Section VII
Foliage & Seed Feeding Pests

EVALUATION OF NOVEL MODE OF ACTION INSECTICIDES TO CONTROL WINTER MOTH IN BLUEBERRY, 2008

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Winter moth, *Operophtera brumata* (L.). A population of late instar winter moth were collected on 20 May from a varietal blueberry planting at the WSU Mount Vernon NWREC. The population caused significant economic damage. These larvae had exited from the floral buds and were voraciously feeding and spinning silken thread to tie leaves together. If not controlled, winter moth larvae are capable of severely defoliating blueberry before they drop to the ground to pupate under debris. Infested terminals 3-4 inches long were collected and placed in paper bags and held in a refrigerator before being treated with aqueous suspensions of insecticides with a hand held atomizer until dripping. Five terminal replicates were place in quart sized, clear plastic, disposable food containers. The lids were punctured multiple times with a sharp probe for ventilation. Bayer CropScience's flubendiamide (Belt™) is a new lepidopteran-specific insecticide that is active via ingestion with no contact activity. DuPont's experimental DPX-HGW86 (Cyazypyr™) is formulated as a SE (suspo emulsion) or OP (oil dispersion). It is translaminar via foliar application and systemic via root uptake (drip irrigation application) and broad spectrum. Belt and Cyazypyr are members of a new chemical class

(IRAC) called diamides that modulate ryanodine receptors in muscles cells causing uncontrolled release and depletion of Ca^{2+}.

By 2 DAT all treatments were significantly similar to the standard Success™ with larval mortality for mature larval instars ranging from 83% to 97% (Table 1). Though not significant, the high rate of the oil dispersion formulation, HGW86 and low rate + MSO provided 100% mortality by 7 DAT. There appeared to be some performance differences for Belt when mixed with two different surfactants but by 7 DAT they were similar to that of HGWW86 and Success.

Table 1. Winter moth bioassay on blueberry, 2008.

		Percent Mortality		
Treatment	Rate/acre	1 DAT	2 DAT	7 DAT
HGW86 10SE*	13.6 fl oz	80.0a	86.7a	93.3a
HGW86 10SE*	20.6 fl oz	93.3a	96.7a	100a
HGW86 10SE + MSO*	13.5 fl oz	83.3a	93.3a	100a
HGW86 OD*	13.5 fl oz	76.7a	83.3a	100a
Belt + NIS	4 fl oz	96.7a	96.7a	96.7a
Belt + OS	4 fl oz	80.0a	90.0a	100a
Success	6 fl oz	96.7a	96.7a	100a
Untreated check	0	0	6.7b	20b

Mean within columns followed by the same letter are not significantly different (Fisher's protected LSD, $P<0.05$), PRC ANOVA SAS.
MSO (methylated seed oil adjuvant, NIS (non-ionic surfactant), OS (organosilicone).
*Buffer to a pH of 5.0 or lower.