

Managing codling moth with new insecticides: Assail, Intrepid, and Success

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Introduction

Food Quality Protection Act (FQPA)

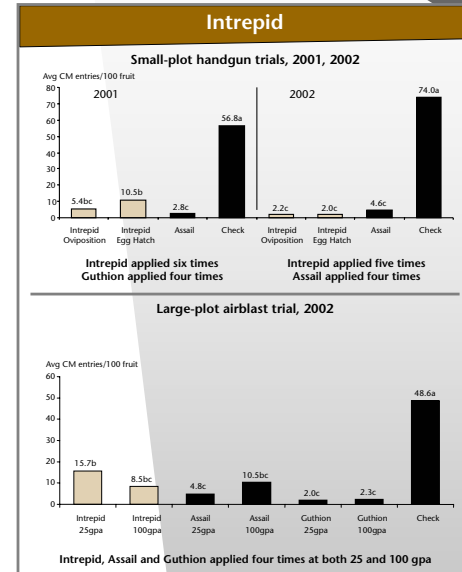
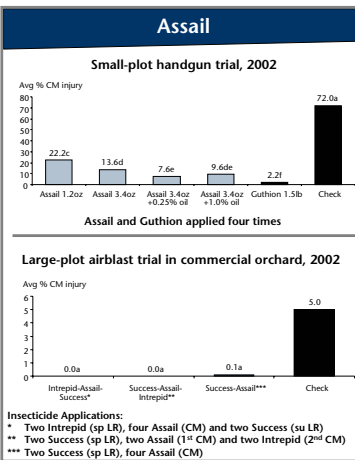
- Landmark pesticide food safety legislation passed by congress in 1996.
- Mandates a single, health-based standard for all pesticides in all foods.
- Provides special protections for infants and children.
- Requires the review of older pesticides to ensure they meet current standards.
- Expedites review of safer pesticides to help them reach the market sooner.

EPA has chosen the organophosphates to be one of the first groups to undergo tolerance reassessment under FQPA. "Reduced risk" alternatives are being tested by WSU TFREC scientists to determine efficacy and non-target effects.

Assail
acetamiprid
Chloronicotinyl class of chemistry
Registered on apple in 2002
REI = 12 hours; PHI = 7 days

Intrepid
methoxyfenozide
Insect Growth Regulator
Registered on apple in 2001
REI = 4 hours; PHI = 14 days

Success
spinosad
Natural product of microbial fermentation
Registered on apple in 1998
REI = 4 hours; PHI = 7 days
*potential organic formulation of spinosad in future



Methods and experimental design (small-plot trials)

- Assail**
- Rates compared – alone and in combination with spray oil, 2002
 - Single-tree plots replicated five times – four applications
 - Applied with handgun sprayer at 300 psi to drip ≈ 400 gpa

- Intrepid**
- Oviposition timing compared to traditional egg hatch timing, 2001 & 2002
 - Five-tree plots replicated four times – six applications (2001)
 - Two-tree plots replicated five times – five applications (2002)
 - Applied with handgun sprayer at 300 psi to drip ≈ 400 gpa

- Success**
- Rates and application intervals compared, 1999
 - Two-tree plots replicated four times – six and twelve applications
 - Applied with handgun sprayer at 300 psi to drip ≈ 400 gpa

Codling moth injury assessed at the end of each CM generation

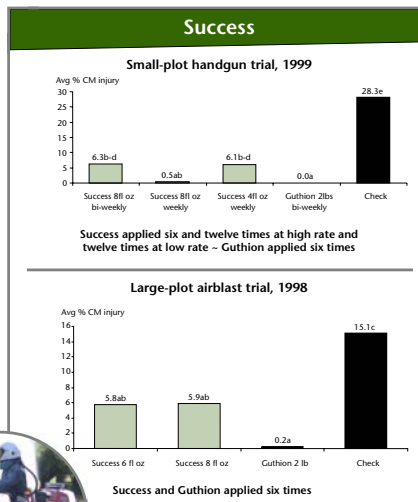
Methods and experimental design (large-plot trials)

- Assail**
- Full season program with Intrepid and Success in commercial orchard, 2002
 - 0.5 acre blocks replicated three times – four applications
 - Airblast sprayer calibrated to deliver 100 gpa

- Intrepid**
- Water volume compared (25 and 100 gpa), 2002
 - Five tree plots replicated three times – four applications
 - Airblast sprayer calibrated to deliver both 25 and 100 gpa

- Success**
- High and low rates compared, 1998
 - Five tree plots replicated three times – six applications
 - Airblast sprayer calibrated to deliver 100 gpa

Codling moth injury assessed at the end of each CM generation



- Assail**
- Significant rate effect noted with Assail applied twice/generation without horticultural spray oil
 - No apparent increase in efficacy of Assail against CM with the addition of horticultural spray oil
 - Exceptional CM control using Assail as part of a seasonal program in a commercial orchard

- Intrepid**
- No significant difference in CM control relative to water volume
 - No significant difference in suppression of CM entries/fruit between Intrepid, Guthion, and Assail with airblast application at 100 gpa
 - No indication that altering the timing of Intrepid (oviposition compared to egg hatch) changed the relative efficacy

- Success**
- No significant rate effect was noted in treatments applied bi-weekly
 - No significant improvement in CM suppression in applications made weekly compared to bi-weekly
 - Six applications of Success reduced CM injury by 60-80% relative to the untreated check.

Conclusion