

Coragen: New Insecticide from DuPont

Meeting in Wimauma, FL May 16, 2007

(Notes by Dr. Rachel Ribbeck)

Speakers and Subjects:

Charles Morris: (Area Sales Manager) Welcome address and introductions of key DuPont staff and speakers for the day.

Lars Swanson: (Portfolio Manager) Objectives and schedule of the meeting.

Dr. Paula Marcon: (Global Research Leader) Biological attributes of Rynaxypyr.

Dr. Cheryl Bellin: (Environmental and Biological Fate Technical Leader) Biological Attributes and Soil Activity

Dr. Dave Schuster: Evaluation of Coragen for Control of Insects in Florida.

Dr. Dan Sherrod: (Product Development Manager) EUP Booklet Requirements:

Topics Discussed:

1. Long-lasting (14 days+ and rainfast) and highly effective: Provides control of a wide range of Lepidopteran pests as well as activity on leafminer and whitefly. Toxicity has also been observed in some Coleoptera including Colorado potato beetle and rice water weevils. Research is currently being conducted to assess toxicity on pepper weevil.
2. Novel mode of action: Rynaxypyr is a ryanodine receptor agonist which causes death through muscle paralysis. Ca^{2+} is released from the muscle cells which results in the insects' impaired ability to regulate muscle function.
3. Effective and Selective: Rynaxypyr is very effective at low rates and can be applied as a foliar spray and through drip irrigation. After ingestion, feeding cessation is achieved within a few hours and death of the insect occurs within 72 hours. Ovi-larvicidal activity has been observed when Lepidoptera eggs are treated with rynaxypyr. The neonate dies soon after hatching as a result of ingesting the treated egg during the hatching process. Research has shown minimal impact on beneficial insects making it a good fit for IPM programs. No detrimental effects have been observed in bees, birds, fish, and mammals. To date there have been no phytotoxic effects on crop plants and no effect on fruit quality.
4. Safe: No affinity has been observed of the active ingredient for the target protein in humans. The label requires minimal PPE. Under the EUP label the PHI is 24 hours and the REI is 12 hours. DuPont expects that when the federal label is written the REI will be reduced to 4 hours.
5. Activity in the Plant and Soil: When applied by a foliar spray, translaminar activity is observed. This was demonstrated in experiments in which rynaxypyr was applied to the top side of cabbage leaves and diamond back moths were placed on the underside and began feeding. This experiment was particularly impressive due to the very small amount of feeding that resulted in the death of the insect. It was observed that the

activity of rynaxypyr was increased by 5X when applied with the adjuvant methylated seed oil (MSO) – or any non-ionic adjuvant. When injected through a drip system Rynaxypyr behaves similarly to imidacloprid; Rynaxypyr has only a slightly higher soil affinity. To adequately deliver Rynaxypyr to the root zone an appropriate amount of water is needed to push the chemical through the soil profile. Rynaxypyr is xylem mobile and translocated relatively evenly throughout the plant once uptake has occurred. As the plant grows the Rynaxypyr will be located in the lower leaves.

6. Performance of Rynaxypyr versus Comparable Products: In field trails Rynaxypyr was able to control lepidopteran pests quickly and with less active ingredient than competing products. Research has been conducted in Florida to determine if Rynaxypyr is an effective pepper weevil control. Thus far the research has focused on Rynaxypyr as a foliar spray and has not shown adequate control. Trials will soon be conducted to test the efficacy of injecting Rynaxypyr against pepper weevil. Leafminer control was achieved through foliar application of Rynaxypyr
7. EUP Label: Rynaxypyr can be applied on tomato, pepper, squash, watermelon, cucumber, lettuce, spinach, and celery. It is labeled for use against the major lepidopteran pests of these crops as well as whiteflies and leafminers. Depending on the rate used, up to four applications per season are allowed. It is important to note that produce treated with Rynaxypyr under the EUP is not eligible for export since it is not yet labeled in Canada and other countries.
8. Label: The full labeling package was submitted to EPA in January and it was also submitted in several other countries. They are “jointly” reviewing the product and DuPont expects a quicker than normal approval. Right now they are expecting to have the full label by 2 quarter 2008. The first round of labels will include fruiting vegetables, cucurbits, and cole crops.
9. DuPont: They have several new products in the pipeline and are excited about the future of new active ingredients they will offer. They have a brand new herbicide getting close that is totally different than anything available. They also have a fungicide product under development that will be a new mode of action. DuPont has also recent received a patent on a new product delivery methods that will be very user friendly. Growers can order what they want in quantities they want.