Introduction to AgroSource, Inc.

2018 IR-4 Food Use/Biopesticide Workshop
September 19-21, 2018

Mark Trimmer, Ph.D.
Chief Science Officer
AgroSource, Inc.
About AgroSource

• Science –based, privately-held, crop protection company since 2000

• Mission: Identify and develop products for unmet or underserved grower needs

• Products include the leading bactericide brands in fruits, vegetables and ornamentals for bacterial disease control in the US
AgroSource Products

**FireLine™** 17 WP (17% oxytetracycline)

**FireLine™** 45 WP (45% oxytetracycline)

**FireWall™** 17 WP (17% streptomycin)

**FireWall™** 50 WP (50% streptomycin)

**Form of Active Ingredients:**
- Oxytetracycline Hydrochloride (FireLine)
- Streptomycin Sulfate (FireWall)
## Product Uses

### Pending Section 3 Labeling for Citrus includes uses for Citrus Canker and Citrus Greening

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Crop</th>
<th>FireWall 17% Streptomycin</th>
<th>FireWall 50% Streptomycin</th>
<th>FireLine 17% Oxytetracycline</th>
<th>FireLine 45% Oxytetracycline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Blight</td>
<td>Apples</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Pears</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Citrus Greening (HLB)*</td>
<td>Oranges</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Grapefruit</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other Citrus Varieties</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bacterial Spot</td>
<td>Peaches</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Nectarines</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other Diseases</td>
<td>Ornaments</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Tobacco</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Potatoes</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Pepper (Seedlings)</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Tomatoes (Seedlings)</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Celery (Seedlings)</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*Only in Florida and California under a Section 18 Emergency Exemption*
Keys to Success Against Bacterial Diseases of Plants with Fireline™ & FireWall™

Proven activity against Gram negative bacteria (Fire blight, bacterial spot & speck, etc.)

Screening adjuvants to optimize uptake and movement to active site

Validated control in greenhouse and field
ASI Research & Development

• Cooperative Research and Development Agreement (CRADA) with USDA (2013)
  • The primary scientific investigators are: Dr. Robert Shatters, USDA; and Dr. Mark Trimmer, ASI & Dr. Kent Morgan, ASI
Case study: Citrus and HLB

• Oxytetracycline and streptomycin have been in use for years in plant agriculture

• FireLine and FireWall were formulated for treatment of surface bacterial plant diseases

• HLB is an internal bacterial disease of Citrus

• CRADA HLB research discovered that by pairing FireLine and FireWall with a specific application schedule and screening adjuvants, FireLine and FireWall now penetrate and move systemically, translating to reduced bacterial titer, higher yields, and better tree health

This has lead to Section 18s in FL and CA, and Section 3 new uses for all citrus are pending EPA approval
The ASI/ARS CRADA Team

- Rene Amundson, Ph.D.
- Doug Baugher, Ph.D.
- Carly Franko
- Lori Hutchinson
- Jeongsoon Kim, Ph.D.
- Evan Koester
- Dave Lindsay, Ph.D.
- Bo Meador
- Kent Morgan, Ph.D.
- MaLu Oliveira, Ph.D.
- Taw Richardson, President/CEO
- Jeff Santosuosso
- Mark Trimmer, Ph.D.
- Ericarose Warwick
- Monty Watson
- Kimberly Wood
- Patrick Zagorski

- Belkis Diego
- Carole Malone
- Steve Mayo
- Robert Shatters, Ph.D.