Biology of the Green June Beetle and *Achrastenus griseus*, a Bud-Boring Weevil

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The Green June Beetle (GJB) is in the order Coleoptera, family Scarabeidae, subfamily Cetoniiae, Tribe Cetoniini, Genus *Cotinis*. There are 22 species of *Cotinis*, all of which are found in the Americas. Three species occur in Texas. The Green June Beetle, *Cotinis nitida* Linnaeus, is the most common, abundant and economically significant species. Two of the Texas species, the Western Green June beetle *Cotinis mutabilis,* and the South Texas Coastal Cotinis, *Cotinis boylei,* are not considered economic concerns. *Cotinis mutabilis*, also known as the Green Fruit or Figeater Beetle has been collected in some of the western and southern counties of Texas, and westward to Southern California. *Cotinis boylei* is restricted to the south Texas coastal plains. *Cotinis nitida* is native to the south eastern United States. It is considered an economically damaging pest to turf grass in its larval stage and to fruit crops in its adult stage. The GJB causes significant loss to winegrape harvests in certain vineyards of North Central Texas.

The adult GJB is large, measuring up to one inch in length with metallic green wing covers and margins of light brown to orange yellow. The GJB is sometimes mistaken for one of its relatives, the common June bug, or the Japanese beetle. Larger and more robust, the adult GJB feeds on and damages ripened fruits of many thin skinned crops, including grapes, peaches, including grapes, blackberries, raspberries, peaches, pears, plums, apples, corn, and the sap of large, deciduous trees, …In contrast, its relatives, the Japanese and June beetles primarily feed on leaves.

In late July and August, adult females select oviposition sites in areas containing decomposing manure and organic matter. They lay their eggs 4-8 inches into soil. The GJB eggs hatch in about 3 weeks and spend two instars underground. The second instar larvae emerge in autumn to feed, crawling on their backs, their small legs not useful for locomotion. They then burrow underground to overwinter in vertical tunnels. The tunneling of GJB larva makes them a recognized insect pest to turf grass. The third instar emerges, from February to May, early in the winegrape growing season. They burrow underground once more to pupate, emerging in June and July as adults. The GJB completes one generation per year.
The adult stage of GJB coincides with the maturing grape clusters in Texas. The adult GJB is attracted to the fragrance of ripening fruits. Once the source of the fruit fragrance is located, GJB begin to feed by piercing the fruit with the horn on its head and feeding with chewing mouthparts. As the GJB feeds, it emits volatile aggregation hormones. These hormones mixed with the smell of ripening fruit make a highly attractive odor to both male and female GJB. Thus begins a characteristic infestation as the GJB accumulate en masse on ripening grapes. The GJB contaminates the fruit with an unpleasant compound it excretes as it feeds. The physical damage caused to the fruit during feeding invites combinations of yeasts to collect on the clusters. The unpleasant GJB excretions mix with yeasts on ripening grape berries. The resulting damage can render infested grape crops a loss as the odor causing compounds and GJB debris give a distinctive unpleasant taste in the final wine product.
Extensive research by Dr. Donn Johnson of the University of Arkansas has been conducted on determining effective lures for mass trapping GJB. A mass trapping project will be conducted in conjunction with Johnson during the 2009 grape growing season.

Achrastenus griseus Horn is a broad-nosed weevil of the order Coleoptera: Entiminae. The insect is described as being found in sandy soils of central and east Texas. So far, it has been identified in sandy soils of two Texas vineyards, one in North Central Texas, the other in Southeast Texas. It is also described as a generalist feeder; however, in a vineyard, this broad-nosed weevil prefers to feed on

young buds as they begin to break dormancy. *Achrastenus griseus* Horn will be referred to, in this study, as the Bud-boring Weevil, in reference to its observed feeding habit and damage to young buds. A pesticide field trial is being planned for the bud-boring weevil.

In certain vineyards of Texas, the GJB inflicts significant damage to grape clusters. The bud-boring weevil inflicts significant damage to developing vine shoots. The damage to the winegrape crop results in economic loss to these vineyards. Very little has been researched in Texas on either vineyard pest.

REFERENCES

Chittenden, F. H. and D. E. Fink. 1922. Green June beetle. USDA Agricultural Bulletin 891:1-52.

Entomological Society of America Annual Meeting. Johnson, D.T. 2005. http://esa.confex.com/esa/2005/techprogram/paper_21322.htm

Flanders, K.L. and P.P. Cobb. 2000. Biology and Control of the Green June Beetle. Alabama Cooperative Extension System. ANR-991.

Goodrich, M. A. 1966. A revision of the genus Cotinis (Coleoptera: Scarabeidae). Annals of the Entomological Society of America 59:550-568.

Johnson, D.T. 2009. Alternative management tactics for green June beetles in grape. Submitted for publication Entomological Society of America.

Texas A& M University System Entomology Department. http://www.texasento.net/Cotinis.htm

University of Arkansas. http://www.uark.edu/depts/entomolo/museum/greenjune.html

University of Oklahoma. http://www.ento.okstate.edu/ddd/insects/greenjunebeetle.htm

University of Maryland. http://iaa.umd.edu/umturf/Insects/Green_June_Beetle.html

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