

Community-Wide *Lygus* Action Plan No. 5

The University of Arizona • College of Agriculture

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As the agricultural complexity increases within a community so does the potential for cross-commodity interactions. This is especially true for highly mobile and polyphagous pests like Lygus or whiteflies. It is these two qualities, the abilities to readily move and to feed on many different host plants, that make Lygus a shared pest within this community. While controlling nymphs in sensitive crops is important, the distribution and abundance of Lygus adults are key to understanding the potential for cross-commodity interference.

Understanding & Tracking Adult Movement

Our working group identified several potential problems when it comes to movement (and establishment) of *Lygus* populations. Overwintering *Lygus* adults move to early spring hosts such as alfalfa from weeds and desert habitat. Seed-alfalfa producers identified forage alfalfa as a potential source of emigrating adults flushed by cuttings during a critical pollination period. Cotton producers viewed seed-alfalfa as a productive host for and source of migrating adults during critical squaring periods.

Our survey now extends to over 180 sites in the western Pinal County area and involves the efforts of 6 samplers, 2 days a week. The result is a large, systematic set of data that may help in understanding adult movement within this complex community.

Our analytic approach so far has been to chart the average population growth trends in several host crops (Fig. 2). This information is useful in understanding the relative “productivity” of these various *Lygus* hosts and in alerting everyone of potentially damaging levels of these insects. They cannot definitively show us how *Lygus* move from host to host. At best, we can infer this transfer by observing declines in one host’s adult levels with simultaneous increases in another host’s adult levels.

With the advent of more powerful geostatistical techniques, we can now begin to explore trends in “movement” more explicitly with spatial information. In our case, we have recorded the locations of systematically-selected sites for each sample taken. By simultaneously analyzing *Lygus* abundance data along with this spatial information, we hope to better infer the causes and extent of adult movements within this community (e.g., Fig. 1). Once enough data is collected, we may be able to provide information about the effective range of this mobile pest. This could lead to better and more accurate recommendations for locating and managing sensitive crops in a cross-commodity community.

This process takes time! We hope to offer up preliminary analyses of these data in the near future.

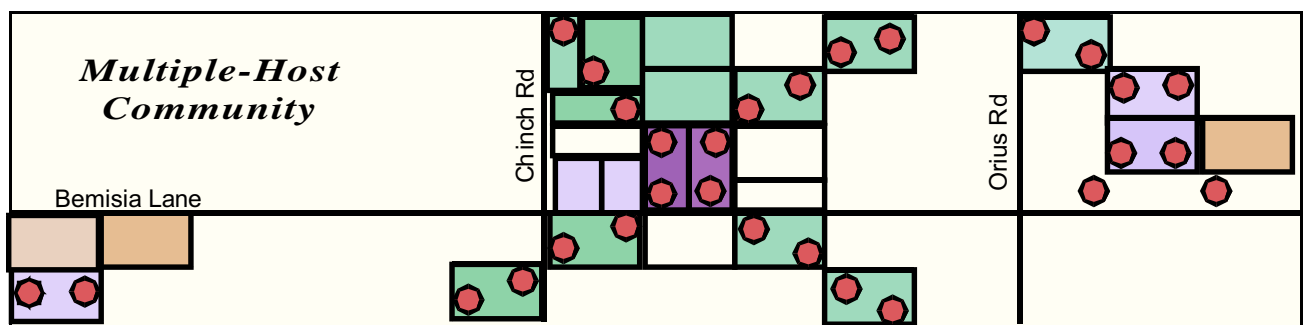
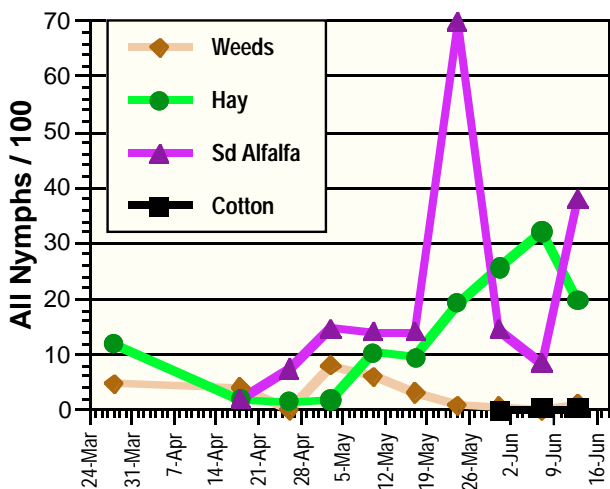
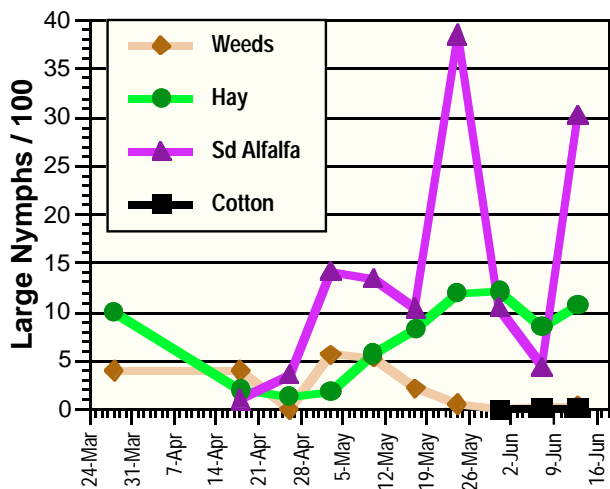
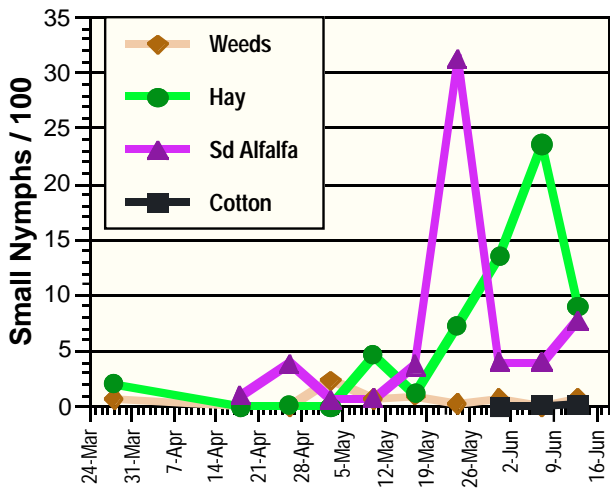


Figure 1: Geographically-explicit (i.e., mapped) data on the abundance of *Lygus* may help explain this pest’s movement through the community. This example above shows carefully selected samples (circles) arranged along transects across multiple hosts.



Community-Wide Trends

Seed-alfalfa is moving at or ahead of the projected production time line. The crop is drying down very quickly and is devoid of any *Lygus* where it is completely dried. Our samplers have relocated some of their samples in an attempt to find greener areas within fields. *Lygus* are still abundant there including a large fraction of large nymphs. Should these nymphs successfully develop into adults prior to desiccation, we may see one last flush of adults from these areas. At this time, forage alfalfa is the likely “recipient” of most moving adults. Thus, cutting management remains critical at this time!

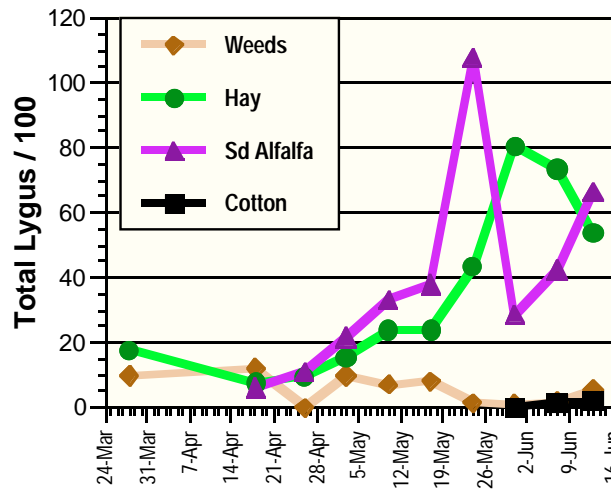
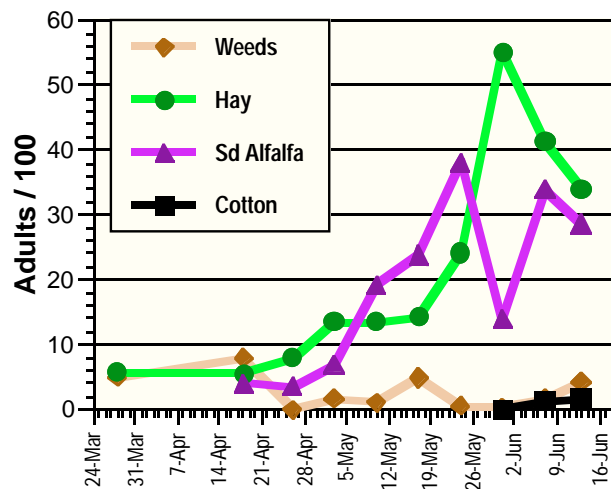


Figure 2: Number of *Lygus* per 100 ‘cotton-style’ sweeps in various crops in the western Pinal County area. Each chart represents an average of multiple sites in multiple fields each week. Due to differences in the number of sites each week, these numbers are for general information only. No sample was taken from seed-alfalfa on 28 March. Each site is re-sampled each week unless it has been recently sprayed, cut or otherwise removed, or watered. Each chart shows the results for the entitled life stage. Small Nymphs are instars 1–3; Large Nymphs are instars 4–5; All Nymphs is the sum of these 2 nymphal categories; Total *Lygus* is the sum of all stages of *Lygus* including adults.

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