Progress Report – Submitted March 14, 2016

Second Quarterly Report

Chemical profile for possible host selection and to induce resistance against spotted wing drosophila in grape

D. G. Pfeiffer, and B. Hussain

Department of Entomology, Virginia Tech, Blacksburg, VA 24061

1) Salicylic acid (SA) and jasmonic acid (JA) induce defensive response against insect pests. The pre application of SA & JA induced defensive response against SWD in two different wine grapes. **In a field study**, **plants pre-sprayed with SA & JA exhibited highest defensive response relative to unsprayed vines**. We quantified increased total phenol, tannin and flavonoid content in SA & JA-treated fruits (Table 3) compared to untreated fruits. Among the two different varieties, total tannin and flavonoid content was higher in Pinot Noir relative to Chardonnay. **There were no differences in SWD infestation**. **Cluster weight (grams) was also highest in SA & JA sprayed plants relative to untreated.**

2) We quantified total tannin, total phenol and total flavonoid content in six grape varieties to explore the possible resistance of wine grapes against SWD. We **estimated highest amount of secondary metabolites in Petit Verdot and Petit Manseng relative to other varieties (Viognier, Cabernet Franc, Vidal, Pinotage**).

Varieties	Treatments	µġ Quercetin equivalents/gram	µġ Tannic acid equivalents/ gram	µġ Gallic acid equivalents/ gram
Pinot Noir	SA	217.16	17.8	185.36
	JA	192.66	16.33	186.16
	Control	111	15.6	184.33
Chardonnay	SA	97.66	14.04	182.36
	JA	104.33	16.43	182.16
	Control	82.66	9.36	180.56

I. Quercetin used as standard for Total flavonoid estimation;
II. Tannic acid used as standard for Total Tannin estimation;
III. Gallic acid used as standard for Total phenol estimation;
IV. Data are on dry weight basis.

Analysis of chemical samples is continuing, and will be used to supplement other varietal observations.