UNIVERSITY OF KENTUCKY

COLLEGE OF AGRICULTURE ● DEPARTMENT OF ENTOMOLOGY

ENTFACT-143

JAPANESE BEETLE IN KENTUCKY SOYBEAN

Popillia japonica, (Coleoptera: Scarabaeidae)

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The Japanese beetle is a relatively new insect in many Kentucky soybean fields. This pest, best known for destroying roses and grapes, has been slowly moving from northeast to southwest across the state. Japanese beetles are now distributed throughout the state, but the largest populations are still in central Kentucky and eastward.

Adults are ½ inch-long, metallic green and bronze beetles. There is a row of white tufts on the side of the body below the bronze wing covers. The larvae (immature stages) are white grubs. They are found in the soil from late summer through the winter until about June. Adults emerge in early June and stay around feeding on a wide variety of plants until about August.

Egg-laying begins soon after adults emerge from the ground and mate. Females leave plants in the afternoon, burrow 2 to 4 inches into the soil in a suitable area, and lay their eggs. Females lay 1 to 4 eggs every 3 to 4 days for several weeks - a total of 40 to 60 during their life. The grub or larval stage hatches from the egg. The Japanese beetle spends about 10 months of the year in the soil as a white grub. The grubs grow quickly and by late August are almost full-sized (about 1 inch long). They feed on the roots of living plants but are of little importance in soybean fields. For a more in-depth understanding of the biology of this insect see Entfact-409, *Japanese Beetle*.

The main damage to soybeans is caused by adults. They feed in groups, starting at the top of a plant and working downward, and prefer plants exposed to direct sunlight. A single beetle does not eat much; it is group feeding by many beetles that causes the severe damage. Adults feed on the upper surface of foliage, chewing out tissue between the veins. This gives the leaf a characteristic skeletonized appearance. Infestations often begin on smartweed, a favorite food of this insect, and spill over to soybean plants after the weeds are eaten up.

Because Japanese beetles feed in such large numbers, it is not hard to determine whether or not they are damaging your plants. What is important is how much damage they are causing. To determine if their feeding is of economic importance, we use estimates of leaf defoliation. As with all sampling, select several areas of the field and at each location estimate the amount of defoliation that has occurred. The soybean IPM manual (IPM-3) contains graphics that can help you estimate defoliation levels. As a rule of thumb, most people tend to over estimate the amount of loss. When you have made several estimations, average your figures to obtain a single estimate for the whole field.

If your field is in the prebloom vegetative stages, 35% defoliation is needed before a control is warranted. If the plants have reached the bloom stage, you should refer to the Defoliation tables in ENT-13 or IPM-3. These tables will allow you to use other information like expected yields, plant stage, and cost of control to compute how much defoliation is needed before a treatment is required.

The ability of soybeans to sustain defoliation without yield reduction varies with the growth of the plant. However, soybeans are very hardy, and the defoliation required before a control is necessary will never be less than 20%, and usually a great deal more.

In the event an insecticidal control is needed you can find recommendations and information on appropriate insecticides in ENT-13.

For immediate access to more information visit our family of web sites at:

http://www.uky.edu/Agriculture/IPM/ipm.htm
http://www.uky.edu/Agriculture/PAT/welcome.htm
http://www.uky.edu/Agriculture/Entomology/enthp.htm

Other Sources of Kentucky Information on this Insect.

IPM-3, *Kentucky Integrated Crop Management Manual for Soybeans*.

ENT-13, *Insecticide Recommendations for Soybeans*.

Entfact-409, *Japanese Beetle*.

Additional Print References

Davidson, R. H., Lyon, W. F. Insect Pests of Farm, Garden, and Orchard. New York: John Wiley & Sons, 1979.

Higley, L. G., Boethel, D. J., editors. Handbook of Soybean Insect Pests. Lanham, MD: Entomological Society of America, 1994.

Metcalf, R. L., Metcalf, R. A. Destructive and Useful Insects. New York: McGraw-Hill, Inc., 1993.

Pedigo, L. P. Entomology and Pest Management. New York: Macmillan Publishing Co., 1989.