

Efficacy of OMRI Approved Insecticides and Acaricides

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OMRI Approved Insecticides

- The Organic Materials Review Institute (OMRI) is a national nonprofit organization that determines which input products are allowed for use in organic production and processing.
- OMRI Listed—or approved—products may be used on operations that are certified organic under the USDA National Organic Program.

Why would I use an OMRI listed pesticide ?

- If the operation is certified organic
- resistance management
- rapid breakdown, low residue
- low-risk to workers, consumers and the environment
- low re-entry interval
- low pre-harvest interval

Organic Insecticides

- Should be considered a solution of last resort.
- Should be used in combination with other pest control tactics such as biological control and cultural tactics.
- Spray timing is important to target the most susceptible stages of the pest
- Sprays are often needed to be applied before conventional action thresholds
- Excellent coverage is often needed

Soaps (M-pede)

- One of the first widely used organic insecticides
- Effective on soft bodied insects and mites.
- Generally short term partial control of aphids and mites



Oils

Vegetable Oils (Eco E-rase, Natur'l Oil)
Petroleum Oils (JMS Stylet Oil)
Neem Oil (Trilogy)

- Oils smother motiles and eggs resulting in longer control than Soaps.
- JMS stylet oil and Trilogy significantly reduce pacific and Willamette spider mites in grapes (Pease and Zalom)
- Use of oils in warm temperatures or after fruit is present may cause phytotoxicity in some crops



Rosemary Oil (Ecotrol)

- Good control of two spotted spider mite Strawberries (Zalom)
- No control of cyclamen mites in strawberry bioassay (Zalom)
- Potato aphids on tomatoes w/ adjuvant (Pease and Zalom)
- Control of Willamette mites grapes (Pease and Zalom)



Clove Oil (GC-Mite)

- Control of cyclamen mites comparable to Fujimite and Danitol in strawberry bioassay (Zalom and Thompson)
- Potato aphids on Tomatoes (Pease and Zalom)
- Control of Willamette and Pacific Mites on Grapes (Pease and Zalom)



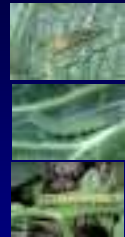
Azadiractin (Neemix, Agroneem, AZA-direct)

- Control of cabbage looper and beet armyworm in Lettuce superior to Bt (Palumbo)
- Aza-Direct + Entrust provided significantly better WFT residual suppression than Entrust alone (Palumbo)
- Some control of Potato Aphid with Agroneem, Neemix (Pease and Zalom) and AZA-direct (Kuhar et al.)



Spinosad (Entrust)

- Control of western flower thrips and beet armyworm in strawberries comparable to Lannate 90SP (Zalom et al.)
- Imported cabbageworm in brassicas significantly reduced by Entrust (80-97% control) (Dively et al)
- Entrust provided significant knockdown and residual suppression of WFT compared to the untreated control (Palumbo)
- Spinosad applications may have detrimental effects on Syrphid Fly larvae (Chaney)



Bacillus thuringiensis (Dipel, Agree, Xentari)

- imported cabbageworm infestations in brassica crops were significantly reduced by Javelin (82-88% control) and Agree (67-90% control)
- significantly less control of both beet armyworm and cabbage looper in lettuce than Entrust or Aza-Direct



Pyrethrins (Pyganic)

- Stink bug density and tomato damage were not significantly different in Pyganic and untreated plots (Pease and Zalom)
- Lygus nymphs are susceptible to Pyganic but field studies are inconclusive.
- Pyganic may have detrimental effects on beneficials

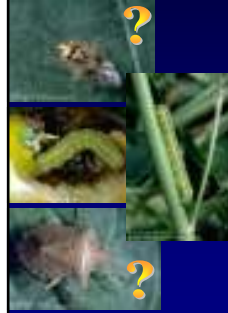


Kaolinite Clay (Surround, Green Cypress Kaolin)

- Stink bug numbers and damage significantly lower in tomatoes treated w/ Surround (75lb/acre) (Pease and Zalom)
- Residue is not acceptable for fresh market, but some processors may accept



Cedar Oil (Cedar gard)



- Repellant
- Reduction of tomato fruitworm, beet armyworm, tomato pinworm damage; not Lygus, stink bug or suckfly damage (Carson et al)
- No reduction in Stink bug numbers or damage in tomatoes. (Pease)
- However, many tomato growers in Yolo County swear by this product for stink bug and worm control

Improving Efficacy of OMRI Insecticides

- Excellent coverage is essential
 - 100-200 gal/acre may be needed for adequate coverage
 - Buffer water if advised by manufacturer
 - Air-assist, electrostatic and drop nozzle sprayers can increase coverage
 - Addition of adjuvants to sprays can increase coverage and efficacy.

OMRI Approved Adjuvants

Active Ingredient	Adjuvant Type	OMRI Products
Yucca extract, saponins	Spreader and penetrant	Biolink Surfactant and Penetrant Natural Wet Surfact 50 ThermX
Soapbark, alkylphenol ethoxylate, polysaccharide	Spreader sticker	Biolink Spreader Sticker
Potassium Salts of Fatty Acids	Spreader	Green Valley Natural Plant Wash
Neem Oil	Sticker extender	Trilogy

OMRI Approved Adjuvants

Active Ingredient	Adjuvant Type	OMRI Products
Joboba Oil	Spreader	Green Cypress Organic Spreader
Fish Oil	Spreader Sticker Extender	Organocide (+ Sesame Oil) SeaCide
Petroleum Oil	Sticker Extender	JMS Stylet Oil PureSpray™ Green
Vegetable Oil	Sticker Extender	Natur'l Oil Eco E-rase
Bentonite, Lactose, Casein	Sticker Extender	S-K-H Organic Adhesive Adjuvant

Organic Adjuvant Trials (Pease and Zalom)

Potato Aphids

Small Plot Field Trial

- CRD with 4 replicates
- First application made at 50 gpa
- Second application one week later at 100 gpa
- Applications were made using an Echo backpack air assist sprayer



Organic Adjuvant Trials (Pease and Zalom)

Potato Aphids

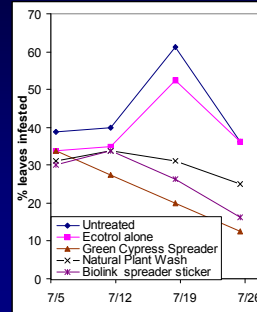
Field Bioassay

- CRD with 4 replicates
- One leaf per plant was selected
- Number of live potato aphids was counted per leaf before and after spray
- Applications were made using a hand spray bottle to drip.

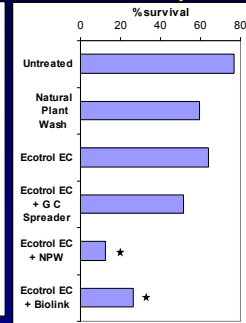


Ecotrol EC with and without adjuvants

Small Plot Trial

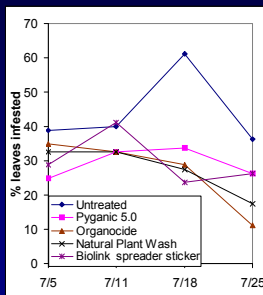


Field Bioassay

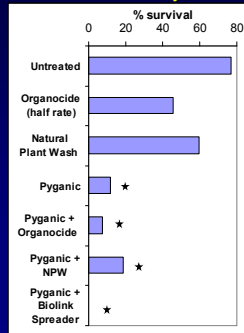


Pyganic with and without adjuvants

Small Plot Trial

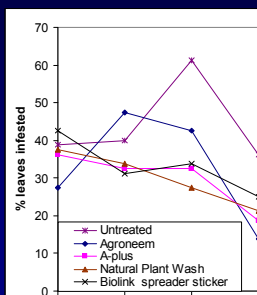


Field Bioassay

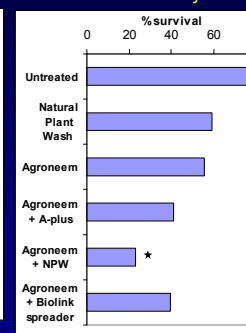


Agroneem with and without adjuvants

Small Plot Trial

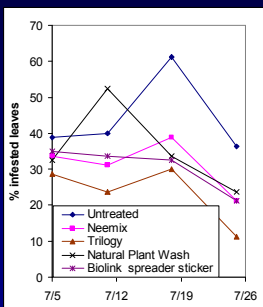


Field Bioassay

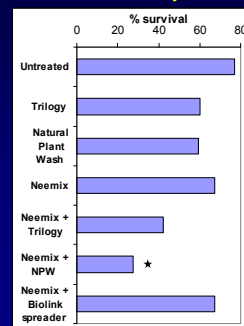


Neemix with and without adjuvants

Small Plot Trial



Field Bioassay



Conclusions

- Products tested were only effective only after a second application at 100 gpa
- Adjuvants significantly increased the effectiveness of Ecotrol EC and Pyganic
- Oil adjuvants tend to extend control
- Soap adjuvants tend to result in better knockdown control (particularly with azadirachtin)
- More research is needed determine the utility of specific adjuvant / insecticide combinations.