

Spotted Wing Drosophila

{ Monitoring *Drosophila suzukii*
{ Cornell's Hudson Valley Laboratory, Summer 2013

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Insect Overview

- ⌘ An invasive insect in the vinegar fly family. (Drosophilidae)
- ⌘ Introduced to the Western United States in 2008.
- ⌘ By 2010, it had been observed across the Midwest, extending its range to the East Coast.
- ⌘ In the summer of 2013, we observed high levels of small fruit infestation across the Hudson Valley.



Monitoring Methods

- ⌘ Apple Cider Vinegar Traps with yeast, flour, and sugar mixture.
- ⌘ Insects in trap were removed and counted weekly.
- ⌘ Nearby fruit was simultaneously sampled and checked for infestation.



Monitoring SWD Fruit Infestation

- ⌘ Each Week, fruit was sampled and checked for SWD eggs and Larvae.
- ⌘ Fruit was placed in containers and insect eggs allowed to mature.
- ⌘ After 14 days, flies in container were identified, and SWD adults were counted.

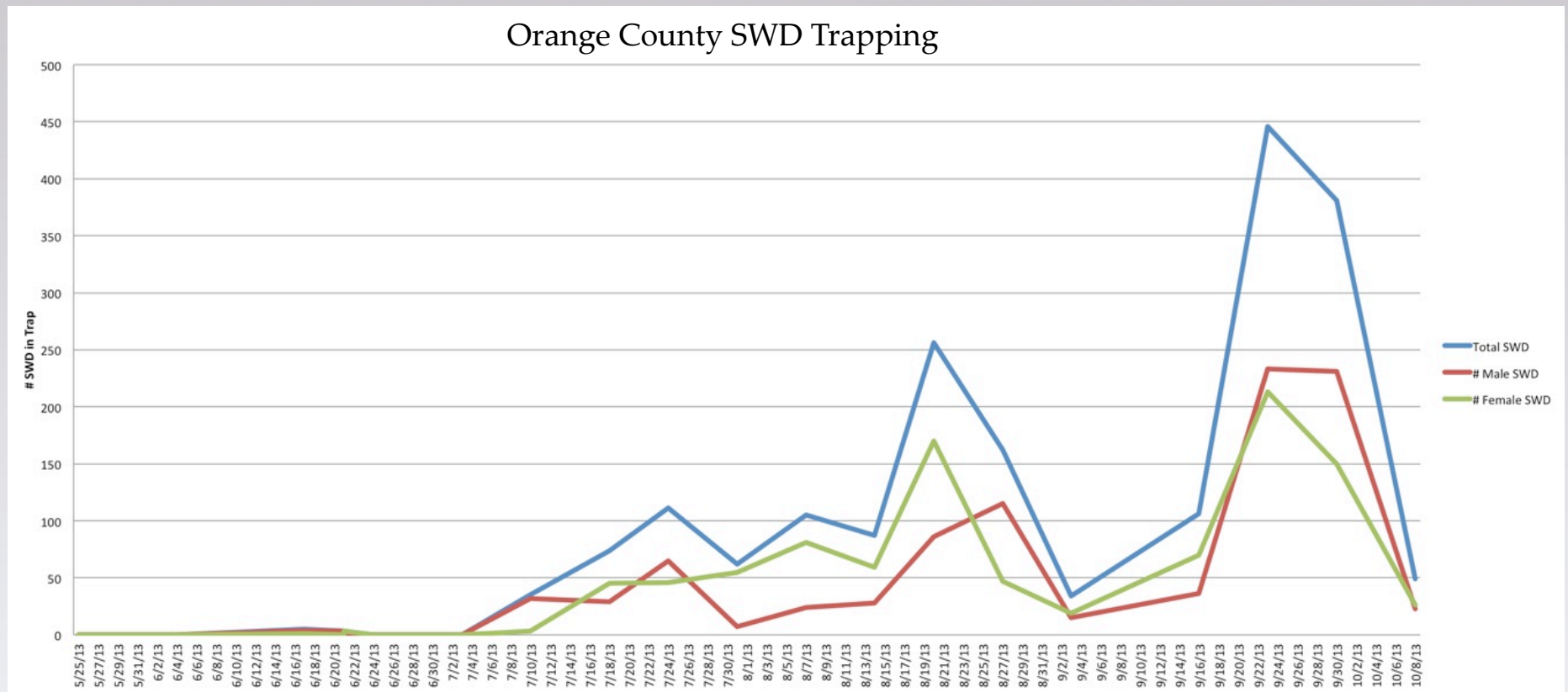




Tartarian Honeysuckle (*Lonicera tatarica*)

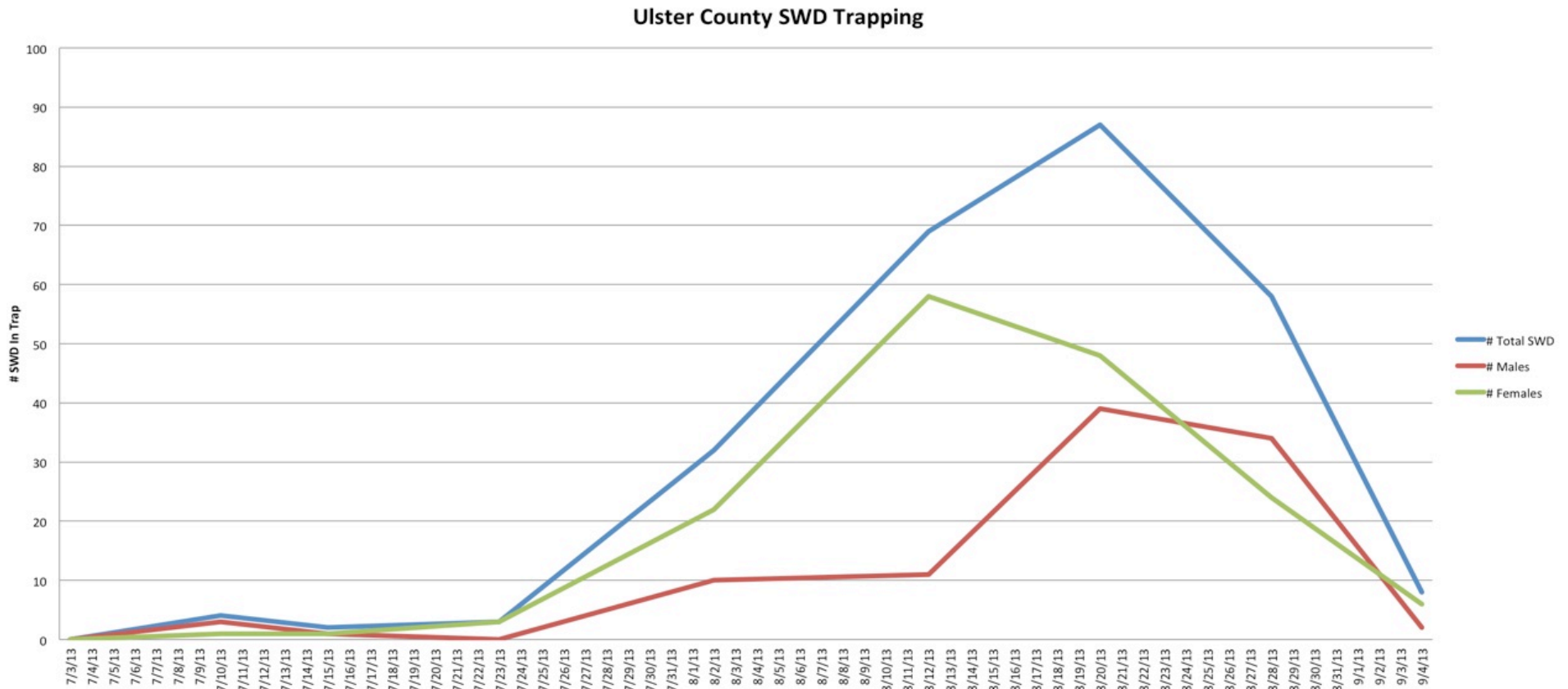
An invasive shrub, Tartarian honeysuckle is a native of eastern Asia and was first introduced into North America as an ornamental in 1752. SWD was found to be highly attracted to the fruit, and infestations in *L. tatarica* were noticed before infestation in cultivars.

SWD Population over Time: Orange



- First Capture: June 17 (5 SWD, 4 Male, 1 Female)
- Largest Capture: September 23 (446 SWD, 233 Male, 213 Female)

SWD Populations over Time: Ulster

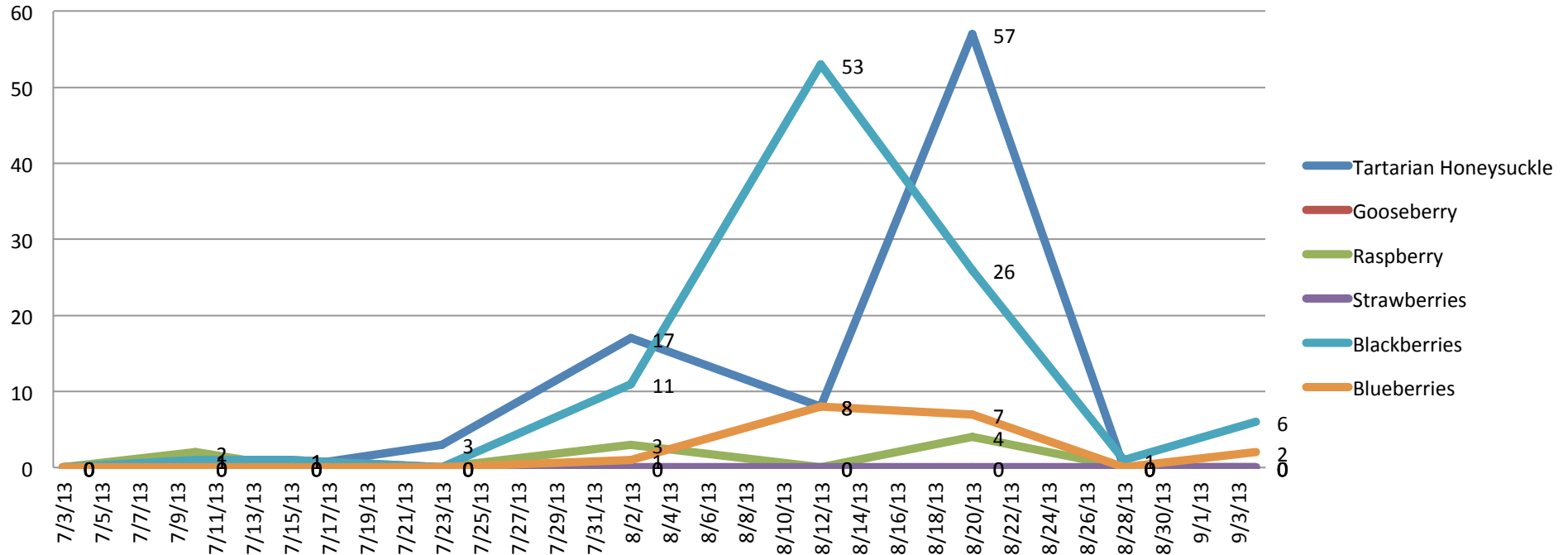


First Capture: July 10 (4 SWD, 3 Males, 1 Female).

Largest Capture: August 20 (87 SWD, 39 Males, 48 Females).

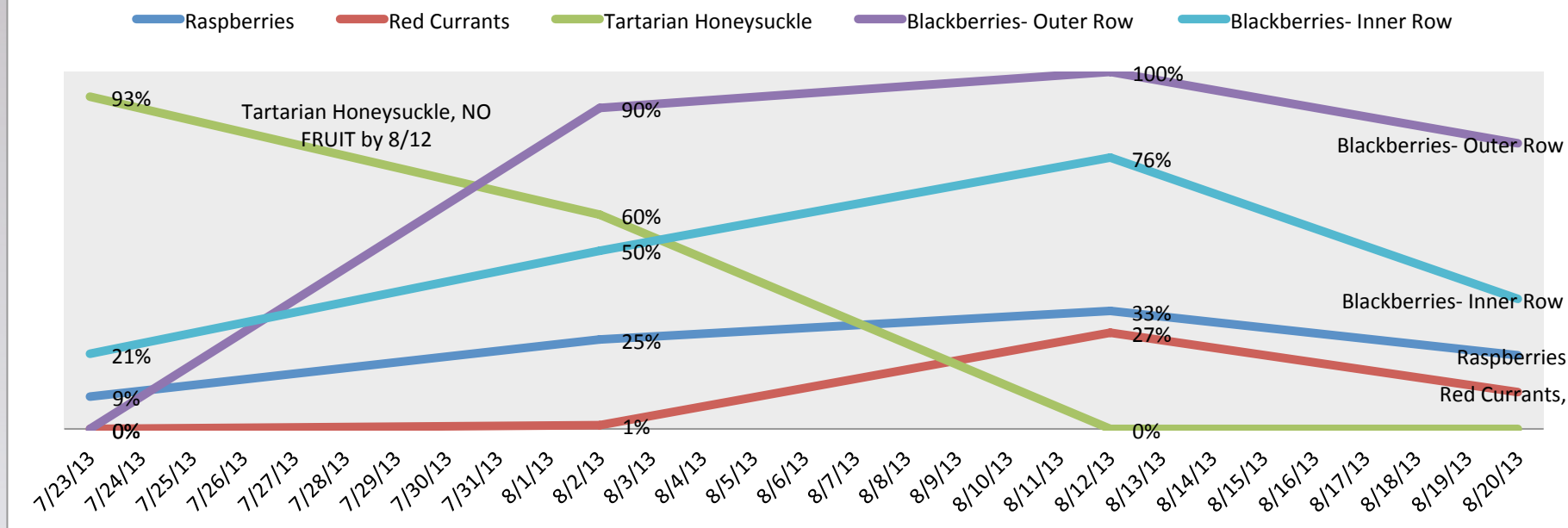


Ulster County Trapping- By Fruit

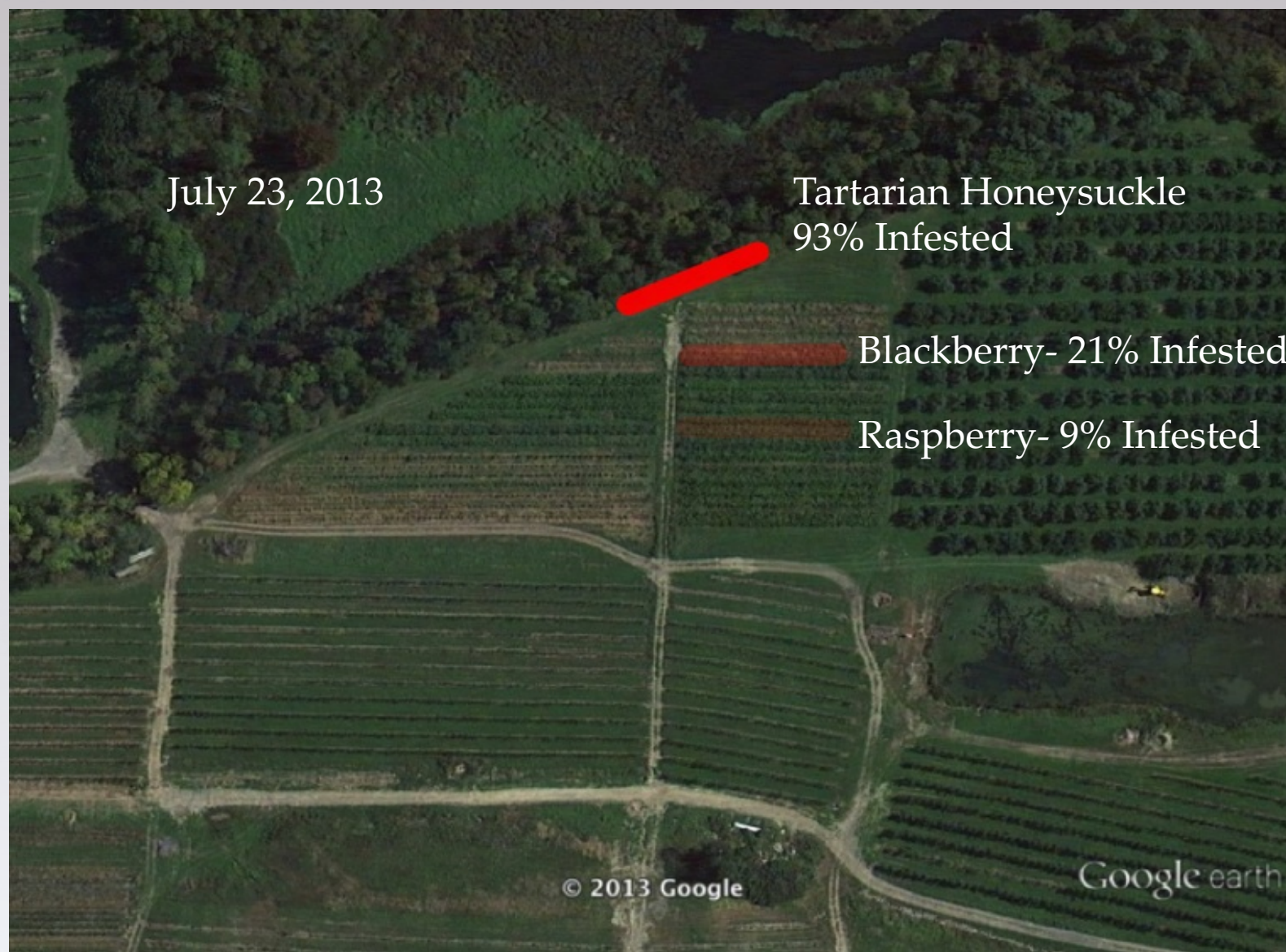


- ⌘ Insects captured in traps placed near certain commodities. Populations near Blackberries and Tartarian Honeysuckle consistently higher than other areas.
- ⌘ Tartarian Honeysuckle trap continued to collect adults for a week after plants lost all fruit.

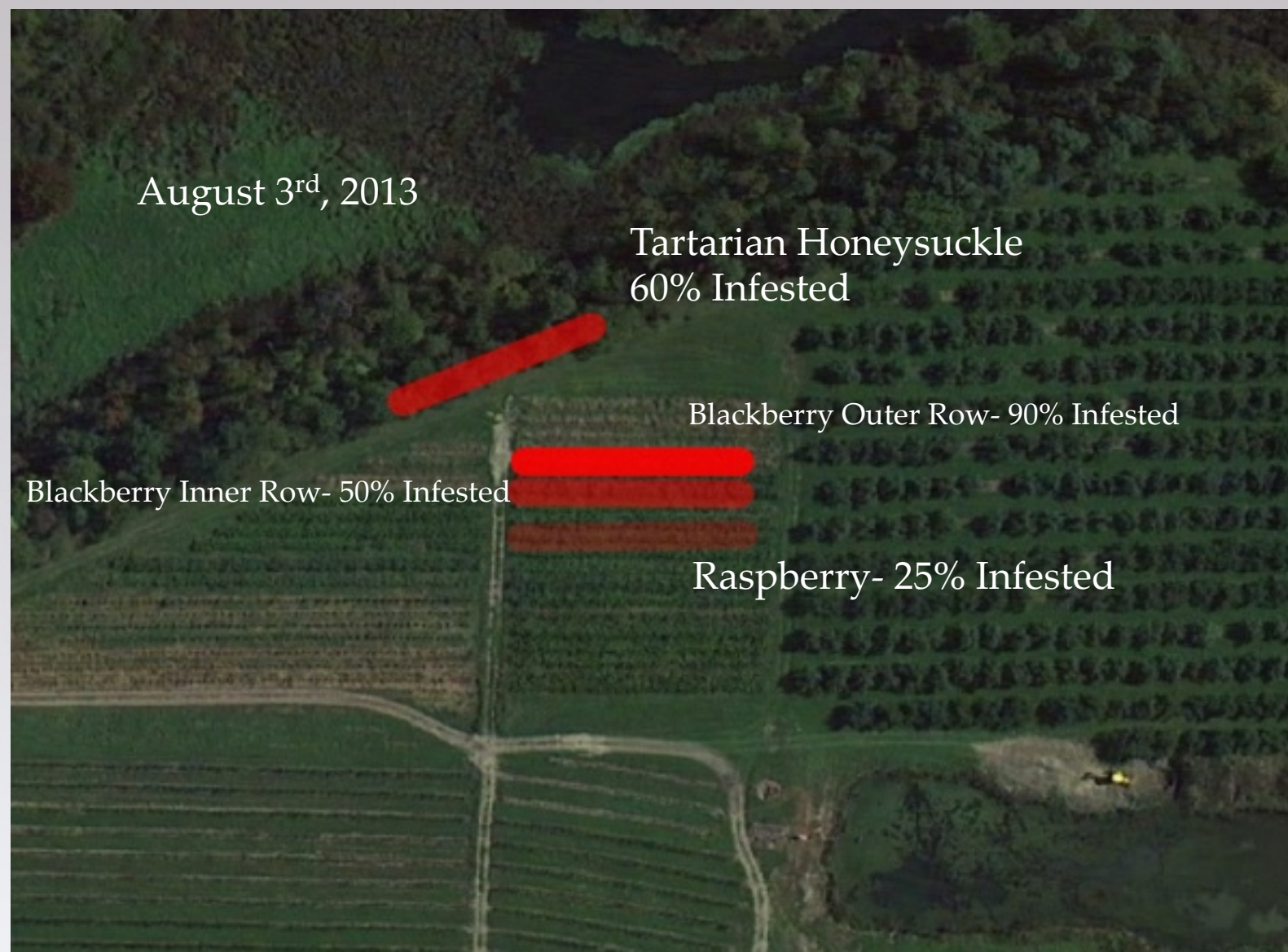
Fruit Infestation levels- Wild and Domestic fruit



- ⌘ Fruit samples from Ulster county were examined and levels of SWD infestation was determined.
- ⌘ Tartarian Honeysuckle berries maintained high levels of infestation until August 12, when the plants bordering the orchard no longer had fruit.
- ⌘ Infestation in the domestic cultivars increased as wild hosts disappeared.



Fruit Infestation levels by location. Opacity of line indicates level of infestation.



As Tartarian Honeysuckle loses fruit, infestation increases in cultivars closest to forest edge.

August 12th, 2013

Tartarian Honeysuckle: No Fruit

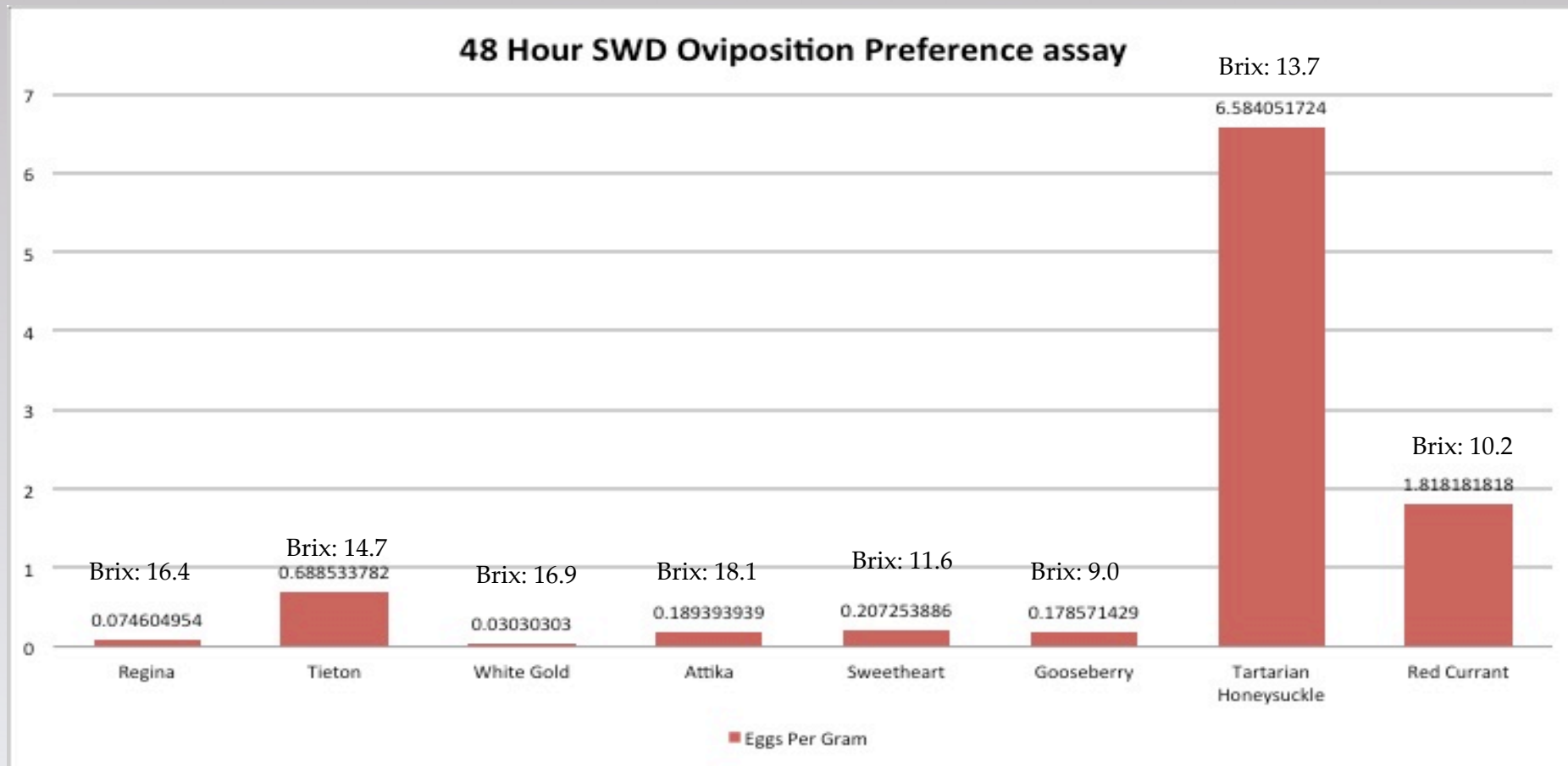
Blackberry Outer Row- 100% Infested

Blackberry Inner Row- 76% Infested

Red Currant-
25% Infested

Raspberry- 33% Infested

As Tartarian Honeysuckle loses all fruit, Infestation in cultivars reaches higher levels.

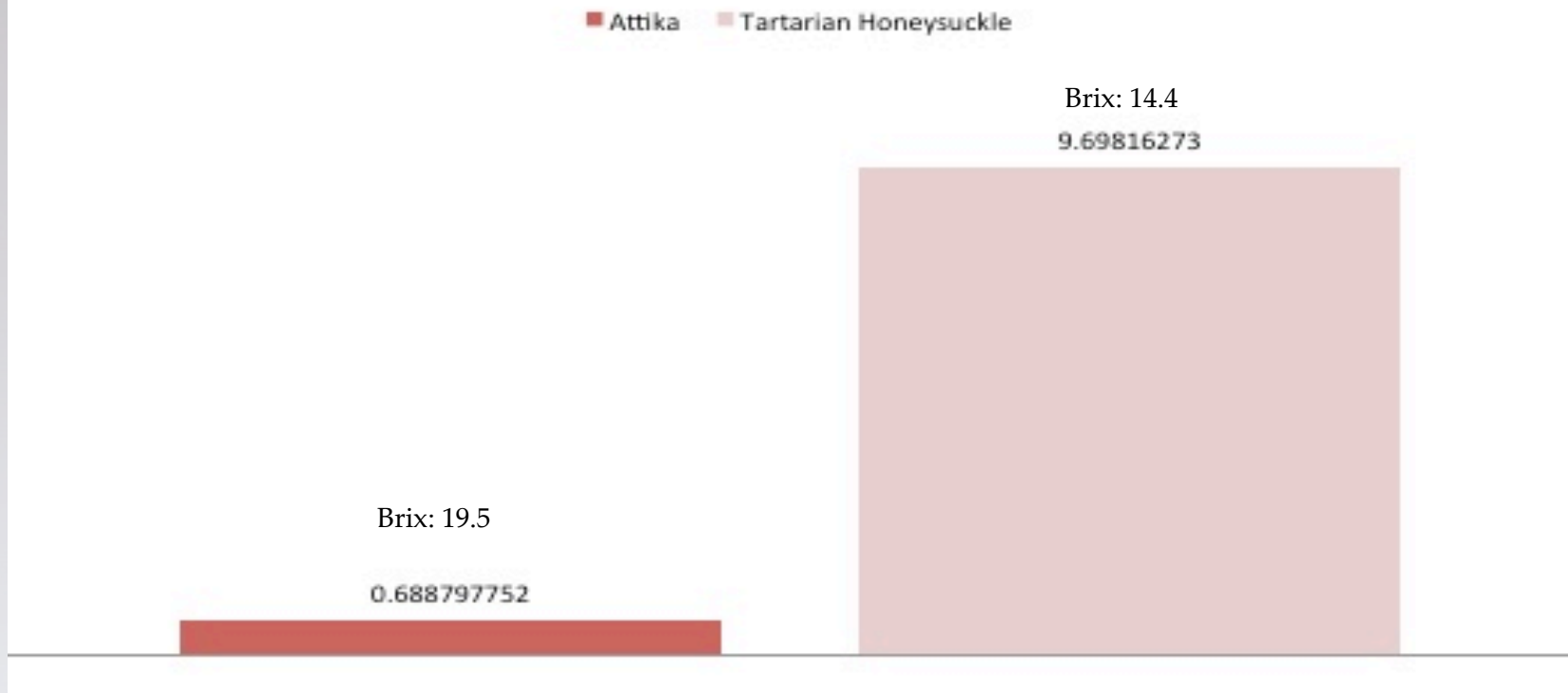


SWD oviposition on wild hosts such as Tartarian Honeysuckle and Gooseberry was compared to various cherry varieties and Red Currant.

Male and Female flies were introduced to fruit, and allowed 48 hours to oviposit before they were removed and eggs were counted. Each fruit was isolated with 5 male and 5 female SWD adults.

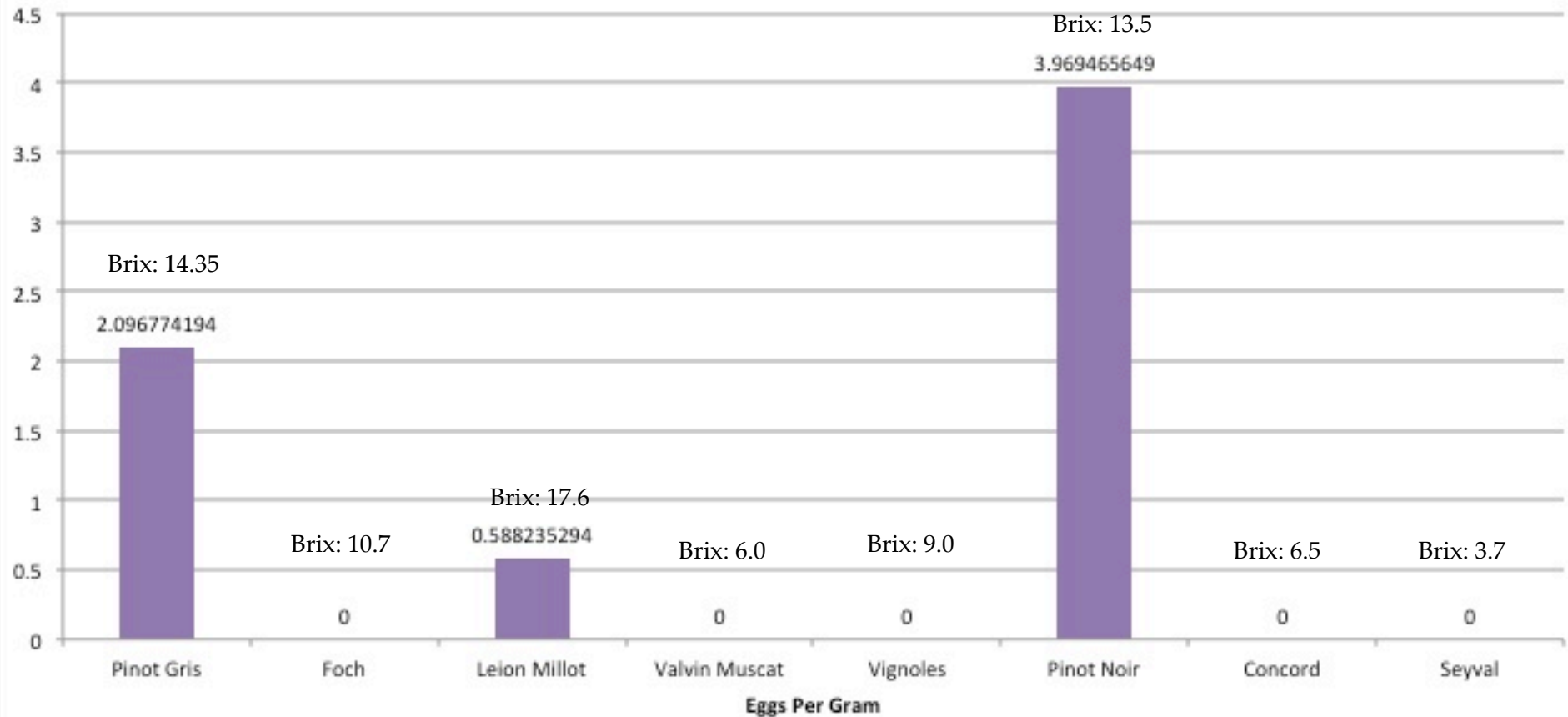


48 Hour SWD Oviposition assay- Attika cherry vs. Wild host



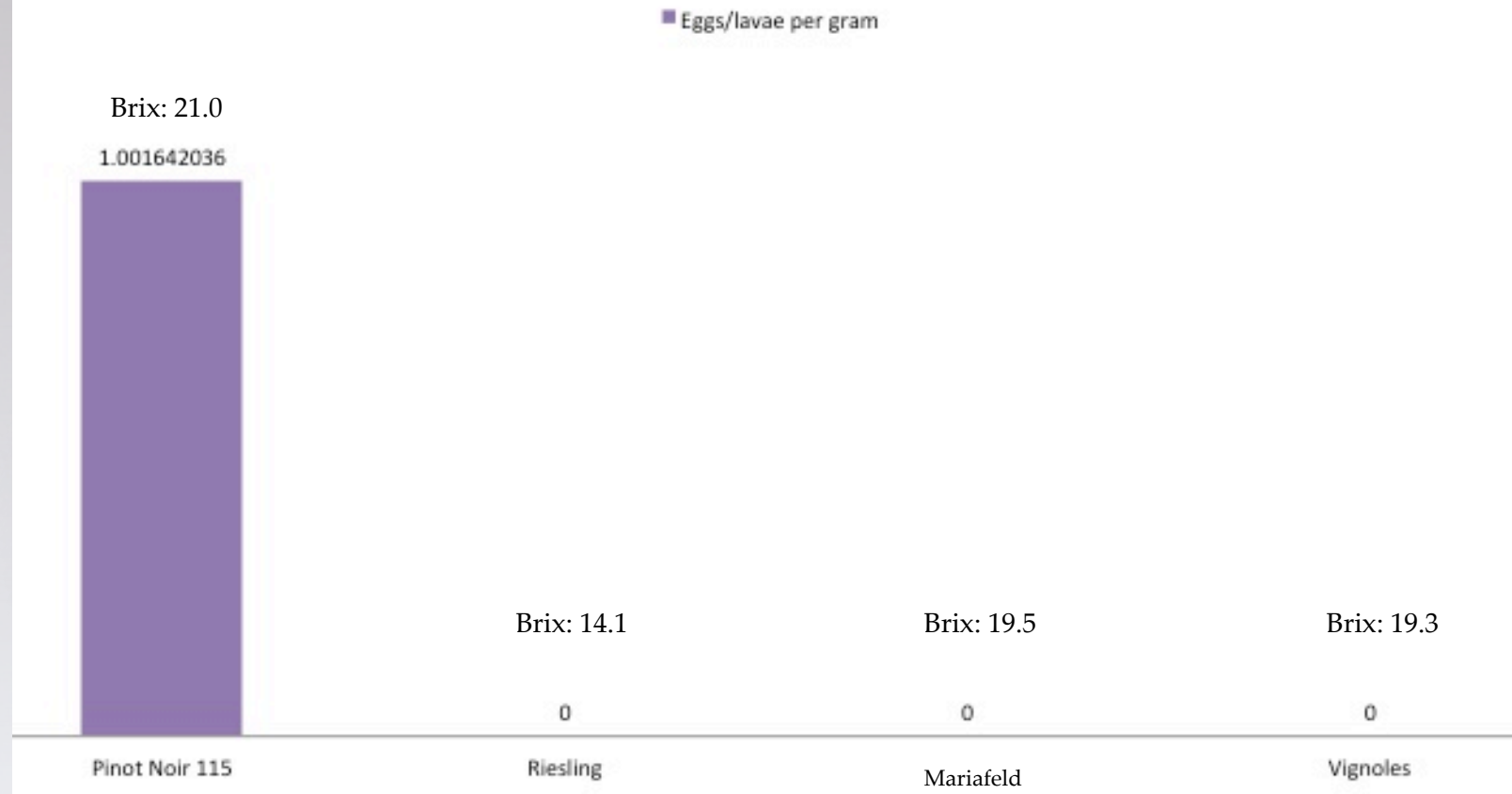
Attika Cherry placed in container with Tartarian Honeysuckle. Flies allowed free movement and choice between both varieties. Oviposition in Tartarian Honeysuckle observed at much higher levels.

48 Hour SWD Ovipositional Preference assay



SWD ovipositional preference in healthy grape varieties. All grapes placed in same container. 40 SWD adults introduced and allowed 48 hours to oviposit.

SWD Infestation in Grape- Ulster County- September 16th



Grapes collected and analyzed from an Ulster County vineyard indicated that Pinot Noir is indeed at high risk of SWD infestation.

Acknowledgments



To all of our technical staff and assistants!

