

RELATIONSHIP BETWEEN TOTAL POPULATION COUNTS OF GLASSY-WINGED SHARPSHOOTER AND NUMBERS OBTAINED FROM VARIOUS SAMPLING METHODS

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INTRODUCTION

Most of our knowledge of the dispersion of *Homalodisca coagulata* (glassy-winged sharpshooter, GWSS) has been obtained with relative sampling methods in vineyards and citrus orchards (Blackmer et al. 2001, Blua et al 2001, Puterka 2001). Currently, sampling methods are being used to determine timing of pesticide treatments and to judge their efficacy (Blua and Redak 2001, Henneberry et al. 2001). This use implies that the sampling method used relates in a known way to population density. Unfortunately, this is not the case, and some important questions are raised. If a given treatment against GWSS results in “zero counts” by beat sampling, does that necessarily indicate that there are no GWSS in the area due to the treatments, or could some GWSS be left alive but at density below the detection threshold of the monitoring tool? Could an unknown low density of GWSS be enough to vector PD within or between treated areas? Does the relationship between population sampling precision and accuracy change seasonally? To answer these questions it is imperative to develop a fundamental understanding between actual (=absolute) GWSS density in the field and any relative density estimates derived from various sampling procedures.

OBJECTIVES

The overall goal of our research is to correlate the numbers of GWSS obtained by various sampling methods currently used in population monitoring in citrus with their population density. Part of this goal involves developing and testing sampling methods. Sampling methods chosen for examination were yellow sticky-card monitoring, beat-net sampling, and timed counts. Total sampling involved covering trees with tents, killing all GWSS inside with pyrethrum canisters, and counting dead sharpshooters on cloth under the trees.

RESULTS AND CONCLUSIONS

To determine the efficiency of yellow sticky-card sampling we examined numbers of GWSS caught on the cards as a function of the number of GWSS placed on the card before it was deployed in the field. Mean numbers (and SE) of GWSS caught on cards on which we placed 0, 25, 50, 100, and 200 GWSS was 45 (6.9), 38.4 (4.1), 39.4 (2.0), 30.8 (5.6) and 8.4 (3.3), respectively. We detected a significant ($p < 0.001$) relationship between numbers of GWSS placed on the card and numbers of GWSS caught (Figure 1). This relationship should be considered depending on the use of yellow sticky-cards in GWSS monitoring.

Because this project was initiated in mid July 2002, we have collected and analyzed sampling and total count data for only 7 dates. Thus far, for adult and total GWSS no significant correlations were detected between absolute counts and beat-net samples, timed counts, or sticky-card samples. For adults, GWSS sticky-card samples did not significantly correlate with any other sampling method. For juvenile GWSS, absolute counts correlated significantly ($p = 0.035$) with timed samples. Finally, for juveniles, adults, and total GWSS, beat-net samples correlated significantly ($p < 0.01$) with timed counts.

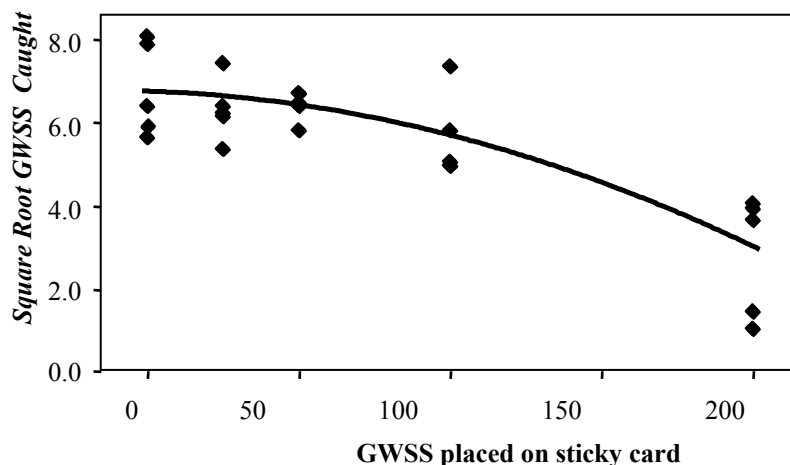


Figure 1: GWSS capture as a function of the number of individuals placed on the yellow sticky card before field deployment. Equation for line is $Y = -8E-05X^2 - 0.0022X + 6.5844$, $R^2 = 0.708$.

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