

Delphastus pusillus

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Whiteflies are major greenhouse pests, and the two most commonly encountered are: the greenhouse whitefly, *Trialeurodes vaporariorum*, and the silver-leaf whitefly, *Bemisia argentifolii* (formerly known as strain 'B' of the sweet potato whitefly, *Bemisia tabaci*). One method of whitefly control is reliance on chemical insecticides. Though chemical insecticides have been somewhat effective in controlling whiteflies they are becoming more difficult to use because of stringent rules and regulations. An alternative control method is the use of beneficial organisms or biological control. Control of greenhouse whitefly has been very successful with the parasitoid, *Encarsia formosa*. This parasitoid, however, is not as effective in controlling silverleaf whitefly. In contrast, *Delphastus pusillus*, a predatory beetle shows more potential for controlling this pest.

Biology

Delphastus pusillus is a native lady bird beetle that attacks all species and stages of whiteflies, with a preference for eggs and nymphs. The adults are small (1/16 inch), shiny, black beetles. They are strong fliers that usually migrate into areas which contain high densities of whiteflies. Female beetles tend to lay their eggs within whitefly egg clusters to make it easier for the young larvae to find a food source.

Delphastus pusillus undergoes complete metamorphosis and consists of an egg stage, 4 larval instars, a pupae stage, and an adult. The eggs are clear and approximately twice as long as they are wide. Larval stages are pale-yellow, and

are longer than they are wide. The fourth instar eventually crawls down a plant stalk and pupates inside dried up leaves. Newly emerged adults are pale-brown to almost white, but they eventually turn black. Development from egg to adult takes about 3 weeks at 80° F. Females live for about 50 days and can lay approximately 3 to 4 eggs per day. Both larvae and adults are active predators that can consume over 300 eggs or 100 nymphs of silverleaf whitefly per day. Adults and larvae feed by piercing the insect integument (covering) and extracting out the contents. Release of *D. pusillus* is compatible with other biological control organisms because it avoids parasitized whiteflies. Something to be aware of when using *D. pusillus* is that trichomes (hairs) on plant leaves can deter feeding and egg laying.

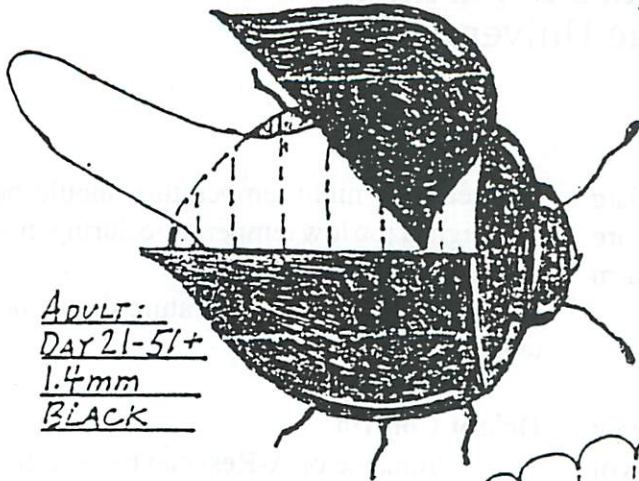
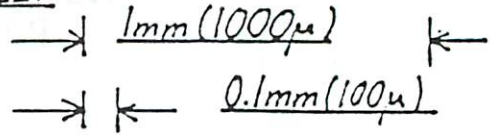
Considerations for Use

Releases must be concentrated near areas of high whitefly populations. *D. pusillus* performs best when the temperature is between 65 and 90° F and when the relative humidity is above 75%. Remember that releases of *D. pusillus* must occur before whitefly populations in the entire greenhouse are out of control. Predators should be released as soon as possible, release in the early morning or evening (dusk). The cost for *D. pusillus* ranges from \$25.00 to \$60.00 per 100 adults. For more information on release rates and costs consult supplier catalogs.

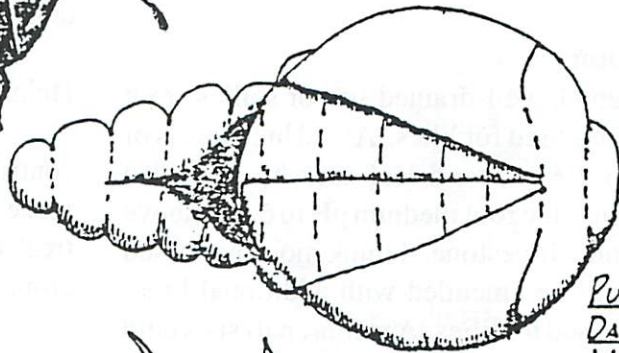
* The author wishes to thank Dr. Clifford Sadof for his comments and suggestions.

DELPHASTUS PUSILLUS: DEVELOPMENT TIME, 21 DAYS AT 75°F
AND 85% RELATIVE HUMIDITY: ADULT LONGEVITY, 30+ DAYS
FEMALE FECUNDITY, 50 EGGS OVER LIFETIME

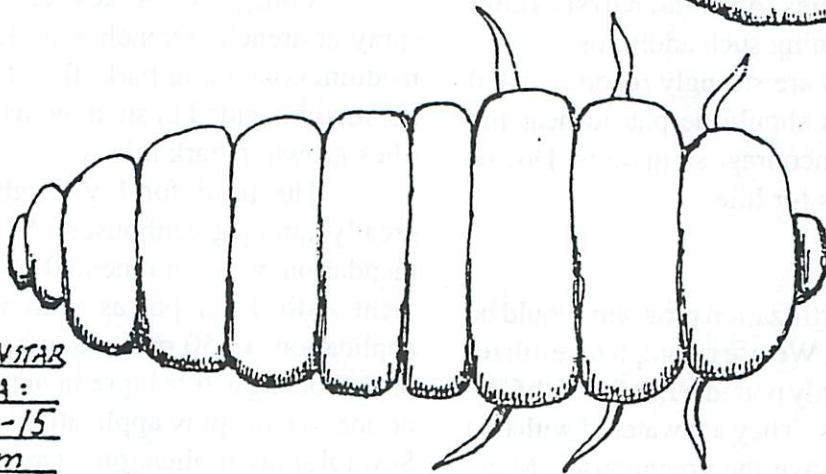
SCALE:



ADULT:
DAY 21-51+
1.4mm
BLACK



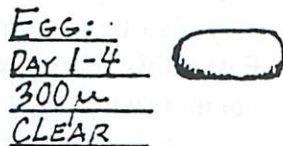
PUPA:
DAY 15-21
1.4mm
YELLOW



4TH INSTAR
LARVA:
DAY 11-15
2.3mm
PALE YELLOW-GREEN



2ND INSTAR
LARVA:
DAY 7-8
600µ
PALE YELLOW-GREEN



EGG:
DAY 1-4
300µ
CLEAR