

Looking for Lygus (in all the right places): The Outlook for 2003

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The dismal start to the 2003 season has many people making comparisons to 1995 and 1998. The late planting and poor initial growth suggests a later crop and shorter season. These conditions make lygus a pest of particular concern. For example, in 1995 the yield loss estimate due to lygus was placed at 4.5% and in 1998 at 3.2%. Both years represent the highest loss due to lygus during the 1990's.

Each year I have been making a projection about the potential lygus pressure for the season. The projection is based on rainfall patterns, weed hosts, and sample survey data.

Rainfall:

The rainfall patterns in 1998 were similar to 2003 during April and May but twice the amount fell during this period in 1998 than 2003. Regressing rainfall data from Hanford from 1979 through 2000 (Figure 1), against reported yield losses due to lygus for those years, suggested that rainfall in May was an important month in predicting lygus damage ($r^2 = 0.29$, $p < 0.01$, $n = 22$). Currently (5/15/03), 0.82 inches of rain have been recorded at the Stratford CIMIS station, south of Hanford.

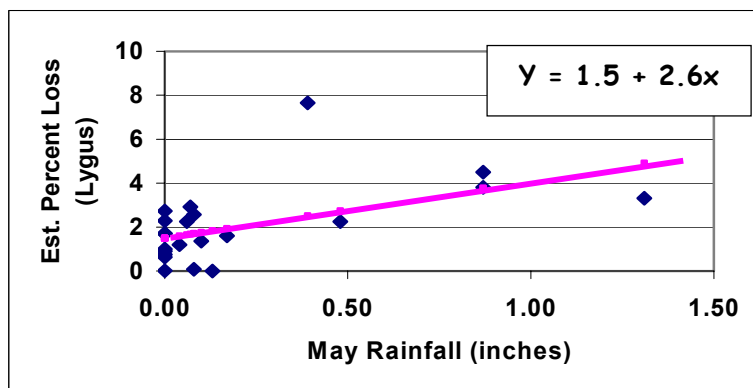


Figure 1. Relationship between rainfall in May (Hanford, CA) and estimated cotton losses due to lygus.

The winter period (January to March) was dry in 2003 but enough rain falling during December to germinate weeds such as filaree and London rocket. One of the unique situations in 2003 is finding plants blooming with a mature seed load. These hosts will provide lygus with good habitat and the sufficient rainfall in April and May might ensure that hosts will be available through May.

Hosts

A wide variety of weed hosts are available to sample. The most commonly sampled plants were shortpod mustard, tarweed, *Hemizonia*, filaree, annual sweet yellow clover and London rocket. Unique to this year were the mixtures of weeds and their abundance. For example last year, weeds that acted as lygus hosts were limited in distribution and abundance. This year they are common and widely distributed. Especially abundant were shortpod mustard along the roadsides and London rocket on acreage that remain uncultivated. Tumbleweed is germinating and will develop on ground that has been disturbed. Since the rainfall pattern was split between

early winter and early spring, the grasses dominated the foothills on both sides of the Valley. Except for roadside weeds, very few hosts were found in the rangeland areas and should not act as a major source for lygus in 2003.

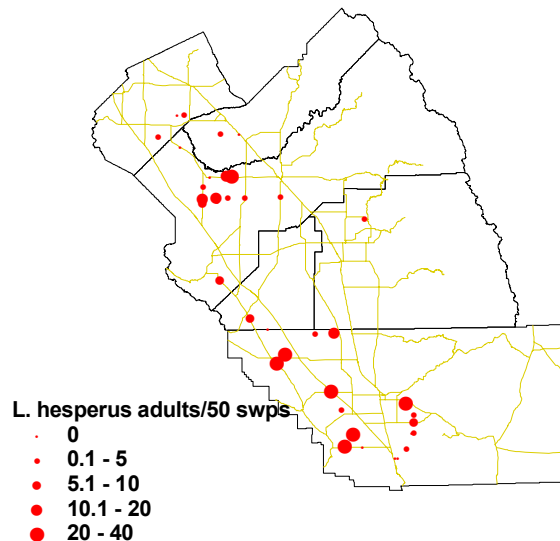
Survey Data

Compared to 2002 when very few hosts or lygus could be found in April, in 2003 sample locations were easy to find. A total of 39 sites were sampled between April 22 and May 9, 2003. Since many hosts were available, the insects were widely distributed (Figure 2). In many locations both *L. hesperus* and *L. elisus* were found together. Of all the adult insects found, 46% were *L. hesperus*. Considering all sites, the average *L. hesperus* population was 8 adults/50 sweeps. *Calocoris* was another plant bug frequently encountered in this survey and could be mistaken for lygus if not carefully examined.

Calocoris and *L. elisus* resemble *L. hesperus* but do not threaten cotton. *L. elisus* will impact dry beans as will *L. hesperus*. *Calocoris* can be a problem in pistachios but has only one generation per year. A new key to common lygus species in Central San Joaquin Valley will be available at lygus.uckac.edu after June 1, 2003 or through your local Farm Advisors' office.

Lygus were abundant in the interior of the Valley as well as on the rim. However, the population tended to be concentrated along roadside on the rim of valley but distributed in field-size locations throughout the interior.

Figure 2. Results from lygus sample survey taken between 4/22/03 and 5/9/03



What does it mean?

We found lygus population densities were more abundant and widespread in 2003 than it has been for many years. Even accounting for only *L. hesperus*, the population density is the highest in many years. The hosts that support lygus are abundant and widespread and will continue to support populations for several weeks, especially with April rainfall allowing additional growth

and development of weeds. There appears to be enough time for another generation to build before being forced into croplands. Thus the population is capable of moving from weed hosts to crops and will probably be greater than in recent years. The unknown factor is the timing when weeds become unsuitable hosts and lygus are forced to move. If cotton is not susceptible (i.e. pre-squaring with limited row coverage), lygus will settle into other crops. If movement is timed during early squaring, square losses could be high.

The movement probably will not occur as a wave from foothill to crops but rather from adjacent weedy fields and roadsides throughout the Valley. Fields that will be most susceptible are those located near uncultivated ground that have high weed populations and limited management potential. Foothill areas did not have as much lygus due to their undisturbed conditions and development of non-hosts.

Based on past experience and survey sampling, the potential threat from lygus is expected to be high in many areas of the Valley. The inclination to treat early due to a shorten season is strong but preventative approaches should be considered very carefully based on field sampling, stage of crop, potential yield and severity of the threat. Visiting fields frequently during the early fruiting cycle is the best investment that can be made. If populations are threatening the square set based on expected square retention, consider the options carefully, applying a measured response to the situation. This will result in the level of control required for the situation while potentially conserving natural enemies if there is a fit for more selective insecticides.

An important non-chemical approach is to take advantage of alfalfa in the neighborhood by managing cutting cycles and/or preserving habitat strips during June and July. Encourage neighbors to manage alfalfa to scale up to area-wide management of lygus.

Lygus represents a greater threat in 2003, but it is only one of several insects that must be watched. Aphids are greater problems when planting dates are spread over time and late-planted fields will have lint exposed longer to honeydew. In addition, whitefly is a potential threat to cotton quality in any particular year but especially on late-planted cotton. A balanced and integrated approach to cotton lygus pest management will assure fewer secondary problems from mites, worms, aphids and whiteflies.