

# Pest Managements Strategies Incorporating New Reduced Risk Insecticides

R. A. Van Steenwyk  
Dept. E.S.P.M.  
University of California  
Berkeley, CA. 94720



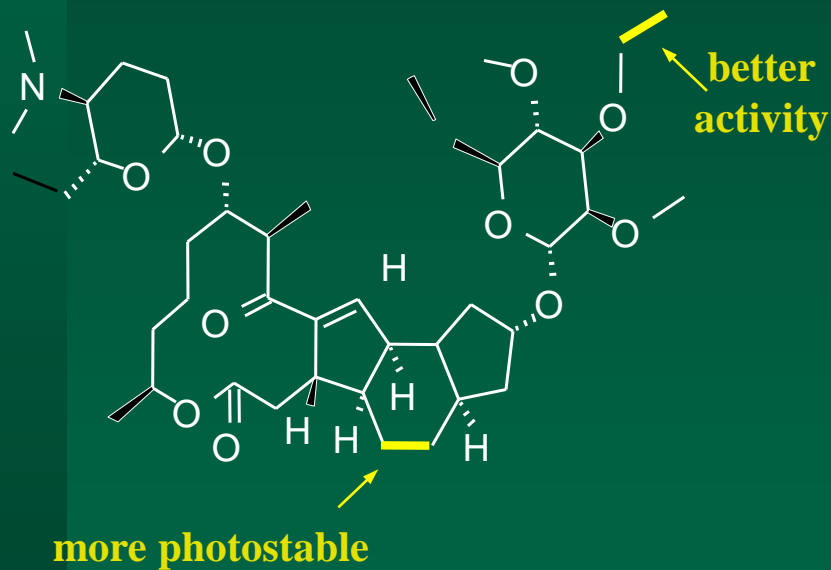


# Delegate 25WG

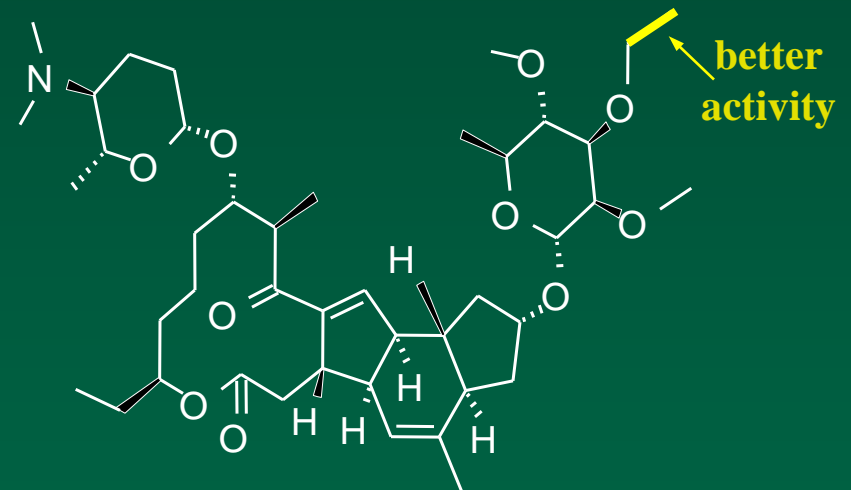
Chemically modified isomers  
of spinosyn  
(Second generation spinosyns)

# Spinetoram

## Major component



## Minor component



**Chemical modification of spinosyn that resulted in increased photostability and improved efficacy**



# Altacor 35WG

chlorantraniliprole = Rynaxypyr™

Anthranilamide

New mode of action

It is derived from

*Ryania speciosa*



# Altacor 35WG

Activates the ryanodine receptor  
in the muscle causing  
release of stored calcium which in  
turn impairs muscle regulation.

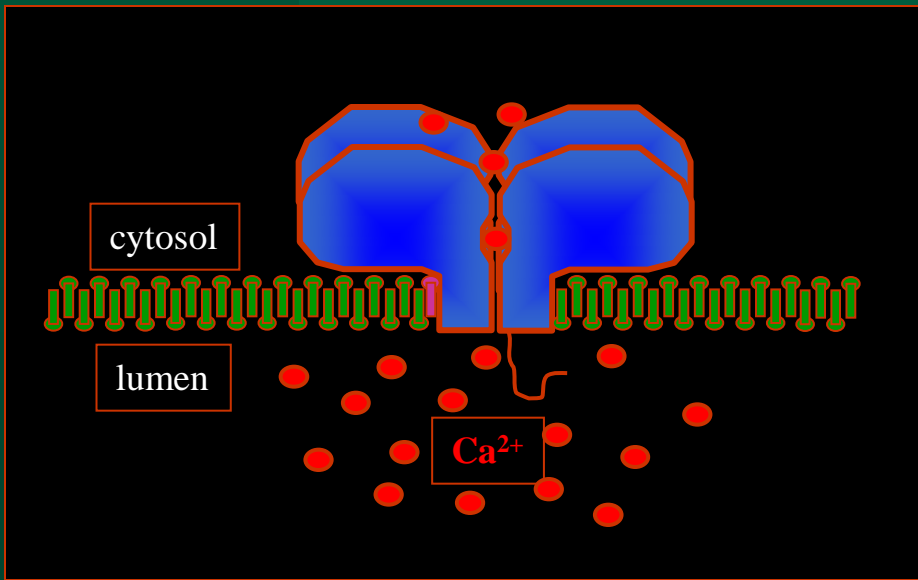
# *DuPont™ RynaXypyr™ Novel Mode of Action*

## *Activates Insect Ryanodine Receptors*

### *Ryanodine Receptor:*



Plays a critical role in  
muscle contraction



### *RynaXypyr™:*

Rynaxypyr binds to this  
receptor, causing uncontrolled  
release of calcium,  
to the point of depletion  
Result: muscle paralysis

# Methods

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## ◆ CM Trials in Fairfield

- All treatments replicated 4 times
- Single tree applications
- Applied using hand-held orchard sprayer at 25 psi & 200 gal/ac
- Treatments applied at 1A (mid-April), 1B ( mid-May), 2A (mid-June) and possibly (mid-July)

# CM Evaluation

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- ◆ Harvest evaluation on late July to early August
- ◆ 1000 fruit examined per treatment



# Secondary Pest Evaluation

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- ◆ PP, ERM, TSSM and PRM
  - 10 exterior & 10 interior leaves per week
  - Weekly examinations: mid-June to harvest
  - Brushed and counted under magnification (20X)

# CM Efficacy in Pears 2005

Treatment	Rate/ac	No. Appl.	% CM	No. PP
Delegate 25WG	6.0 oz	3	8.7 b	60.5 a
Delegate 25WG	7.2 oz	3	3.6 a	87.0 a
Delegate 25WG	6.0 oz	4	5.9 ab	65.3 a
Delegate 25WG	7.2 oz	4	4.1 a	65.5 a
Grower standard <sup>b</sup>		3	4.8 ab	246.0 b
Untreated check			82.0 c	117.5 a

<sup>b</sup> Treatment pH was adjusted to less than 5.

# CM Efficacy in Pears 2005

Treatment	Rate/ac	No. Appl.	% CM	No. PP
Altacor 35WG <sup>a</sup>	2.0 oz	3	4.5 a	133.3 ab
Altacor 35WG <sup>a</sup>	3.0 oz	3	6.5 a	208.8 bc
Altacor 35WG <sup>a</sup>	4.0 oz	3	4.5 a	96.3 a
Grower standard		3	4.8 a	246.0 c
Untreated check <sup>b</sup>			82.0 b	117.5 a

<sup>a</sup> Treatments contained 0.25% PureSpray Green oil by volume.

<sup>b</sup> Treatment pH was adjusted to less than 5.

# CM Efficacy in Pears 2006

Treatment	Rate/ac	No. Appl.	% CM	No. PP
Delegate 25WG	7.0 oz	4	4.6 a	16.8 a
Delegate 25WG <sup>a</sup>	7.0 oz	4	1.4 a	12.3 a
Delegate 25WG <sup>a</sup>	7.0 oz	2	1.3 a	13.3 a
Calypso 4F <sup>a</sup>	8.0 oz	2		
Calypso 4F <sup>a</sup>	8.0 oz	2	2.5 a	14.3 a
Delegate 25WG <sup>a</sup>	7.0 oz	2		
Grower Standard <sup>b</sup>		4	3.6 a	135.8 c
Untreated check			74.9 b	58.3 b

<sup>a</sup>Treatment includes 1% PureSpray Green horticultural oil.

<sup>b</sup>Treatment pH was adjusted to less than 5.5.

# CM Efficacy in Pears 2006

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Treatment	Rate/ac	No. Appl.	% CM	No. PP
Altacor 35WG	2.0 oz	4	11.8 b	90.5 b
Altacor 35WG	3.0 oz	4	5.2 a	103.3 b
Grower Standard <sup>b</sup>		4	3.6 a	135.8 c
Untreated check			74.9 c	58.3 a

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<sup>b</sup>Treatment pH was adjusted to less than 5.5.

# CM Efficacy in Pears 2007

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Treatment	Rate/ac	No. Appl.	% CM	No. PP
Delegate 25WG	6.4 oz	3	0.5 a	16.1 a
Delegate 25WG <sup>a</sup>	6.4 oz	3	0.4 a	18.6 a
Delegate 25WG	7.0 oz	3	0.5 a	20.6 a
Grower Standard <sup>b</sup>		3	1.5 a	21.9 a
Untreated check			48.5 b	59.1 b

<sup>a</sup>PureSpray Green horticultural oil was applied.

<sup>b</sup>Treatment pH was adjusted to less than 5.5.

# CM Efficacy in Pears 2007

Treatment	Rate/ac	No. Appl.	% CM	No. PP
Altacor 35WG <sup>a</sup>	3.0 oz	3	1.1 a	25.5 a
Altacor 35WG	3.0 oz	3	1.2 a	40.8 b
Altacor 35WG	4.0 oz	3	0.8 a	44.7 b
Grower Standard <sup>b</sup>		3	1.5 a	21.9 a
Untreated check			48.5 b	59.1 c

<sup>a</sup> PureSpray Green horticultural oil was applied.

<sup>b</sup> Treatment pH was adjusted to less than 5.5.

# CM Efficacy in Pears 2008

Treatment	Rate/ac	No. Appl.	% CM	No. PP
Targo 0.934 EC	8.0 oz	2	1.2a	67.5 ab
Delegate 25WG	6.4 oz	2		
Targo 0.934 EC	15.0 oz	2	0.8 a	116.0 b
Delegate 25WG	6.4 oz	2		
Delegate 25WG	6.4 oz	2	0.3 a	41.0 a
Flexi 40WG	7.0 oz	2		
Grower Standard <sup>ab</sup>		4	0.4 a	32.5 a
Untreated check			46.8 b	105.3 b

<sup>a</sup>Treatment includes 1% PureSpray Green horticultural oil.

<sup>b</sup>Treatment pH was adjusted to less than 5.5.



# Available Materials

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Name	PHI	Rate	Rate/Season
◆ Assail	7 days	8.0 oz	32.0 oz
◆ Calypso	30 days	8.0 oz	16.0 oz
◆ Warrior II	21 days	2.5 oz	12.5 oz
◆ Brigade	14 days	32.0 oz	80.0 oz
◆ Altacor	14 days	4.0 oz	9.0 oz
◆ Voliam Flexi	35 days	7.0 oz	16.0 oz
◆ Delegate	7 days	7.0 oz	19.5 oz
◆ Imidan	7 days	114.0 oz	16.0 lbs
◆ Guthion	21 days	48.0 oz	4.0 lbs

# Program Principles

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- ◆ Pheromone disruption
- ◆ Apply Delegate to only one generation per season preferable only once year
- ◆ Apply Altacor (Anthranilamide group) to only one generation per season preferable only once per year
- ◆ Mix other modes of action (detoxification) with the new reduced risk products.

# Program with low CM and PP pressure

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## ◆ Pheromone disruption

- Delegate at 1A or 1B
- Altacor or Voliam Flexi at 2A

# Moderate CM and PP pressure

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## ◆ Pheromone disruption

- Altacor + Agri-Mek + oil at 1A
- Calypso at 1B
- Delegate 2A

# Program with high pressure

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## ◆ Pheromone disruption

- Delegate at 1A and 1B
- Voliam Flexi and/or Altacor at 2A and 2B