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THE JAPANESE BEETLE



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... HOW WE FIGHT IT

THE JAPANESE BEETLE

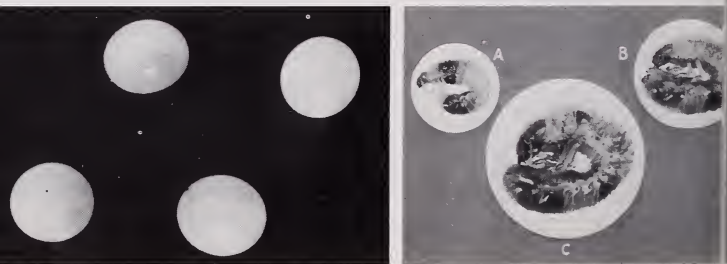
. . . HOW WE FIGHT IT

The Japanese Beetle is a highly destructive plant pest. The grub feeds on the roots of grasses and destroys turf. The adult feeds on flowers, shrubs, trees, and fruit; and on field crops, such as corn and soybeans.

A native of Japan, the beetle was discovered in the United States in 1916 near Riverton, N.J. It has since spread over much of the Eastern United States and is now found from southern Maine southward into Alabama and Georgia and westward into Michigan, Illinois, Missouri, and Tennessee.

Grubs of the Japanese beetle feed on the roots and underground stems of grasses and other plants. Often this feeding goes unnoticed until the plants fail to grow properly, or until they die. When the grubs are numerous, they can cause serious damage to turf.

Adult Japanese beetles feed on nearly 300 different kinds of plants. The beetles often congregate and feed on flowers, foliage, and fruit that are exposed to bright sunlight.



J-722, BN-33300

Left, eggs of the Japanese beetle. About 7 times natural size. Right, grub in three stages of growth: (A) Midsummer; (B) early autumn; (C) late autumn and spring. About natural size.

When feeding on leaves the beetles usually chew out the tissue between the veins and skeletonize the leaves. Sometimes they make many large, irregular holes in the leaves.

If a tree or shrub is heavily infested with Japanese beetles it can lose most of its leaves in a short time.

The beetles often mass on ripening fruit and feed until nothing edible is left. They seldom feed on unripe fruit. They seriously damage corn by eating the silk as fast as it develops. This prevents the kernels from forming.

The adult Japanese beetle is a little less than $\frac{1}{2}$ -inch long and has a shiny green body and bronze-colored outer wings. It has six small tufts of white hairs along each side of its body, under the edges of the wings. The male and female beetles look similar, but the males usually are slightly smaller than the females.



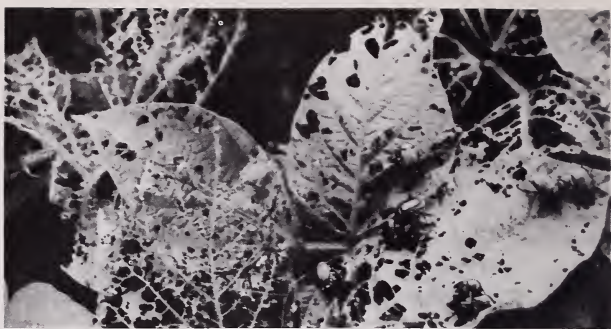
BN-33298, BN-5089

Pupa (left), about $3\frac{1}{2}$ times natural size. Adult Japanese beetle (right), about $2\frac{1}{2}$ times natural size.



PN-1911

Turf damaged by grubs.



PN1912, BN-33302

Top, beetles feeding on soybean leaves. Bottom, beetles feeding on peaches.

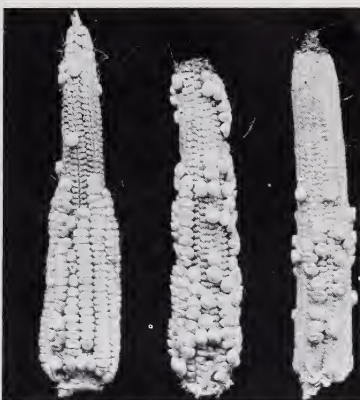
The Japanese beetle spends about 10 months of the year in the ground as a white grub. The grub is similar to our native white grub, but it is usually smaller, about 1 inch long when fully grown. It lies in the soil in a curled position.

The adult beetles first appear on their favorite food plants in late spring or early summer, depending on the area. They are very active for 4 to 6 weeks. Then they gradually disappear.

The beetles fly only in the daytime. They are particularly active on warm, sunny days and move quickly about the plants.

From time to time, the female beetles leave the plants on which they have been feeding, burrow about 3 inches into the ground—usually where there is turf—and lay a few eggs from which the grubs will later hatch. After the eggs are laid, the females return to the plants and continue to feed.

By midsummer the eggs hatch and the young grubs begin to feed. In late autumn the grubs burrow 4 to 8 inches into the soil. They remain inactive all winter. In



BN-7846X, BN-33299

Beetle damage to corn. Left, beetles feeding on cornsilks. Right, resulting malformation of ears.

early spring they return to the turf, where they continue to feed on roots until late spring. Then they change into pupae. In about 2 weeks the pupae become adult beetles and emerge from the ground.

The life cycle takes 1 year.

Your Federal and State governments are working together to control the Japanese beetle with surveys to find it, quarantines to keep it from moving to new areas, treatments with biological organisms and chemical pesticides to suppress it, and research to find safer, more effective ways to combat it.

SURVEYS

Plant protection workers use survey traps to find new infestations. Aromatic baits are placed in the traps to attract the beetles. The traps, usually green or yellow, are the major detection device in the Federal-State program.

The workers also examine favored host plants to find the beetles. Once the skeletonized leaves are discovered, the adult beetles are usually found very quickly.

QUARANTINES

Beetle-infested areas are under Federal and State quarantines. The Federal quarantine is designed to prevent interstate spread of the pest; State quarantines serve to halt its spread within State Borders. These quarantines require articles that might harbor Japanese beetles to be certified free of the pest before they may be moved from the area.

Some of the articles that must be certified are: soil, grass sod, plants, and soil-moving equipment that has been



PN1913

Applying milky disease powder.

used in the quarantined area. If adult beetles are numerous in an area, certain farm produce may require certification before it is moved to a non-infested area.

Homeowners in the infested areas who wish to swap plants with out-of-town friends should first consult their county agricultural agent or a Federal or State plant protection inspector to determine if quarantine regulations affect the exchange of plants.

Homeowners and gardeners from noninfested areas should remember that a certificate is required for some plants that come from an area under quarantine.

Plant protection workers sometimes apply biological organisms or chemical pesticides to soil and foliage to suppress new infestations before they become unmanageable.

If possible, biological controls are used. One of these is milky disease, a bacterial disease that infects and kills the grub without causing harm to other animal life.

Chemical pesticides are used only where they will not adversely affect the environment or nontarget organisms.

RESEARCH

Entomologists, chemists, engineers, and other USDA scientists are searching for new and safer ways to control the Japanese beetle. Saturation trapping to replace pesticides in control programs is being investigated. New baits and trap distribution patterns are being developed to increase the effectiveness of the survey.

WHAT YOU CAN DO

Your help is needed to prevent the spread of the Japanese beetle. You can help if you do these things:

- Organize a community-wide campaign to treat soil with milky disease. Milky disease is a natural enemy of the Japanese beetle grub. Dust mixtures that contain spores of the organism causing this disease are available commercially but the supply is limited. They are most effective when applied throughout a community, but they may be applied to individual properties. Usually, the disease works slowly, and its effects may not be evident for several years. It kills grubs in the soil, but it does not prevent beetles from flying in from untreated areas. It is harmless to plants and to humans and all other forms of animal life.

- Make your property unattractive to beetles. Remove all ripening and rotten fruit as soon as possible. Clean out weeds and other unwanted plants. Keep desirable plants healthy. If possible, select plants that do not attract the beetles. Do not set out susceptible plants until after the height of the beetle season.

- Protect turf and other plants with chemical pesticides or biological organisms such as milky disease. To obtain these products, contact your local garden supply store. Follow label directions explicitly.

- Report new infestations to your county agricultural agent.

- Do not use beetle traps to protect plants. They may attract more beetles to your property while catching only a small percentage of them, thus increasing the likelihood of damage. Traps are primarily for use by Federal and State officials to obtain information about the distribution and spread of the beetle.

- Check with your county agricultural agent or your State or Federal plant protection inspector if you are moving to another area, or if you intend to swap plants with out-of-town friends. These officials can tell you what quarantine restrictions you will need to observe. Insect collectors should not exchange live insects. Do not mail live insects.



Use Pesticides Safely

FOLLOW THE LABEL

U. S. DEPARTMENT OF AGRICULTURE

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