

# Tank Mixing Modes of Action

## Codling Moth Control on Apple

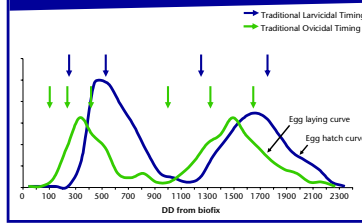
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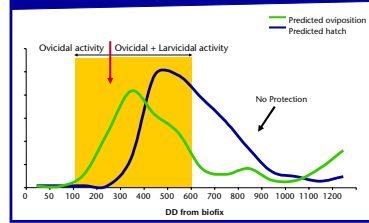
### Mode of Action

- ◆ Insecticides control a specific life phase of the target insect
- ◆ Insecticides with ovicidal activity (Diamond and Intrepid) are applied early in the CM generation to target egg laying while insecticides with larvicidal activity (Guthion and Assail) are applied after egg hatch has begun
- ◆ Tank mixing these two modes of action targets two codling moth life phases in a single spray application
- ◆ Applications are made at traditional egg "hatch" timing. The ovicide targets eggs and the larvicide works against newly hatched larvae.

### Two Modes of Action



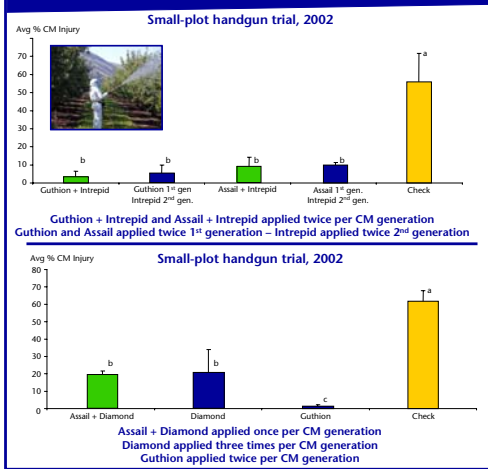
### Combining Modes of Action



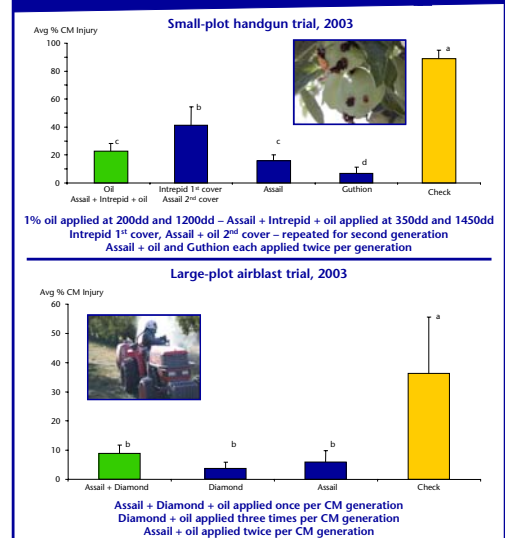
### Methods and Experimental Design

- 2002 Small-plot handgun trials**  
**Intrepid applied in combination with Guthion & Assail**
- ◆ Two applications per CM generation
  - ◆ Two-tree plots replicated four times
  - ◆ Applied with handgun sprayer ≈ 400 gpa
- Diamond applied in combination with Assail**
- ◆ One application per CM generation
  - ◆ Single-tree plots replicated five times
  - ◆ Applied with handgun sprayer ≈ 400 gpa
- 2003 Small-plot handgun trial**  
**Intrepid applied in combination with Assail**
- ◆ One application per CM generation
  - ◆ Single-tree plots replicated five times
  - ◆ Applied with handgun sprayer ≈ 400 gpa
- 2003 Large-plot airblast trial**  
**Diamond applied in combination with Assail**
- ◆ One application per CM generation
  - ◆ Fifteen-tree plots replicated four times
  - ◆ Applied with Rears Pak-Blast Sprayer calibrated to deliver 100 gpa
- Codling moth injury assessed at the end of each CM generation

### 2002 Research Trials



### 2003 Research Trials



### Conclusions

- ◆ Applying 1% oil at 200dd and 1200dd followed by a tank mix combination of Assail + Intrepid + oil at 350dd and 1450dd provided season long CM control that was equivalent to four applications of Assail (small-plot 2003)
- ◆ Applying the combination twice per CM generation only marginally increased CM control relative to the two materials applied separately. The second application in this program is less important because of the level of control provided by the first application (small-plot 2002).
- ◆ A tank mix combination of Assail + Diamond applied once per CM generation provided season long CM control that was equivalent to six applications of Diamond (small-plot 2002).
- ◆ A tank mix combination of Assail + Diamond + oil applied once per CM generation provided season long CM control that was equivalent to six applications of Diamond + oil or four applications of Assail + oil (large-plot 2003).