10 Years of Admire
In the Desert

- Use Patterns
- The Past 10 years
- Looking Ahead
Admire® (imidacloprid)

- Soil-applied, systemic compound that effectively controls sucking insects
- Novel mode of action—acts as a agonist by binding to post-synaptic Nicotinic receptors
- Flexible use patterns
- Selective activity
Admire

Most effective when:

* Applied at planting with label rates (12-20 oz)

* Placed below the seed during shaping/planting

* Injected through drip after stand establishment
Key to performance:

* Place Admire where it will stay in an aqueous solution within the root zone of the plant.

Soil Applications

- Chemical does not readily move in soil
- Placement is important
Chemigation via drip irrigation may be the most optimal application method.
Admire
How does it work?

**Immatures**

*Eggs* – Little to no effect

*Crawlers* - feed upon hatching and are highly susceptible

Admire Efficacy
Whiteflies and Aphids in desert vegetable producing areas have not affected Yield or Quality since Admire has been used on an areawide basis for the past 10 years.
10 Years of Admire in The Desert
Whitefly outbreaks from 1991-1993 caused $$$ millions worth of damage to vegetables and melons in AZ/CA.

Admire
Sec 18 : 1993-1995
Sec 3 : 1995
**Whiteflies in the 90’s**

- **Reduced Yields**
  - leaf necrosis
  - fruit size
  - plant vigor

- **Reduced Quality**
  - Low sugars
  - sooty mold

*Admire* vs *Untreated*
Performance of Admire in Commercial Lettuce
Yuma, Gila, & Dome Valleys

Whitefly nymphs / cm²

n = 5-8 fields

Field Standard (Admire - 16 oz)
Untreated Field Plots
Application methods
Admire Rates
Insect Evaluations
\{ Same Each Year \}
Fall and Spring Melons

Silverleaf Whitefly Adult Activity (Seasonal Avg)

Mean SWF Nymphs/cm²/leaf

10 Years of Admire in the Desert

Eggs

Untreated
Admire 16 oz
10 Years of Admire in the Desert

Fall and Spring Melons
Silverleaf Whitefly Nymph Control (Seasonal Avg)

Mean SWF Nymphs / cm² / leaf

- Untreated
- Admire 16 oz

10 Years of Admire in the Desert

Fall and Spring Melons
Silverleaf Whitefly Nymph Control (Seasonal Avg)
Whitefly Egg Densities on Fall Melons
(% reduction compared to untreated check)
Whitefly Nymph Densities on Fall Melons
(% reduction compared to untreated check)

Mean SWF Nymphs / cm² / leaf

- Untreated
- Admire 16 oz

Year: 94, 95, 96, 97, 98, 99, 00, 01

(76), (97), (95), (85), (82), (90), (82), (90)
Fall Melons 2001
Pre-harvest (60 DAP)

Admire

Untreated check
Seasonal Whitefly Densities - Spring Melons

Mean eggs/cm²/leaf

Eggs
- Untreated
- Admire 16 oz

(96) (33) (43) (61) (81) (72) (78) (57) (38)

Admire 24 oz
Mean nymphs / cm² / leaf

Seasonal Whitefly Densities - Spring Melons

Nymphs

Untreated
Admire 16 oz

Admire 24 oz
Mosaic Viruses
* ZYMV, WMV2, PRSV

* very low incidence in AZ / CA melons since 1993

Cucurbit Leaf Curl Virus

* Geminivirus first reported in 1998

* no economic damage reported in commercial fields
Admire

- Conservation of natural enemies
- Easy on pollinators
Season-long Control of Green Peach Aphid In Head Lettuce at Low Rates

Yuma Ag Center, 1994

- Untreated
- Standard Foliar
- Admire 20 oz
- Admire 16 oz
- Admire 12 oz

Mean Aphids Per Plant

Days After Planting
Head Lettuce

Systemic translocation of Admire in frame leaves in first 60 days prevents GPA from significantly colonizing lettuce plants.
Green Peach / Potato Aphid Complex - Harvest Densities

10 Years of Admire in the Desert

- Untreated
- Admire 12-16 oz

Mean Aphids / Plant

- 10 Years of Admire in the Desert
- Green Peach / Potato Aphid Complex - Harvest Densities
- Untreated
- Admire 12-16 oz
Sustained Admire Efficacy In Desert Crops - 10 Years

- Large, untreated host crop acreages
- Diverse seasonal crops with alternating insecticide use patterns
- Population Dynamics
- Inherent Toxicity of soil-applied Imidacloprid
So what’s to be concerned about?
Neonicotinoid Chemistry

Imidacloprid
ADMIRE
PROVADO

Thiamethoxam
PLATINUM
ACTARA

Thiacloprid
CALYPSO

Acetamiprid
ASSAIL

Dinotefuran
So what’s to be concerned about?

1) Expanded registrations of neonicotinoids:
   - Actara/Platinum/Centric: cotton, melons
   - Assail/Intruder: cotton, leafy vegetables
   - Calypso: (labels pending)
   - Dinotefuron (labels submitted to EPA)

2) Multiple applications allowed by labels.

3) Lack of Alternative Chemistries in the Pipeline

4) A Real Risk of Resistance
Sustaining Neonicotinoid Efficacy in Multi-crop Communities

Winter Vegetables

Spring Melons

Fall Melons

Cotton
Cross-commodity Guidelines for Neonicotinoids

1) Multi-crop Communities

**Cotton**: Do not apply neonicotinoids in cotton.  
*Centric, Leverage, Intruder.*

**Melons /Vegetables**:  
- A single neonicotinoid use (soil or foliar) per crop  
- Do not apply a foliar neonicotinoid spray after the use of a soil application of Admire or Platinum.
Cross-commodity Guidelines for Neonicotinoids

1) Multi-crop Communities (YUMA)

Melons/Vegetables:

- Consider foliar alternatives for vegetables that are planted after WF movement subsides and harvested before aphids typically become abundant. (e.g., October in Yuma Valley)
Resistance Risks Associated with Shared Neonicotinoid Uses in a Multi-Crop Community (eg., Yuma – current usage)
Resistance Risks Associated with Shared Neonicotinoid Uses in a Multi-Crop Community (eg., Yuma – current usage)
Resistance Risks Associated with Shared Neonicotinoid Uses in a Multi-Crop Community (eg., Yuma – potential usage)
Preserve a **Neonicotinoid-free Period** in Multi-Crop Communities (e.g., Yuma-Recommended)

- **Melons**
  - Neonicotinoid

- **Vegetables**

- **Cotton**
  - IGRs and
  - Conventional

Relative Whitefly Population Abundance


Sections: F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12

Section F13 is not highlighted.
2) **Cotton–intensive community**

- No more than 2 neonicotinoid uses per cotton crop

- Sprays should only be used following an initial IGR spray (Stage II of IRM Program)

- Sprays should not be applied consecutively, but rotated with conventional chemistries (Stage II or III)
Resistance Risks Associated with Neonicotinoid Uses in a Cotton-intensive Community (e.g., Buckeye-label max)

“Remember the Pyrethroids”
Resistance Risks Associated with Neonicotinoid Uses in a Cotton-intensive Community
(e.g., Buckeye-recommended use)
Whiteflies and Aphids in desert vegetable producing areas have not affected Yield or Quality since Admire has been used on an areawide basis for the past 10 years.