

Chemical Control/New Products

ASSAIL—A NEW TOOL FOR CODLING MOTH CONTROL

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Introduction

Assail (Acetamiprid) was originally discovered by Nippon-Soda and is currently marketed in the United States by Aventis CropScience. Acetamiprid is registered worldwide under the tradenames Mospilan and Rescate (Mexico) on a variety of crops and numerous pest species. Assail is a nicotinic receptor agonist that interferes with the sodium ion flow, disrupting the insect nervous system. The target insect species is impacted through both contact and ingestion routes. Assail is applied as a foliar material and is highly systemic, providing quick knockdown with residual control dependent on rates used. Assail is not effective when applied as a soil drench due to its short residual in soil. Assail is very safe to bees and was granted reduced risk status based, in part, on this. Populations of some beneficial species such as coccinellids are impacted by Assail while others such as lacewings, predatory mites and parasites show little or no effect.

Research conducted from 1992 to present indicates excellent activity on a wide range of insect pests including codling moth, aphids, leafhoppers, whiteflies and mealybug. Early screening trials evaluating aphid activity also showed positive codling moth results in the form of reduced percent damaged fruit. Subsequent small plot pome fruit trials identified excellent control of both codling moth and aphids. In 2000, trials were designed to specifically evaluate the impact of rate on codling moth, aphid and secondary pest control in a large plot environment.

Materials and Methods

Four trials were arranged in the major apple production regions of Washington. Trial site locations included Wenatchee (two sites), Yakima and Ephrata. With the exception of the Ephrata site, all locations included an untreated check for comparison. All locations utilized Guthion as the commercial standard for efficacy comparison. Two trial locations used 3 replicates in a randomized complete block design and two trials utilized 4 sub-samples per treatment for efficacy evaluations.

All treatments were applied with commercial application equipment. Volumes ranged from 100 to 200 gallons per acre and 120-165 psi. Application timings were based on the codling moth heat unit biofix model (degree-days) developed by Washington State University and/or adult trap data.

Codling moth evaluations consisted of 1-2 measurements of codling moth infested fruit following the second and/or last (4th–5th) application. Aphid data were collected at one of the

four locations and are reported as aphids per leaf. Additionally, pandemis leafroller, western tentiform leafminer and white apple leafhopper were evaluated at one location but are not summarized in this report.

Results and Discussion

Assail applied at rates of 0.1 to 0.15 lb AI/acre, as a four to five treatment, full season program, provided codling moth control comparable to Guthion at 1.0-2.0 lb AI/acre. Untreated infestation levels of codling moth ranged from 28 to 65% across the four locations at final evaluation. In addition to codling moth control Assail, at above rates, also provided 95-100% woolly apple aphid, green apple aphid and rosy apple aphid control.

Codling moth and aphid control by trial location

Wenatchee 1. After 2 applications both Assail at 0.15 and Guthion at 1.0 lb AI/acre had very little codling moth injury, 0.33% and 0%, respectively at the first rating. The second rating resulted in 2.5% and 1% codling moth injury (stings and entries) for Assail and Guthion, respectively. The untreated averaged 4.05 and 28.5% codling moth injury at the first and second ratings, respectively.

Wenatchee 2. The first rating (2 applications) resulted in 1.3% and 0% codling moth injury for Assail at 0.15 and Guthion at 1.0 lb AI/acre, respectively. Average codling moth injury in the Assail plots was 5.5% and 2.3% in the Guthion plots at the second rating. The untreated averaged 18 and 55% codling moth injury at the first and second ratings, respectively.

Yakima. Codling moth injury after three applications of Assail at 0.1 and Guthion at 2.0 lb AI/acre was 3.5% and 1.4%, respectively, with the untreated averaging 5.4% damaged fruit. The second evaluation, 31 days after the 5th application of Assail at 0.1 and Guthion at 2.0 lb AI/acre, showed 13.7% and 6.4% codling moth injury, respectively, while the untreated averaged 65% damage.

Ephrata. A final evaluation of codling moth injury indicated 0.3 and 1.0% damaged fruit for Assail at 0.15 and Guthion at 1.0 lb AI/acre, respectively. Aphid numbers, per leaf, in the Assail plots were 0 for rosy apple aphid, green apple aphid and woolly apple aphid. Aphid numbers in the Guthion plots were 70, 58.8 and 13.8 for the rosy apple aphid, green apple aphid and woolly apple aphid, respectively. Aphid evaluations were obtained 5 days after the last of four applications of both Assail at 0.15 and Guthion at 1.0 lb AI/acre.