Tolfenpyrad
A new broad spectrum insecticide from Nichino America

IR-4 FOOD USE WORKSHOP
SEPT 2010
Las Vegas, NV
2010 IR-4 Food Use Workshop

Las Vegas, NV

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Chemical Details on Tolfenpyrad

- Chemical Name: 4-chloro-3-ethyl-1-methyl-N-[4-p-tolyloxy)benzyl] pyrazole -5-carboxamide

- Empirical Formula: C$_{21}$H$_{22}$Cl N$_3$O$_2$
- Molecular Weight: 283.9
- Code Number: NAI-2302
Insects / Diseases Controlled

- Hemiptera, Coleoptera, Diptera, Lepidoptera, Thysanoptera, Orthoptera and Acarina
- Poisoning by ingestion; contact activity; anti-feeding activity against leps
- Powdery Mildews (MOA unknown)
- Target Crops:
  - Vegetables, Cucurbits, Cole Crops
  - Fruits & Nuts
  - Selected row crops
  - Ornamentals
Efficacy Trials

• Use rate 0.137 to 0.274 lb. a.i/acre (153-307 grams ai / hectare)
• 14 – 27 oz/a (15% EC and 15% SC formulations)
• Alternative mode of action useful against numerous vegetable and fruit/nut pests
Efficacy Trials

- **Coleoptera:**
  - Colorado Potato Beetle, Plum Curculio, Japanese Beetle, Flea Beetle

- **Lepidoptera:**
  - Grape Berry Moth, *Helicopverpa* spp., Diamonback Moth, Imported Cabbage Worm, Leafrollers

- **Hemiptera:**
  - Aphid, Psyllids (include ACP and Pear Psylla), Hoppers, Mealybugs (including Vine Mealybug)

- **Thysanoptera:**
  - Tobacco Thrips, citrus Thrips, Onion Thrips, W. Flower Thrips

- **Diptera:**
  - Cherry Fruitfly, Apple Maggot, Blueberry Maggot

- **Other:** Katydid, Rust Mites, Citricola Scale
Efficacy Trials

• Powdery Mildews:
  – Lettuce
  – Cucurbits
  – Hops
• Possibly certain “downy mildew” species and *Albugo* (white rust)
U.S. Registration Timeline

- Greenhouse registration summer 2010 (reduced risk)
- Submit crop uses with residue chemistry data fall 2010 as reduced risk candidate
- Anticipated food tolerances 2012
EC Vs. SC Efficacy on Colorado Potato Beetle
Miller Research, Rupert, ID 2008

Control of CPB Larvae

NAI-2302 SC: 14 fl oz (153 g ai/ha); 18.1 fl oz (197 g ai/ha)
NAI-2302 EC: 14 fl oz (153 g ai/ha); 18.1 fl oz (197 g ai/ha)
Leverage (imidacloprid + cyfluthrin) 3.75 fl oz/A (88.7 g ai/ha)
Applications made: 17 July 2008, 13.3 GPA
Grape leafhopper: *Erythroneura elegantula* and Variegated LeafHopper: *Erythroneura variabilis* in Grape

**NAI-2302 15EC Efficacy on Leaf Hoppers in Grape**  
**Post Treatment Average Leafhoppers per Leaf**  
**Sanger, CA**  
**Syntech Research 2008**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Leafhoppers/leaf</th>
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<tbody>
<tr>
<td>NAI-2302 EC 153 g ai/ha</td>
<td>0</td>
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<tr>
<td>NAI-2302 EC 229 g ai/ha</td>
<td>0</td>
</tr>
<tr>
<td>Imidacloprid 1.6F 42 g ai/ha</td>
<td>0</td>
</tr>
<tr>
<td><strong>Untreated</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

1 application  
Spray Volume: 96 GPA
Thrips: *Thrips tabaci* in Cotton

NAI-2302 Efficacy on Thrips in Cotton

Virginia

Herbert VTU 2008

![Bar graph showing NAI-2302 Efficacy on Thrips in Cotton](image)

- **Scale**
  - 0
  - 1
  - 2
  - 3
  - 4
  - 5

- **NAI-2302 EC 229 g ai/ha**
- **Acephate 34 g ai/ha**
- **Untreated**

**Legend**
- **4 DAT**
- **9 DAT**
- **16 DAT**

**Note:**
- Planting Date: May 1, 2008
- Treatment Date: May 23, 2008
- Injury Scale: 0-5
  - 0 = no injury; 5 = dead plant
- All seed treated with Atrion 0.75 mg/b seed
Control of Plum Curculio on Apple
Michigan State Univ. 2009

Stings/100 Fruit 6/11

- Untreated
- Imidan 2.5 lbs + Trifol
- Tolfenpyrad 17 fl oz + NIS
- Iolfenpyrad 21 fl oz + NIS
- Actara 4.5 fl oz
- Assail 8 oz

Applied PF, PF+14 and PF+28
Hachi Efficacy on Omnivorous Leaf Roller in Raisin Grape
Percent Damaged Cluster at Harvest
Selma, CA
Sawtooth Research 2009

Application: 100 GPA
Timing: Each flight for total of 3/season
Harvest: 17 August
0.25% NIS in all treatments
P= 0.05 Duncan’s New MRT
Hachi Efficacy on Citrus Thrips in Navel Oranges
Scarred Fruit at Harvest
Porterville, CA
Research for Hire 2009

Application: Petal fall
Spray Volume: 200 GPA
P=0.05 Duncan's New MRT
Harvest Evaluation: October 5th
## Hachi Katydid Efficacy Cage Study in Nectarine
Parlier, CA
Walt Bentley UC IPM 2009

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<th>Treatment</th>
<th>Rate/Acre</th>
<th>1 DAT</th>
<th>3 DAT</th>
<th>4 DAT</th>
<th>7 DAT</th>
<th>14 DAT</th>
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<tr>
<td>Altacor</td>
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<tr>
<td>Delegate WG</td>
<td>6 oz</td>
<td>88</td>
<td>88</td>
<td>88</td>
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<tr>
<td>Avaunt</td>
<td>6 oz</td>
<td>69</td>
<td>81</td>
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<td>Voliam Flexi</td>
<td>7 oz</td>
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</tbody>
</table>

Application: Hand sprayed
Katydids: 3-4 instars (4 katydids/cage)
Spray volume: 136 GPA
No statistics yet
Hachi Efficacy on Tomato/potato Psyllid in Potato
Weslaco, TX
T. X. Liu Texas A&M 2008

Psyllids per Leaf

Hachi 24 fl oz  Fujimite 2 pt  Movento 5 fl oz  Agri-Mek 8 fl oz  Leverage 3.75 fl oz  Untreated
Questions?