FarMore® Technology
Seed Treatment Platform
A Novel Approach to Vegetable Crop Protection
FarMore Technology – Commitment to the Vegetable Industry

• FarMore Technology is the first comprehensive combination of separately-registered seed protection products, proprietary application technologies and dedicated seed treatment services that maximize vegetable production value by enhancing performance and quality.
Benefits of Seed Treatment

- Improved seedling health
- Targeted and accurate application
- Protection for high-value seed
- Complements other crop protection methods
- Optimum stand establishment and plant vigor
- Improved seed germination and seedling emergence
- Grower convenience
Key Features of FarMore Technology

• FarMore Technology is a portfolio of technology and product offerings including FarMore® F300, FarMore® FI400 Cucurbits, FarMore® FI400 Leafy and FarMore® FI500 Onion
• Provides precisely applied and delivered products directly on the vegetable seed
• Maintains the efficacy of seed provider or seed technology company processes such as disinfection, encrusting, pelleting, priming and film coating
Benefits of FarMore Technology

- Provides early-season protection against certain diseases and insects
- Eliminates or reduces the chance of viruses being transmitted by certain insects
- Improves yield and quality potential of small-seeded vegetable crops
- Excellent compatibility with existing insect protection strategies in crops
- Compatible with Integrated Pest Management (IPM) programs
Small-seeded Crop Availability*

• Brassica vegetables
• Bulb or root vegetables
• Cucurbit vegetables
• Fruiting vegetables
• Leafy vegetables

*Not all FarMore offers are available for all crops.
FarMore Technology Availability

- Available through licensed breeders/producers and technology providers
- Request FarMore Technology when you place your seed order
- Not all FarMore Technology brands are available for sale or use on all crops in all states
FarMore F300: Overview

• An advanced fungicide seed treatment technology that delivers protection for a variety of small-seeded vegetable crops against a broad spectrum of seed and seedling diseases

• Active ingredients:

<table>
<thead>
<tr>
<th>Fungicides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mefenoxam (Apron XL®)</td>
</tr>
<tr>
<td>Fludioxonil (Maxim® 4FS)</td>
</tr>
<tr>
<td>Azoxystrobin (Dynasty®)</td>
</tr>
</tbody>
</table>
FarMore F300: Crop Groups

- Cucurbit vegetables
- Leafy vegetables
- Tomatoes
- Onions
- Peppers
- Carrots
- Brassica
FarMore F300: Disease Protection

- Pythium
- Fusarium
- Rhizoctonia
- Helminthosporium
- Alternaria

- Aspergillus
- Penicillium
- Seedborne Sclerotinia in selected vegetables
- General damping-off and seedling blight
FarMore F300: Cucumber Fungicide Trials

Cucumber plants
28 Days
Variety: Armenian

Check, physical root measurement – 196.22 cm
Treated with FarMore F300, physical root measurement – 461.21 cm

Trials conducted at Syngenta Western Regional Technical Center, 2003-2005.
FarMore F300: Cabbage Fungicide Trials

Untreated
Cabbage Plants under *Pythium* pressure

FarMore F300

Trials conducted at Syngenta Western Regional Technical Center, 2003-2005.

Classification: Public
FarMore F300: Carrots in a *Pythium*-infected Field

Trials conducted at Syngenta Western Regional Technical Center, 2003-2005.

Classification: Public
FarMore F300: Cucumber Stand Improvement

Percent Stand Improvement Over Untreated

Mississippi, California and Texas
Average of three trials
Inoculated with *Rhizoctonia*

- Untreated
- FarMore F300
- Thiram (78 g) + Captan® (55 g)
FarMore F300: Cucumber Yields Fungicide Trials

Total Yields (Pounds per Plot)

California
Variety: Armenian
Inoculated with Pythium
2003

Untreated
FarMore F300
Thiram (78 g)+ Captan (55 g)
FarMore F300: Processing Tomato Stand Improvement

California
Inoculated with *Rhizoctonia*
Average of two trials
2003

Percent Stand Improvement Over Untreated

- Untreated
- FarMore F300
- Thiram (78 g)+ Captan (55 g)
FarMore F300: Carrot Stand Improvement

Mississippi Variety: Royal Chantenay Inoculated with *Rhizoctonia* 2003

Percent Stand Improvement Over Untreated

- **Untreated**: 100
- **FarMore F300**: 122
- **Thiram (78 g)+ Captan (55 g)**: 113

Classification: Public
FarMore F300: Onion Stand Improvement

Mississippi
Variety: Granex 33
Inoculated with Rhizoctonia
2003

Classification: Public
FarMore F300: Pepper Stand Improvement

Mississippi Variety: Pepper (Jalapeno M) Inoculated with *Rhizoctonia* 2003

- Untreated: 100
- FarMore F300: 137
- Thiram (78 g) + Captan (55 g): 118

Classification: Public
FarMore F300: Direct-seeded Cucumber Yields Under *Rhizoctonia* Pressure

Variety: Vlasic  
Inoculated with *Rhizoctonia*  
Thiram treated at 4.5 oz/100 lbs  
DAP = Days After Planting  
California, 2005

Classification: Public
FarMore F300: Cantaloupe Plant Vigor and Yield Improvement

University of California, Davis
Variety: Oro Rico (Cantaloupe)
Thiram treated at 4.5 oz/100 lbs
2005
FarMore FI400: Overview

- Fungicide/insecticide seed treatment technology that helps maximize cucurbit and leafy vegetable production by enhancing performance and value
- Active ingredients:

<table>
<thead>
<tr>
<th>Fungicides</th>
<th>Insecticides</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mefenoxam (Apron XL)</td>
<td>Thiamethoxam (Cruiser® 70WS – FarMore FI400 Leafy)</td>
</tr>
<tr>
<td></td>
<td>(Cruiser 5FS – FarMore FI400 Cucurbits)</td>
</tr>
<tr>
<td>Fludioxonil (Maxim 4FS)</td>
<td></td>
</tr>
<tr>
<td>Azoxystrobin (Dynasty)</td>
<td></td>
</tr>
</tbody>
</table>
## FarMore FI400: Pest Protection

<table>
<thead>
<tr>
<th>Crop</th>
<th>Diseases</th>
<th>Insects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cucurbits</td>
<td><em>Rhizoctonia</em></td>
<td>Aphids</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seedcorn maggot</td>
</tr>
<tr>
<td>Fusarium</td>
<td></td>
<td>Cucumber beetles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thrips</td>
</tr>
<tr>
<td>Pythium</td>
<td></td>
<td>Flea beetles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Whiteflies</td>
</tr>
<tr>
<td>General damping-off and seedling blight</td>
<td></td>
<td>Leafminers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wireworms</td>
</tr>
<tr>
<td>Leafy</td>
<td><em>Rhizoctonia</em></td>
<td>Aphids</td>
</tr>
<tr>
<td>Fusarium</td>
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<td>Leafminers</td>
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<tr>
<td>Pythium</td>
<td></td>
<td>Thrips*</td>
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<tr>
<td>General damping-off and seedling blight</td>
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<td>Whiteflies</td>
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</table>

*Provides reduced damage.*
FarMore FI400 Cucurbits: Pickling Cucumber Yields Insecticide Trials

Ohio, 2007
FarMore FL400 Cucurbits: Protection of Cantaloupe Against Cucumber Beetles

<table>
<thead>
<tr>
<th></th>
<th>SCB 21 DAP</th>
<th>SCB 28 DAP</th>
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</thead>
<tbody>
<tr>
<td>Fungicide Only</td>
<td>1.5</td>
<td>2.3</td>
</tr>
<tr>
<td>FarMore FL400 Cucurbits</td>
<td>1.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Fungicide + Imidacloprid</td>
<td>1.6</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Mean Number of Pupa per Leaf

SCB – Striped Cucumber Beetle

California, 2007
DAP = Days After Planting
FarMore FL400 Cucurbits: Pumpkin Insect Protection

Ohio, 2005
Variety - Hybrid Pam
FarMore FI500 Onion: Overview

- A fungicide/insecticide seed treatment technology that offers onion growers the protection of three seed-delivered fungicides and two seed-delivered insecticides including increased protection against seedcorn maggots, onion maggots and onion thrips

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<td>Thiamethoxam (Cruiser 70WS)</td>
</tr>
<tr>
<td>Fludioxonil (Maxim 4FS)</td>
<td>Spinosad (Regard™)</td>
</tr>
<tr>
<td>Azoxystrobin (Dynasty)</td>
<td></td>
</tr>
</tbody>
</table>
# FarMore Fl500 Onion: Pest Protection

<table>
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<tr>
<th>Diseases</th>
<th>Insects</th>
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<tr>
<td><em>Rhizoctonia</em></td>
<td>Seedcorn maggots</td>
</tr>
<tr>
<td><em>Fusarium</em></td>
<td>Onion maggots</td>
</tr>
<tr>
<td><em>Pythium</em></td>
<td>Onion thrips*</td>
</tr>
<tr>
<td>General damping-off and seedling blight</td>
<td></td>
</tr>
</tbody>
</table>

*Suppression only.
FarMore FI500 Onion Versus Fungicide Only

Average gain = 4.2 plants/10 row ft  
Range -3.5 to 18 plants/10 row ft  
Median = 3.5 plants/10 row ft

Trials were non-replicated large plot side by sides  
Conducted by third party contractors and seed dealers  
Trials from Idaho, New York, Oregon, Utah, Washington  
Average Vigor Rating for FI500 treated plots = 3.3 (Visual Rating 1-4, 4 = Best) (Cruiser = 0.2 mg a.i./seed)  
Average Vigor Rating for fungicide-only treated plots= 2.7 (Visual Rating 1-4, 4= Best)

Classification: Public
FarMore FI500 Onion: Seedcorn Maggot, *Delia platura*
TBZ Included in Base Treatment (2011 trial)

**Plant population 27 DAP (stand/A)**

- FarMore F300
- FarMore FI500 Onion
- FarMore F300 + Trigard® 50
- Competitive Package**

*Base Treatment: Apron XL 7.5 + Maxim 2.5 + Dynasty 2.5 + Mertect® 50 g a.i./100 kg seed

**Competitive Package: Thiram + Allegiance® + Coronet® + Sepestro

LSD = 43,703

Some treatments were removed for this presentation.
FarMore FI500 Onion: Onion Maggot, *Delia antiqua*
Percent Onion Maggot Damage and Marketable Yield

**Onion Maggot Percent Damage**

- FarMore F300
- FarMore FI500 Onion
- FarMore F300 + Trigard 50
- Thiram + Sepresto

**Marketable Yield (lb/20 row ft)**

- FarMore F300
- FarMore FI500 Onion
- FarMore F300 + Trigard 50
- Thiram + Sepresto

*Base Treatment: Apron XL 7.5 + Maxim 2.5 + Dynasty 2.5 g a.i./100 kg seed*

Some treatments were removed for this presentation.

Classification: Public
FarMore FI500 Onions: Onion Maggot, *Delia antiqua*
Onion Maggot Damage and Marketable Yield

### Onion Maggot Feeding Site Counts

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>FarMore F300</td>
<td>a</td>
</tr>
<tr>
<td>FarMore FI500 Onion</td>
<td>b</td>
</tr>
<tr>
<td>FarMore F300 + Trigard 50</td>
<td>b</td>
</tr>
<tr>
<td>Thiram + Sepresto</td>
<td>b</td>
</tr>
</tbody>
</table>

### Total Yield (lb/45 row ft)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield</th>
</tr>
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<tbody>
<tr>
<td>FarMore F300</td>
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</tr>
<tr>
<td>FarMore FI500 Onion</td>
<td>bc</td>
</tr>
<tr>
<td>FarMore F300 + Trigard 50</td>
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<tr>
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*Base Treatment: Apron XL 7.5 + Maxim 2.5 + Dynasty 2.5 g a.i./100 kg seed

Some treatments were removed for this presentation.

Classification: Public
FarMore FI 500 Onion helps roots thrive
July 2012
Protected onion seeds develop stronger stands that can produce higher yields.
Why Should We Consider New Options in Vegetables?

- Thiram: The most widely used seed treatment in vegetables is carefully watched
- Currently with Thiram:
  - Request for removal of all residential uses of Thiram
  - Cancellation of uses in apples and strawberries
  - Cancellation of on-farm seed treatment uses in peanuts
  - Cancellation of all turf application for turf grown for sale
  - Cancellation of the aerial and hand/spoon application of granular formulations
  - New risk mitigation is required as described by RED
  - Updated worker protection standards
FarMore Technology Versus Competitive Brands

FarMore Technology

- A combination of technologies, including systemic and contact fungicides
- Low use rates per seed
- Spectrum:
  - Fusarium
  - Rhizoctonia
  - Pythium
  - General damping-off and seedling blight
  - Seedborne Sclerotinia in selected vegetables
- Effective on some post-emergence diseases
- A platform for increased performance potential

Thiram

- Non-systemic dithiocarbamate
- Use rate 55 g a.i./100 kg
- Spectrum:
  - Fusarium
  - Rhizoctonia
  - Limited activity on Pythium
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FarMore Technology is an on-seed application of separately registered seed protection products and proprietary application technologies. FarMore F300 contains three fungicides: Apron XL, Maxim 4FS and Dynasty. FarMore FI400 Cucurbits contains Cruiser 5FS insecticide and three fungicides: Apron XL, Maxim 4FS and Dynasty. FarMore FI400 Leafy contains Cruiser 70WS insecticide and three fungicides: Apron XL, Maxim 4FS and Dynasty. FarMore FI500 Onion contains three fungicides: Apron XL, Maxim 4FS and Dynasty, and two insecticides: Regard and Cruiser 70WS.

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