SHOO FLY! REDUCE PESTICIDE DEPENDENCE WITH KNOWLEDGE

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Introduction

Trapping is essential for both monitoring and controlling spotted wing Drosophila (*Drosophila suzukii,* SWD) populations. Important trap characteristics include color, trap entry location and size, volatilization area and headspace (the distance between apple cider vinegar bait liquid line and closest entry point). With knowledge of seasonal SWD activity and SWD ovary maturity during the season, farmers will be better informed as to when they should be treating fruiting crops.

Methods

In 2012, eleven trap designs of varying color, size, trap entry location and size, volatilization area and headspace were tested over a twelve week period (pre-, mid-, and late season; June 11th to September 4th) in wild Himalayan blackberries adjacent to an organic diversified fruit and vegetable farm in Corvallis. Trap contents were collected weekly and bait replaced with fresh apple cider vinegar (5% acetic acid) and a drop of surfactant. Male and female SWD were counted and recorded. Trap designs were assessed based on fly capture (relative abundance). In 2012-2013, female flies were collected from the field each month of the year and dissected in the lab to better understand seasonal ovarian development. The abdomen was separated from the thorax of the fly and opened to reveal the reproductive organs. Ovary maturity was evaluated based on egg-readiness indicted by the presence of a chorion.

Results

Trap design: A combination of smaller headspace and large volatilization area resulted in higher SWD trap captures (Figure 2). The increased entry area provided by mesh compared to hole entries resulted in greater fly captures. Traps placed in diversified landscape caught more SWD than non-diverse areas.

Ovary development: A simple 1-5 rating scale was developed to quantify ovarian maturity throughout the year. Ovaries were most developed during the months of April through September in the Willamette Valley (Figure 3), and least developed during the months of October through March. However, commercial fruit in the valley may not be ripe when female ovaries are mature. It is suspected that fall-mated overwintering and 1st generation females may be feeding and laying eggs in alternative berry hosts early in the season before commercial fruit is ripe.

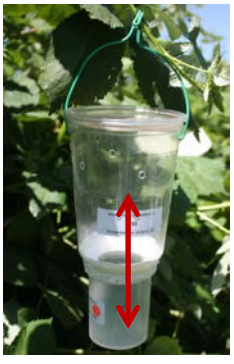

Figure 1. The 10-hole clear deli trap with larger headspace caught less SWD than a deli trap without the cup attached below.

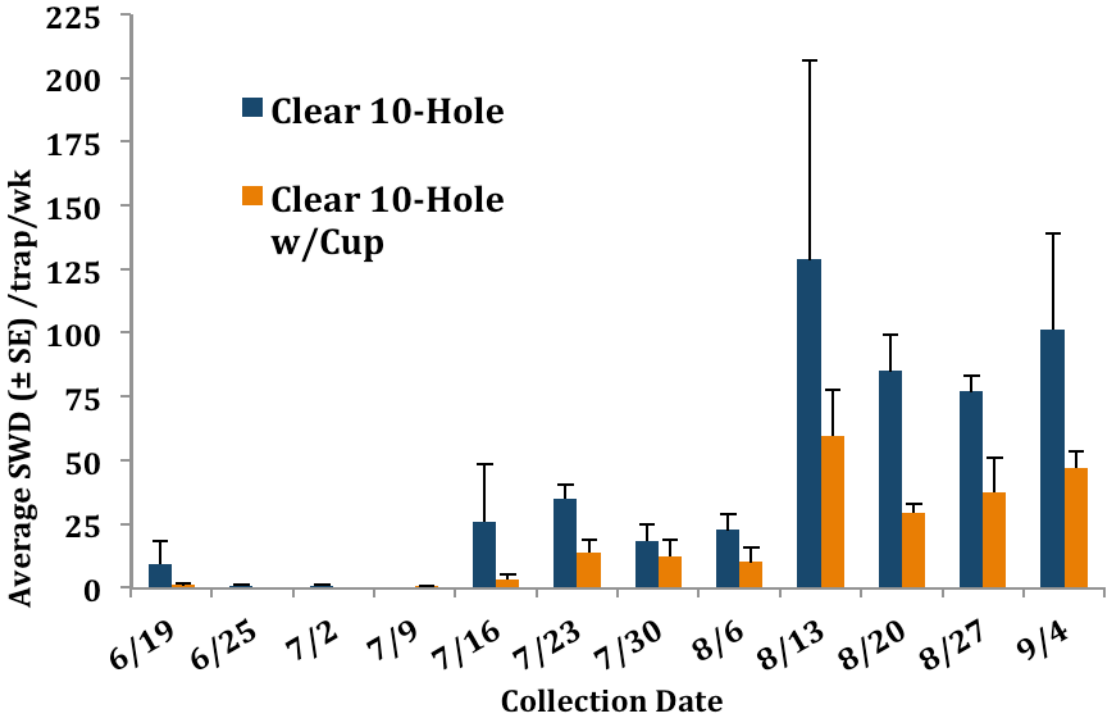

Figure 2. Comparison of SWD trap captures in traps designs with two different headspace values. Both designs utilized a standard 10-hole clear 32 oz. deli cup.

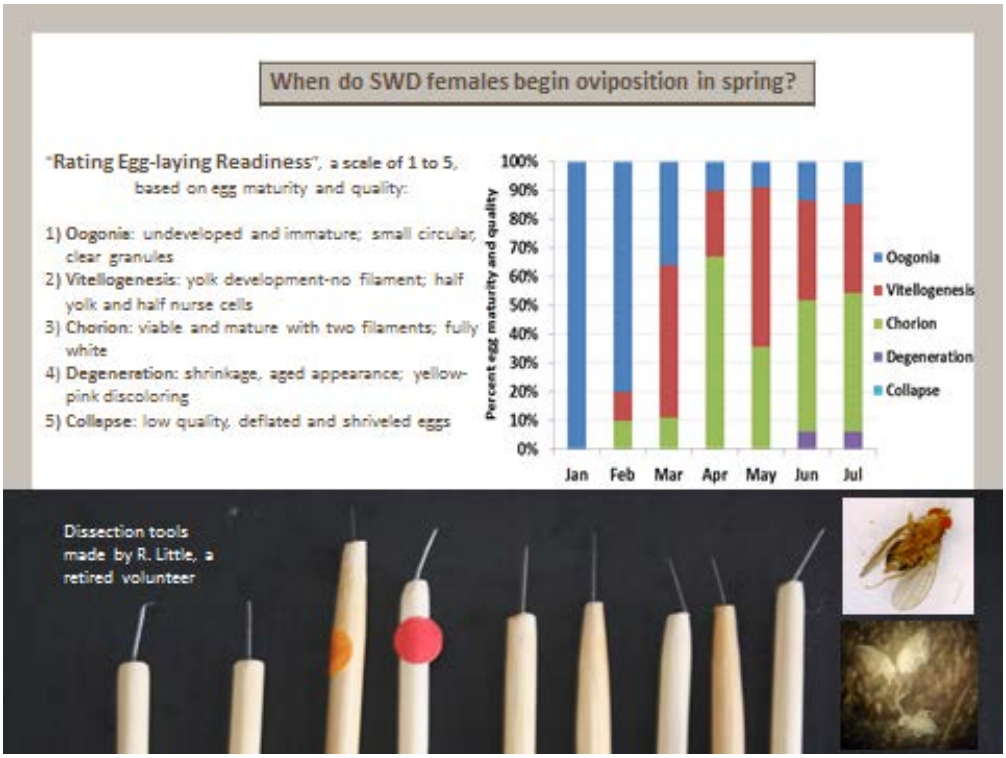

Figure 3. Rating of SWD egg-readiness and seasonal ovary maturity in the Willamette Valley, OR.