Section I: Invasive & Emerging Pests

OVERVIEW OF OUR FIRST SEASON'S EXPERIENCES TO CHEMICALLY MANAGE THE SPOTTED WING DROSOPHILA THROUGH LAB AND FIELD RESEARCH ON BLUEBERRY IN WESTERN WASHINGTON

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Lab bioassay for rapid knockdown of adult life stage

Fully ripened 'Duke' berries were collected on 15 July and dipped for 5 sec and air-dried in a climate-controlled greenhouse at 65-78 ^{0}F. Twelve treatments were replicated 5 times with 2 treated fruit per 2 oz ventilated condiment cup. Three adults were placed in each arena with a cotton water wedge and mortality assessed after 24 hours. High field rates of Brigade®, Asana®, Mustang Max®, Delegate® and Malathion® provided 100% contact mortality within 1 DAT. Mortality was: 94% (Assail®), 75% (Actara®), 36% (Provado®), 73% (Altacor®), 88% (Leverage®), 79% (Endigo®) and 7% (UTC). These data indicate blueberry recommended insecticides would provide quick knockdown as contact harvest treatments by ground or aerial applicators or in combination with the systemic neoniotinoids.

Early season 'Duke' field bioassay
Trials were conducted at WSU NWREC on 6 year-old 'Duke'blueberries. Plots were single bushes replicated four times in a RCBD. Treatments were applied with a CO_2 backpack sprayer equipped with an 8002VS nozzle, delivering 100 gal/ac at 60 psi. All treatments except Altacor contained the R-56® spreader sticker (0.5% v/v). Field residuals of 15 insecticides was evaluated by taking 5 fruit/plot after 1, 5 and 7 DAT. One SWD adult was isolated on a single blueberry for 24 hrs in a 2 oz ventilated condiment cup. Under the conditions of this field-bioassay, 1 DAT performance was less than expected, though our bioassay measured 90% mortality for Malathion and 80% for experimental Endigo. After 7 DAT, mortality was reduced to 58% and 77% for Malathion and Endigo, respectively. The remaining compounds after 1 DAT ranged in decreasing order from 66% for Asana, Mustang Max, Scorpion, Delegate, experimental Hero®, Brigade, Assail, Fulfill®, Provado, Altacor and 15% for Actara. Given a 25% mortality level for the untreated check at 1 DAT, we suspect either colony vigor or high greenhouse temperature (68-82^{o}F) detrimentally affecting the results.

Late season 'Liberty' field bioassay
Trials were conducted near La Conner, WA. Plots were single bushes replicated three times in a RCBD. Treatments were applied with a CO_2 backpack sprayer equipped with an 8002VS nozzle, delivering 100 gal/ac at 60 psi. All treatments contained the R-56 spreader sticker (0.5% v/v). Ten mature blueberries were picked at 1 and 7 DAT from each plot and evaluated for adult mortality after 24 hours. Two berries were placed in 2 oz ventilated condiment cups that included a cotton water wedge and one of the treated berries cut in half to provide nutrients. A single adult SWD was placed in each arena for a total of 15 individuals per treatment. Rain occurred after 1 DAT and possibly reduced efficacy of our applications. Malathion (100%), Delegate (80%) and Brigade (80%) were significantly different from the neonicotinoids Provado (53%), Actara (20%) and Assail (13%) after 1 DAT (Fig. 1). Delegate (80%) and Malathion (67) continued to show good field residual after 7 DAT. Mortality for the UTC was 7% on both posttreatment dates.

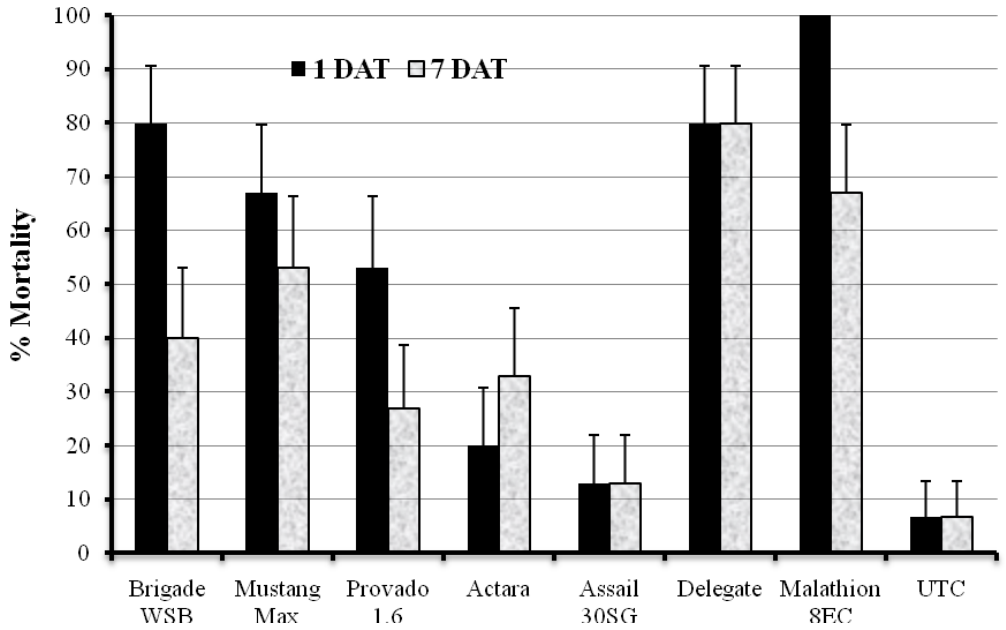

Figure 1. Field-aged residue bioassay of 'Liberty' blueberry.