Exirel: a new insecticide for control of plum curculio and other sucking and chewing insect pests of pome and stone fruit

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With the phase-out of Guthion and further restrictions on the use of Imidan, pome and stone growers are having to use newer insecticides to control plum curculio and other fruit damaging insect pests. Many options exist, including a new one, DuPont Exirel, which is expected to be registered for use in 2013.

Exirel, active ingredient Cyazypyr™, is a second generation anthranilic diamide insecticide (Group 28) that is effective on sucking and chewing pests, i.e., aphids, psyllids, leafminers, beetles, and Lepidoptera (codling moth). Thus, it has a rather broad range of insect control. Exirel is fast-acting (rapid feeding cessation), has no cross-resistance with existing insecticides (good rotation partner), and has low toxicity to predators (good fit with IPM) according to DuPont.

Although Exirel experimental trials have shown excellent control of -- for example -- codling moth in apples, it should also work on weevils hence plum curculio. In 2012 an insecticide efficacy trial was conducted at the UMass Cold Spring Orchard to demonstrate the effectiveness of timely Exirel applications to specifically control plum curculio on apple.

The UMass Orchard experimental block is a mature, semi-dwarf McIntosh block (Tree Row Volume = app. 200 gallons per acre) with a long history of plum curculio activity and damage. The treatments (4 replications, randomized block design) and rates applied are depicted in Table 1.

Table 1. EXIREL, ALTACOR, and AVAUNT treatment rate(s) and timing

Treatment	12-May, PF-5mm	30-May, 1st CM	10-June, 2nd CM
EX-AL-AL	EXIREL 16 fl. oz. per acre	ALTACOR 4 oz. per acre	ALTACOR 4 oz. per acre
EX-EX-AL	EXIREL 16 fl. oz. per acre	EXIREL 16 fl. oz. per acre	ALTACOR 4 oz. per acre
AV-EX-AL	AVAUNT 5 oz. per acre	EXIREL 16 fl. oz. per acre	ALTACOR 4 oz. per acre
UTC (Control)			

Some points on the treatment timing:

- 12-May with Exirel and Avaunt specifically targeting plum curculio
- 30-May with Altacor and Exirel targeting late plum curculio and 1st codling moth spray based on pheromone trap capture and degree-day model
- 10-June with Altacor targeting codling moth (2nd spray)

Applications were made using a Rears PakBlast airblast sprayer calibrated to deliver app. 65 gallons per acre (200 gallons per acre trees, thus 3X concentration), 150 p.s.i. pressure, and using air-induction (low-drift) nozzles.

To evaluate the effectiveness of treatments, 25 fruit samples per treatment replicate (100 fruit per treatment) were observed on 9-July on tree for injury (plum curculio, codling moth, other [sawfly, plant bug]). Results are presented in Table 2.

Table 2. Percent fruit damage

Treatment	% clean fruit	% plum curculio	% codling moth	% other
EX-AL-AL	96 a	4 b	0	0
EX-EX-AL	95 a	3 b	0	1
AV-EX-AL	90 a	2 b	0	8
UTC	53 b	40 a	0	11

mean separation by letter within column by Tukey HSD, $P<0.05$

All treatments were significantly better at reducing plum curculio injury (to mostly below economic injury level) compared to the UTC, as well as resulting in 90% or more clean fruit compared to 53% for the UTC. CM damage was non-existent or unrecognizable. (Some codling moth damage may have gone in the % other column.) The UMass Orchard has very low history of CM injury although adults are caught in pheromone traps. Observation of fruit on the UTC treatment trees showed that both more recent as well as older plum curculio damage was observed hence plum curculio were active during most of the treatment period.

Based on these results. it appears pome and stone fruit growers have another effective, IPM- and rotation-friendly insecticide, DuPont Exirel, to control plum curculio and other sucking/chewing insect pests beginning in 2013.

EXIREL treated McIntosh apple with no insect injury

NON-EXIREL treated McIntosh apple with significant insect/plum curculio damage