New Chemical Control Products for Tree Fruit Pests

Arthur Agnello
Dept. of Entomology, NYS Agricultural Experiment Station, Geneva, NY
2018 Empire State Producers Expo

Minecto Pro (Syngenta)

- pre-mix: cyantraniliprole (a.i. of Exirel) + abamectin (a.i. of Agri-Mek)
  - IRAC Groups 6/28
  - Suspension Concentrate; must be mixed with non-ionic surfactant
- cyantraniliprole: 2nd-generation diamide
  - fruit-feeding Leps – codling moth, oriental fruit moth, obliquebanded leafroller
  - plum curculio, European apple sawfly, pear psylla, rosy apple aphid, white apple leafhopper
  - cherry fruit flies, SWD, Japanese beetle, black cherry aphid
- abamectin: avermectin
  - European red mite, twospotted spider mite, pear psylla
- Registered in NYS in pome & stone fruits
- REI: 12 hr; PHI: 28 days (pome), 21 days (stone)
- High bee toxicity

3 years of field trials at Geneva

- 2015: full season program
- 2016: 2-spray program, 4C & 6C
  - targeting 2nd broods
- 2017: 2-spray program, PF & 2C
  - targeting 1st broods

Cormoran (Adama)

- pre-mix: novaluron (a.i. in Rimon) + acetamiprid (a.i. in Assail)
  - IRAC Groups 15/4A
  - Dispersible Concentrate
- novaluron: IGR-chitin inhibitor / acetamiprid: neonicotinoid
  - fruit-feeding Leps – codling moth, oriental fruit moth, obliquebanded leafroller, fruitworms
  - apple maggot, plum curculio, European apple sawfly, pear psylla, white apple leafhopper, aphids, TPB, stink bugs/BMSB
  - Japanese beetle, mealybugs, mullein plant bug
- Not yet labeled in NYS – submitted for registration in Aug. 2017
  - Eventual registration in stone fruits anticipated: aphids, peachtree borers, fruit flies, Japanese beetle, OFM, PC
- REI: 12 hr; PHI: 12 days
- Moderate bee toxicity

2017 field trial at Geneva

- 2-spray programs
  - PF & 4C, alternating with std internal Lep materials
  - 1C & 2C against 1st brood, Delegate against 2nd brood
  - respective comparisons with Rimon/ std internal Lep materials

Harvanta (ISK)

- cyclaniliprole (Cyclapryn®): diamide
  - IRAC Group 28
  - Soluble Liquid
  - anticipated uses:
    - plum curculio
    - fruit-feeding Leps – codling moth, oriental fruit moth, obliquebanded leafroller, fruitworms
- Not yet labeled in NYS – earliest expected registration 2019
- REI: 4 hr
- High bee toxicity

3 years of field trials at Geneva

- 2015: 2-spray program
  - Pink & PF
  - PF & 1C
- 2016: 2-spray program, PF & 1C
  - typical PC treatment window
- 2017: 2-spray program, PF & 1C
  - typical PC window, rate trial

Sivanto Prime (Bayer)

- flupyradifurone: butenolide
  - IRAC Group 4D (nicotinic acetylcholine receptor agonist)
  - Soluble Liquid
  - Pome fruits: aphids (except WAA), leafhoppers, San Jose scale*, oystershell scale, pear psylla*
    - *combine with oil in early season sprays
  - causes cessation of feeding in sucking pests
  - translaminar movement; mobile in xylem
  - proposed use from late dormant to petal fall
- Not yet labeled in NYS – expected soon
- REI: 4 hr; PHI: 14 days
- EPA Reduced-Risk product; Low bee toxicity, safe to beneficials

3 years of field trials at Geneva

- 2015: 2-spray program
  - TC & 2C / Movento at 1C
  - compare w/ Lorsban & Imidan
- 2016: Pink bud application
  - Movento addition @ 1C NSD
- 2017: 1- spray vs. 2-spray program
  - Pink with and without 2C
  - NSD among treatments, but low populations

Closer (Dow)

- sulfoxaflor: sulfoximine
  - IRAC Group 4C (nicotinic acetylcholine receptor agonist)
  - Suspension Concentrate
  - Pome fruits: aphids incl. WAA, white apple leafhoppers, plant bugs [suppression: San Jose scale, pear psylla]
  - Stone fruits: aphids [suppression: San Jose scale]
  - translaminar movement; mobile in xylem
- Not yet labeled in NYS – expected soon
- REI: 12 hr; PHI: 7 days
- Acute toxicity to bees when contacted directly; dried residues non-harmful

Woolly Apple Aphid Trial - 2017

- 2017 field trial at Geneva
- 2-spray programs
  - Application at 27 June (15% infestation) and 14 d later
  - Addition of either LI-700 or Dyne-Amic as adjuvant
  - comparisons with Movento at 1C with or without Sivanto at 1st appearance of colonies
- All treatments comparable, gave acceptable control of WAA, statistically better than check

Grandevo (Marrone)

- *Chromobacterium subtsugae* strain PRAA4-1^{T}: microbial
  - No IRAC Group
  - Mode of action: oral toxicity (stomach poison), repellency, reduced oviposition/hatch
  - Pome and stone fruits: fruit-feeding Leps – codling moth, oriental fruit moth, obliquebanded leafroller
    - aphids, mealybugs, mites, pear psylla, thrips
- Registered in NYS in pome & stone fruits
- REI: 4 hr; PHI: 0 days; OMRI-approved
- Low toxicity to bees and most beneficials

Venerate (Marrone)

- *Burkholderia* spp. strain A396: microbial
  - No IRAC Group
  - Mode of action: contact/ingestion, enzymatic degradation of skeletal structures and interference with the molting process
  - Pome fruits: San Jose scale, pear psylla
  - Stone fruits: fruit-feeding Leps, aphids, mealybugs, mites, thrips
  - Registered in NYS in pome & stone fruits
- REI: 4 hr; PHI: 0 days; OMRI-approved
- Low toxicity to bees and most beneficials

San Jose Scale Trials

- 3 years of field trials at Geneva
- 2015: 2 sprays per generation
  - Venerate 32 vs. 64 oz
  - compare w/ Lorsban & Imidan
- 2016: 2 sprays per generation
  - Venerate vs. Grandevo
  - compare Lorsban Tight Cluster
- 2017: summer vs. early season program
  - Venerate 2 sprays/gen vs. 1 at TC
  - compare w/ Lorsban & Imidan
- Some effectiveness from all treatments, but low populations made comparisons difficult