

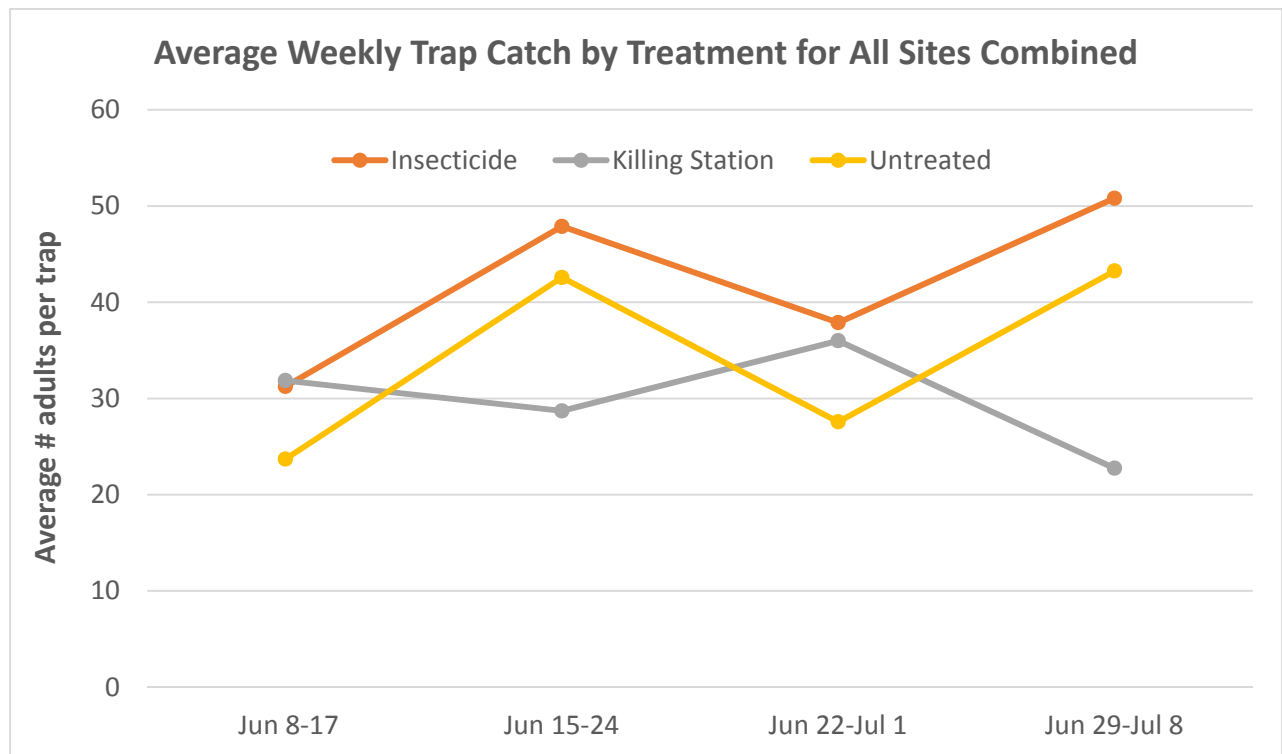
## Backyard Cherry Fruit Fly Trial, Summary of Results – 2013

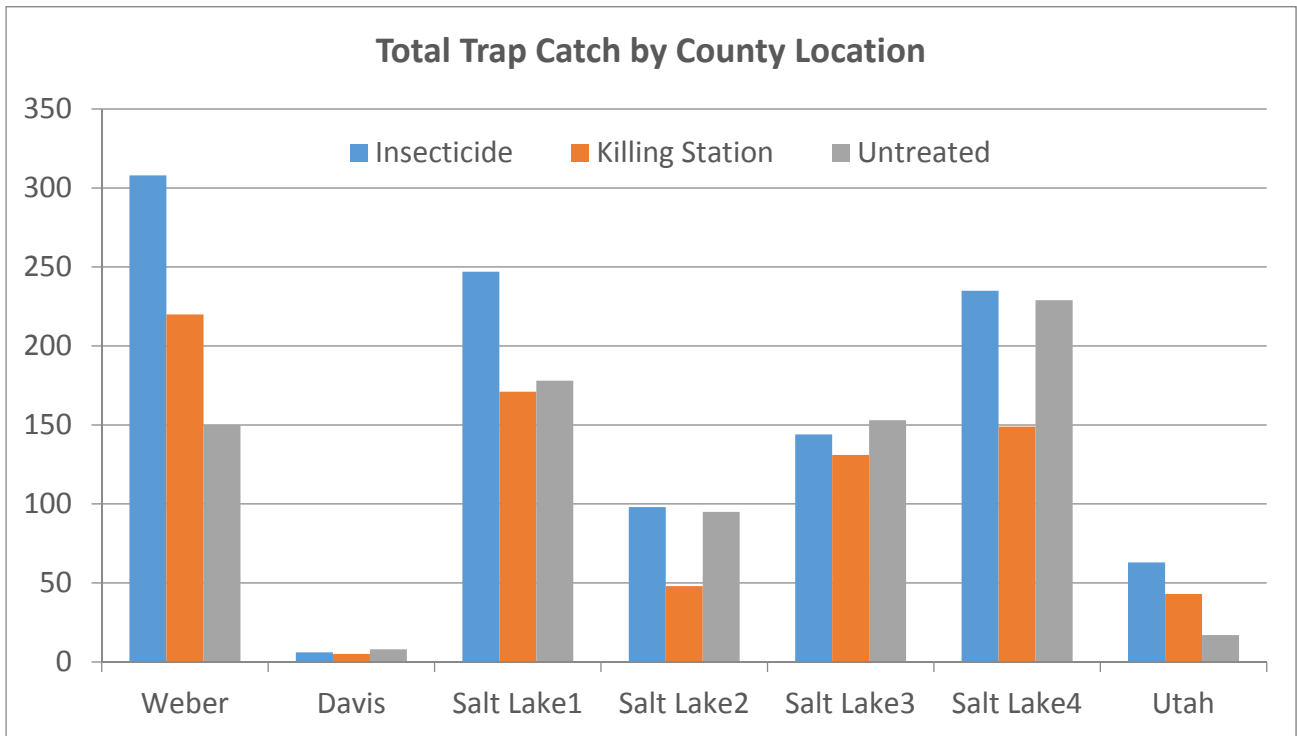
There were three treatments, insecticide (IN), killing station (KS), and untreated (UT), applied to individual cherry trees at seven homeowner sites. Data below is summarized from:

1. Trap catch number and sex of flies collected from traps  
All flies that were captured from each site were inspected for gender, and all female flies were further inspected for presence of eggs. Females with eggs are termed “mature females” and are thus able to infest fruit. All fruit that was collected was inspected for larval infestation.
2. Visual observations
3. Infested fruit  
Fruit was placed on a wire “shelf” inside a Rubbermaid container. As the maggots emerged from the fruit, they dropped to the bottom and pupated. All pupae were counted to determine the percentage of fruit that was infested for each treatment.

### Trap Catch - total

Trap capture for each treatment across all sites was fairly consistent from week to week. In general, more flies were captured in the Insecticide trees than in the Killing Station trees. We believe this is because we had asked that the cooperators choose the tree with the worst injury levels in the past to be the Insecticide tree, thus biasing the results.

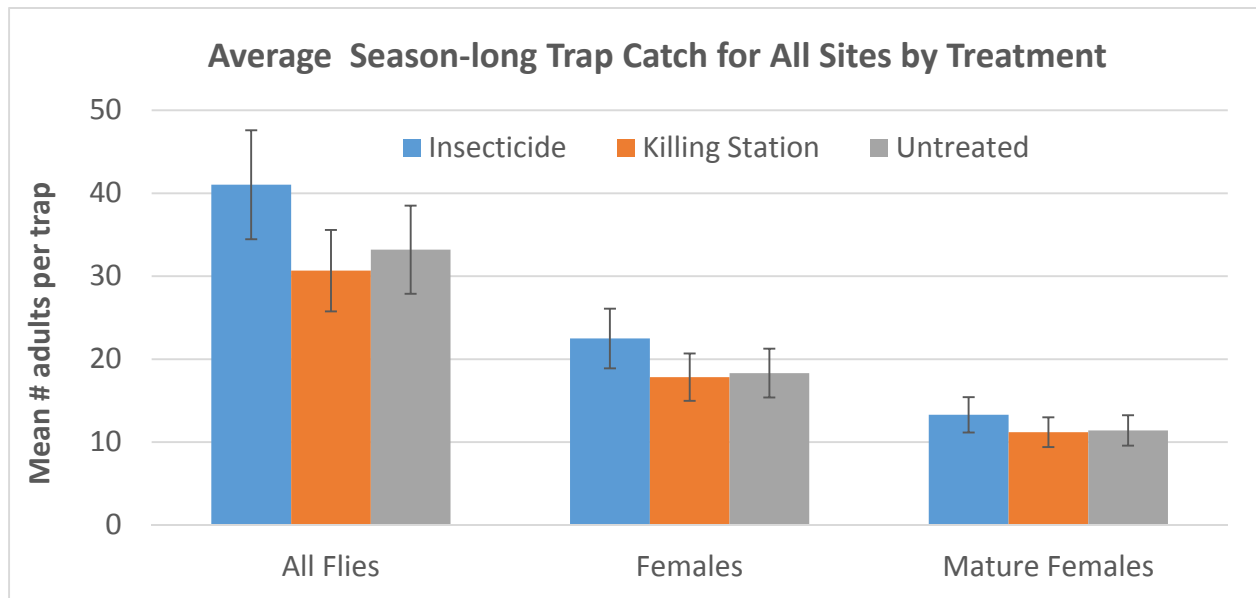




#### Trap Catch by Gender

The reason that we determined gender of the flies was to see whether the presence of killing stations would affect the number of mature females. The answer was that the results were not biologically meaningful. When counting total number of flies, the insecticide treatment has the most, followed by the untreated, and then the killing station tree.

When counting mature females (females with mature eggs in her ovaries, so capable of laying eggs in fruit), there were was no significant difference in that number between treatments (i.e., the counts were very similar).

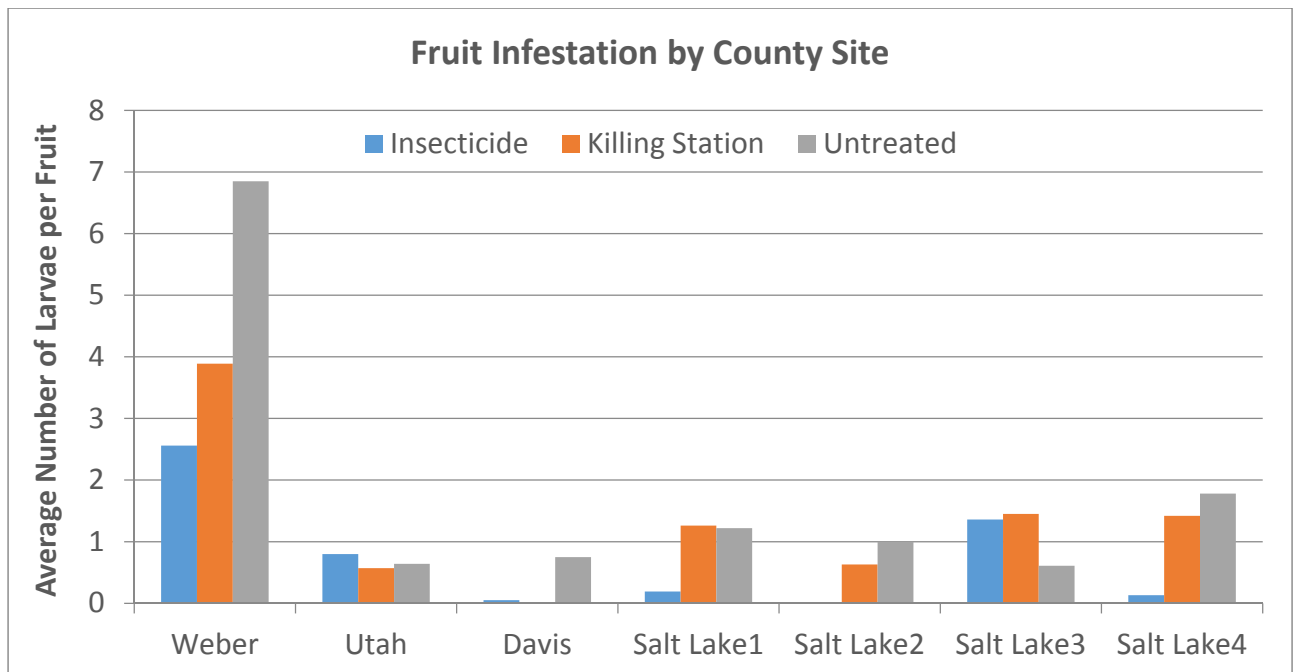
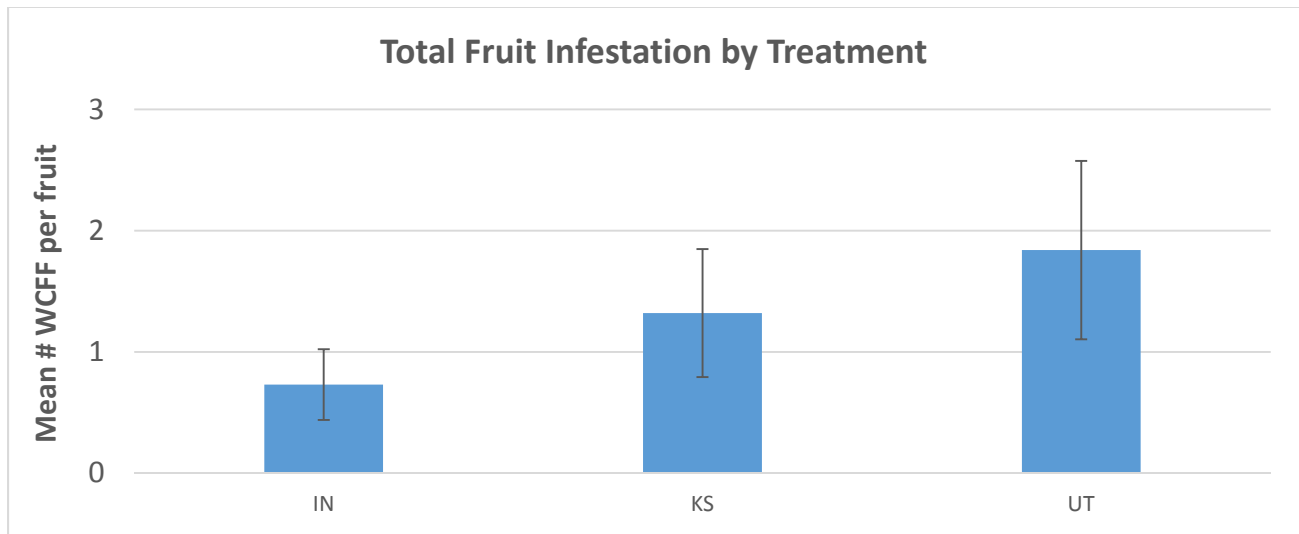


### Visual Observations

In all sites, the number of flies that were observed on the killing stations was too low to result in any meaningful conclusions. Most sites had either zero or a single fly observation total. We plan to make some changes to the placement of the stations and traps, as well as to the GF-120 application, to see if this changes the effect of the killing stations.

### Fruit Infestation – Average # Larvae per fruit

On average, every single fruit collected from the Killing Station trees contained one or more one cherry fruit fly larva (1.32 larvae). For the Insecticide-treated trees, fruits contained, on average, 0.7 larva and the untreated trees contained, on average, 1.84 larvae. The killing stations did not reduce fruit infestation as much as the insecticide treatment. Statistically, there were no differences in the infestation of cherries between the three treatments.



## **Conclusions for 2013 Season**

In home cherry trees, more adult flies were caught in trees treated with insecticide than killing stations, and fly densities were intermediate in untreated trees. Tree assignment to treatments probably played a role in this result. Home site cooperators were asked to avoid selecting trees known to be the most highly infested for the killing station treatment so as to not overwhelm the killing stations. It was suggested that cooperators should assign the most highly infested trees, if known, to the insecticide treatment. Killing stations did not influence the number of flies caught that were females or that were reproductively mature females.

Application of insecticides to home trees significantly reduced fruit infestation as compared to untreated trees. Fruit infestation in trees with killing stations was intermediate to insecticide and untreated trees, and not different from either treatment. Despite the significant differences, fruit infestation was high in all treatments. Although it was not a significant reduction as compared to untreated trees, the trees with killing stations had fewer adults caught on traps and lower fruit infestation; however, the insecticide treatment performed the best in protecting fruit.

The backyard sites were under extremely high pressure from cherry fruit fly, and we found that the killing stations treated weekly with GF-120 were inadequate to lower fruit fly populations and protect fruit as well as insecticide-treated trees. Use of killing stations reduced, but not significantly, fruit infestation as compared to untreated trees. Under heavy fruit fly pressure, insecticides were necessary to lower fruit injury; however, injury still averaged 0.7 larvae per fruit (or 73 of 100 fruit infested). These results demonstrate the challenge, even for insecticides, in managing cherry fruit fly in highly infested home trees.

### *Commercial Orchards*

We also performed this study in commercial orchards and found that killing stations placed in tart cherry trees did not reduce adult trap catch or affect fruit infestation. Adult trap catch was actually numerically higher in trees with killing stations, but not statistically higher. One hypothesis is that if killing stations attract fruit fly adults to feed on the GF-120 bait, capture of adults on traps placed within the same tree may be higher. There was no effect of killing stations on attracting more or less total female and reproductively mature female flies to traps.

As expected, fruit infestation was very low in the commercial orchards. Frequent insecticide sprays were applied to orchards. On one sampling date for example, three cherry fruit fly larvae were found in a sample size of 400 fruit in one untreated plot in one orchard, and one larva was found in a 400 fruit sample in one killing station plot in a different orchard. There is no evidence that the presence of killing stations reduced fruit fly adult populations and protected fruit better than trees without stations in commercially managed orchards.

In commercial orchards, outside sources of cherry fruit fly can result in fruit injury along border trees. We hypothesized that in commercially managed orchards that there would be very low fruit infestation levels in all trees due to an effective insecticide program, but that we might observe a reduction in trap capture of cherry fruit fly adults in border trees with killing stations. Our results do not support this hypothesis. There was no effect of killing stations on adult trap capture or in protecting fruit from very low levels of fruit infestation.