" by a V-shaped row of spines on the underside of the last segment of the body (Figure 3).



Figure 1. Adult Japanese beetle.



Figure 2. White grub.

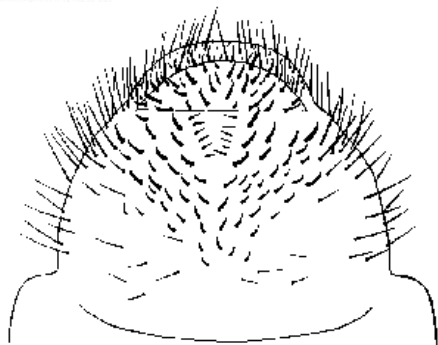


Figure 3. Spine arrangement on the underside of the last segment of the body. Note the "V-shaped" arrangement.

Adults are voracious feeders on the fruit and foliage of more than 275 kinds of trees, shrubs, flowers, and other plants. A ripe peach may have 100 beetles clustered on it. Leaves attacked by the beetle have a lacy appearance since everything but the veins is consumed. Beetles may also affect the development of sweet corn by eating the silks and preventing pollination. The larvae feed on the roots of grass. Severe damage can occur on lawns, golf courses, and pastures when populations of 10 or more larvae/square foot are present. Large areas of brown grass often show up during dry spells in September and October. Under heavy populations, large pieces of sod can easily be peeled back revealing the larvae.

The life cycle requires about one year. Adult beetles begin emerging in mid-May and early June. Peak emergence is reached by early July. Adults remain active for 4-6 weeks. Egg-laying takes place in July. Eggs are laid in small clusters in cells 2-4 inches below the soil surface. Each female lays 40 to 60 eggs during her life. In about 10 days the larvae hatch, move into the root zone, and begin feeding. As winter approaches, the grubs move deeper and form an earthen cell where they spend the winter. Early in the spring they move back to the root zone and resume feeding. Pupation takes place in late April and May. During this stage the insect transforms to the adult stage.

Birds feed on the adult beetles to some extent and the larvae are attacked by several parasites. Prolonged dry weather during the egg laying and larval hatching periods can kill many young grubs. However, all of these are insufficient to keep population levels low enough to prevent injury to choice ornamentals. Individual shrubs and small trees can be covered with netting. Traps are available and are highly attractive to the adult beetles. Unfortunately, unless many traps are concentrated in a community, they will not provide control. In fact, single traps may result in worse damage than if no traps were used. This is because the beetles are strong fliers and are attracted from considerable distances. Many times they land on shrubs near the trap and feed before moving into the trap. If traps are used, they should be placed 20 to 30 feet away from the plants that are to be protected.

Chemical controls include carbaryl (Sevin), malathion, and cyfluthrin (Bayer Advanced Garden Rose & Flower Insect Killer). Always READ THE LABEL before using to check for any special instructions and precautions. During peak beetle activity, treatment will have to be made at weekly intervals to provide adequate protection.

Grub control can be approached from two ways. They are highly susceptible to a disease called milky spore disease. It is caused by a bacterium and is highly specific to Japanese beetle larvae. Once the milky spore disease is established, it remains active for 20-30 years. The only drawback is that it takes 2-3 years to achieve complete control. It is available as a dust or spore powder under the trade name MILKY SPORE. Follow label directions for application.

Several chemicals, including carbaryl (Sevin), trichlorfon (Bayer Advance Lawn 24 Hour Grub Control), and imidacloprid (Bayer Advanced Lawn Season-Long Grub Control) are labeled for Japanese Beetle grub control. However, they only

provide temporary control. Best results are obtained when the insecticide is washed into the soil immediately after application. Advanced Season-Long Grub Control should be applied in May. The others should be applied between August and mid-October.

Additional help and information can be obtained from your local County Extension Agent.

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EIS/TO-5 (New 11/1997, Revised 10/2002).