

Sub-Sampling: Estimating High Counts of Spotted Wing Drosophila (SWD) in Baited Traps

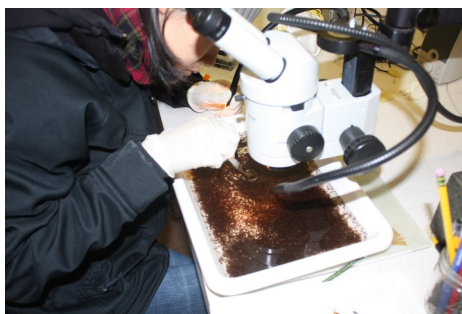


Drosophila suzukii, a vinegar fly

For most current information, see central website:
spottedwing.org

Objective: To reduce the time it takes to count very large samples of SWD in apple cider vinegar or yeast traps (particularly post-harvest), but maintain efficiency and precision ($\pm 10\%$). The estimation offers a good "big picture" view of fly numbers in the field with only a small error.

- Pour contents out of collection jar (or rinse flies off screen), into a shallow white pan. Use a paintbrush to assist with insects stuck on side of container or on lid.



- Stir contents around in pan and REMOVE all unwanted large flies and "other" non-*Drosophila* with forceps, as shown here in the picture.



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- Filter all SWD-like flies from liquid by pouring over a fine screen on top of container, and creating a pile of small flies on screen.



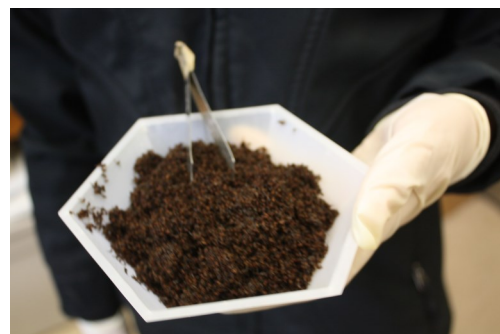
- Take flies off screen by overturning fly pile on screen and gently placing on top of two layers of paper towel or cotton cloth to

remove excess water. You may have to use a paintbrush to remove a any flies stuck on screen.

- Gently blot the top of flies with 4 dry paper towels, 3 times, or until there is no visible liquid. Moisture will be distributed throughout the damp fly sample.



- Add damp fly sample to a large plastic weigh boat, tare, and weigh total fly sample.





- Record weight to 2 decimals.
- Depending on weight of total fly sample, count only a percentage of the sample (see **Table 1**):

Table 1. SWD subsampling calculations, based on total fly sample weight.

If total fly sample weight is:	Count only a % of sample	Multiply resulting counts by
Less than 3 g	20 %	5
>3-5 g	15 %	6.67
>5-10 g	10 %	10
>10-30 g	5%	20
>30 g	1%	100

For example, if the weight of the sample is 3.89g, take 15% of sample by multiplying $3.89g \times 0.15 = 0.58g$

- Immediately weigh out a percentage of the sample collected (0.58g) from middle of damp fly pile in a small plastic weigh boat. Weigh at once to avoid flies drying and causing sample weight to change. Three subsamples are shown below.

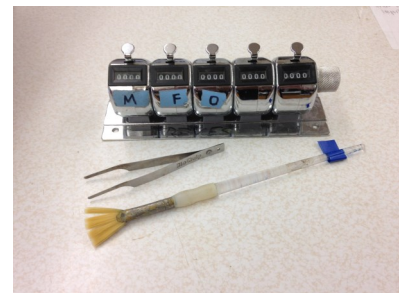


- Count and record subsample:

male SWD	female SWD	other <i>Drosophila</i>
131	139	5



- Create lines of flies to help count. Use a forceps or paint brush to sort out flies. Count with tally counter.



- Multiply each subsample count (male, female, other) according to percentage taken (see **Table 1**).

Multiply by:	Total male SWD	Total female SWD	Total other <i>Drosophila</i>
6.67	873	927	33



We assume that the ratio of males to females is roughly the same in the subsample as the total fly sample. Also, we found that $\frac{1}{2}$ level teaspoon = ~1000 damp flies. It takes approximately 20 to 45 minutes to count 1000 flies, depending on the experience of the person counting.