

IV. Nuts

a. Biology

1. Phytocoris relativus Knight on pistachios

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Bugs in the mirid genus Phytocoris have been known to cause epicarp lesion to pistachios in California since 1984. Phytocoris relativus Knight is by far the most common species collected in pistachios, particularly in the San Joaquin Valley. Phytocoris conspurcatus is also found in pistachios, more commonly in the northern Sacramento Valley. P. relativus is a very common mirid throughout the San Joaquin and Sacramento valleys, and is found on a number of hosts including all of the stone fruits in addition to pistachios.

Phytocoris relativus overwinters in the egg stage and nymphs begin to hatch in March and early April. There are apparently three generations per year. The 1st gen. develops in March-April, the 2nd from late May into early July, and the 3rd gen. in August and September.

Phytocoris has definitely been shown to cause epicarp lesion when caged on soft-shelled pistachio nuts. However, literature reports on this genus also refer to them as predators on various insects and mites, including eggs of the European red mite in England. Observations of P. relativus as predators on other hosts have shown that they readily attack and feed on eggs of the navel orangeworm and the stinkbug Nezara viridula, on the black bean and green peach aphid, and perhaps other soft insects.

Host feeding trials with P. relativus on eggs of oriental fruit moth, nymphs of the greedy scale, Hemiberlesia rapax, and the leaffooted bug, Leptoglossus clypealis, have proved negative. Initial observations on web-spinning mites as hosts have also been negative, perhaps due to disruption of searching by webbing.

Survival time of Phytocoris on these unacceptable hosts alone is sometimes only three-four days. However, when provided with these hosts plus plant material such as green beans or peas, or pistachio nut or stem material, Phytocoris will live for approximately the same time as when provided eggs of navel orangeworm. The greatest longevity of Phytocoris observed in laboratory studies was when the bugs were provided with a variety of foods consisting of both insect and plant material. This suggests that the bugs prefer or are obliged to feed on plant material, and may be only casual predators on other hosts such as insect eggs or scales. In many cases, Phytocoris would feed only on soft shell pistachio nuts over a 24 hour period, even though an excess of navel orangeworm eggs

was also provided as food. These feeding studies support the conclusion that Phytocoris relativus is primarily a phytophagous or plant feeding insect and is definitely implicated as a causal agent of epicarp lesion even in the presence of insect food sources.

Phytocoris can be controlled in orchards with a history of severe epicarp lesion injury through the use of early season (post-bloom) sprays of permethrin or carbaryl. Azinphosmethyl is also effective on the early instars of these bugs.