



Managing Sucking Insects and Weeds That...Suck

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Integrated Weed Management

- ✓ **Cultural**
- ✓ **Nutritional**
- ✓ **Soil**
- ✓ **Water**
- ✓ **Chemical**



Herbicides

// Preemergence (Preventative)

// Applied before weed emerges from turf

// Postemergence (Curative)

// Applied after weed emerges from turf





Specticle

- // Indaziflam Chemical Name: N-[(1R,2S)-2,3-dihydro-2,6-dimethyl-1H-inden-1-yl]-6-(1-fluoroethyl)-1,3,5-triazine-2,4-diamine
- // Cellulose biosynthesis inhibitor (CBI)
 - // Inhibits crystalline cellulose deposition in the plant cell wall affecting cell wall formation, division and elongation – meristems, expanding cells & growing roots
- // Affects weed root development (little or no effect on developed leaves and other tissues)
- // Labelled for golf courses, lawns, parks, cemeteries, sod farms and sports fields
- // Indaziflam has some early postemergence control on Poa, crabgrass, VA Buttonweed, Others?





Site of Uptake

// Ronstar



// Dinitroanilines & Dithiopyr

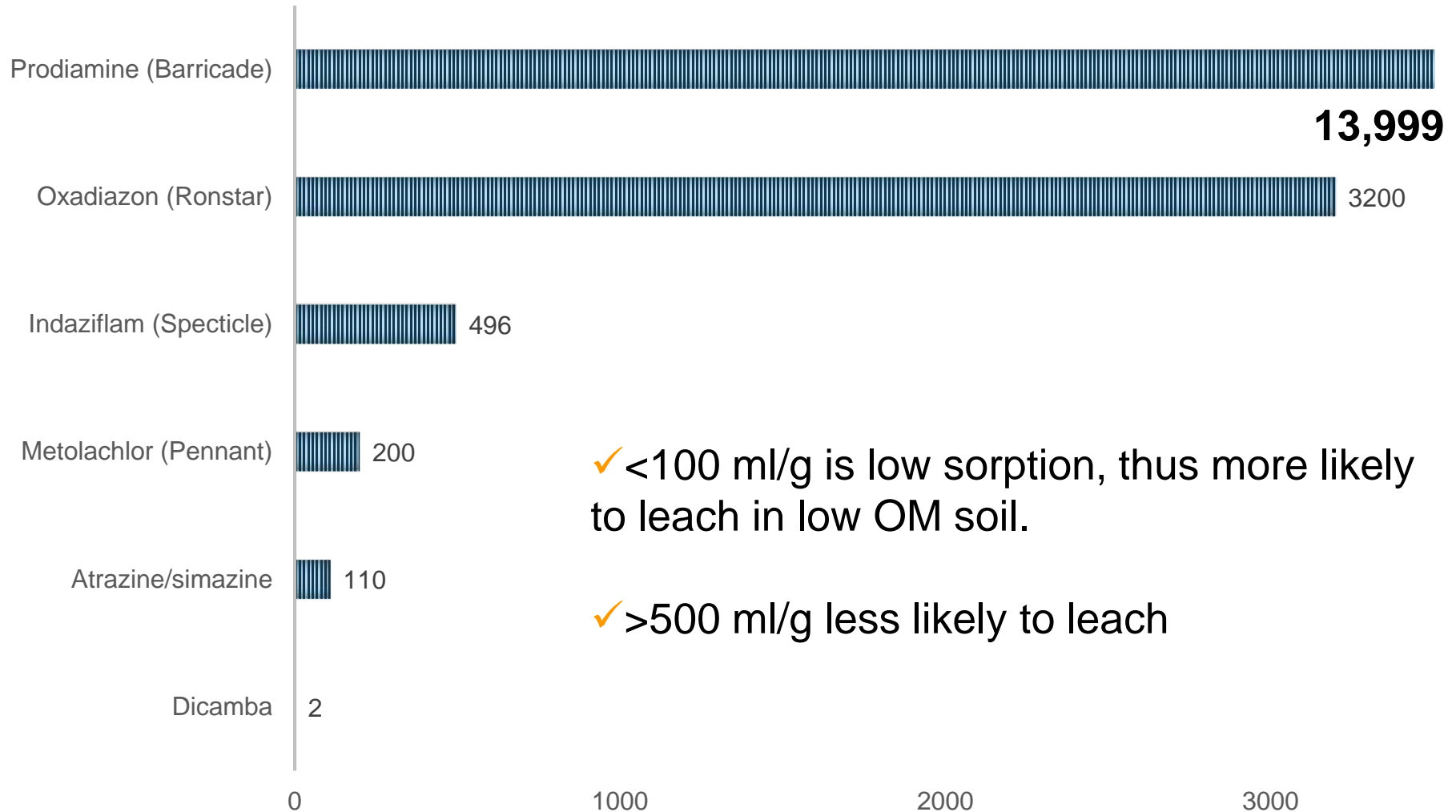


// Specticle





Soil Sorption (Koc) of Herbicides

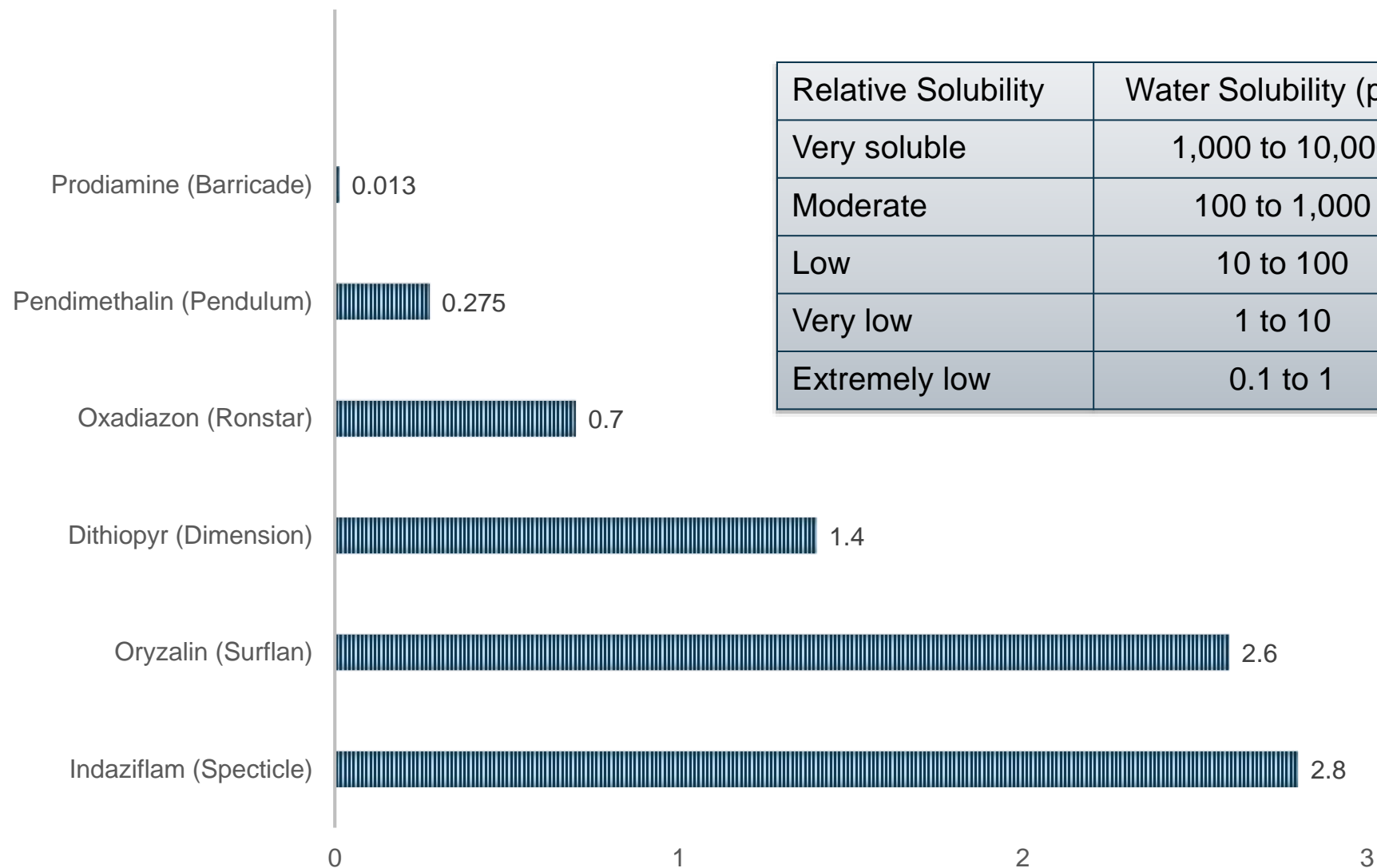


✓ <100 ml/g is low sorption, thus more likely to leach in low OM soil.

✓ >500 ml/g less likely to leach



Water Solubility (ppm) or PRE Herbicides

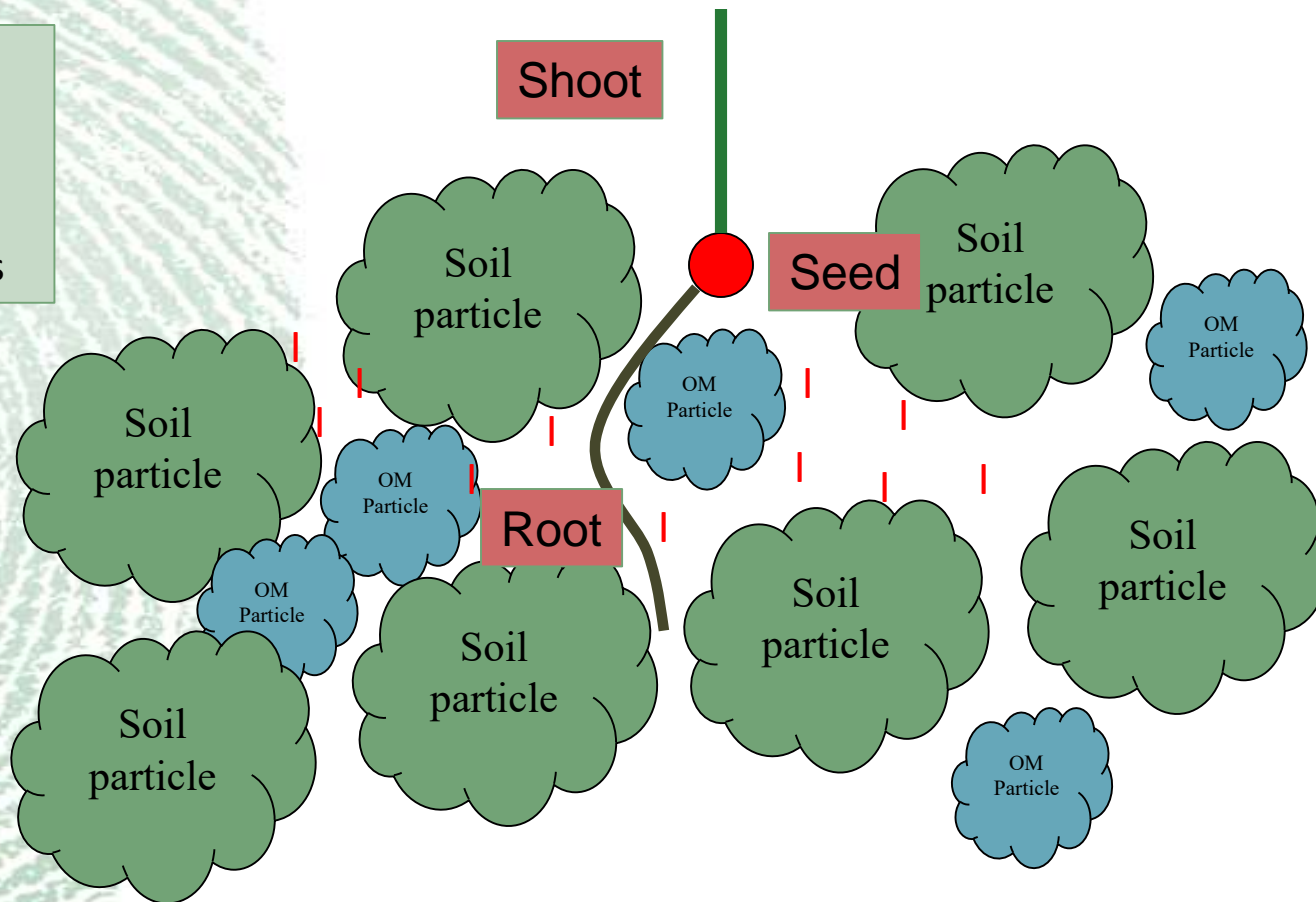


Relative Solubility	Water Solubility (ppm)
Very soluble	1,000 to 10,000
Moderate	100 to 1,000
Low	10 to 100
Very low	1 to 10
Extremely low	0.1 to 1

Specticle in the Soil

Specticle **Adsorbed**
to soil and OM
particles

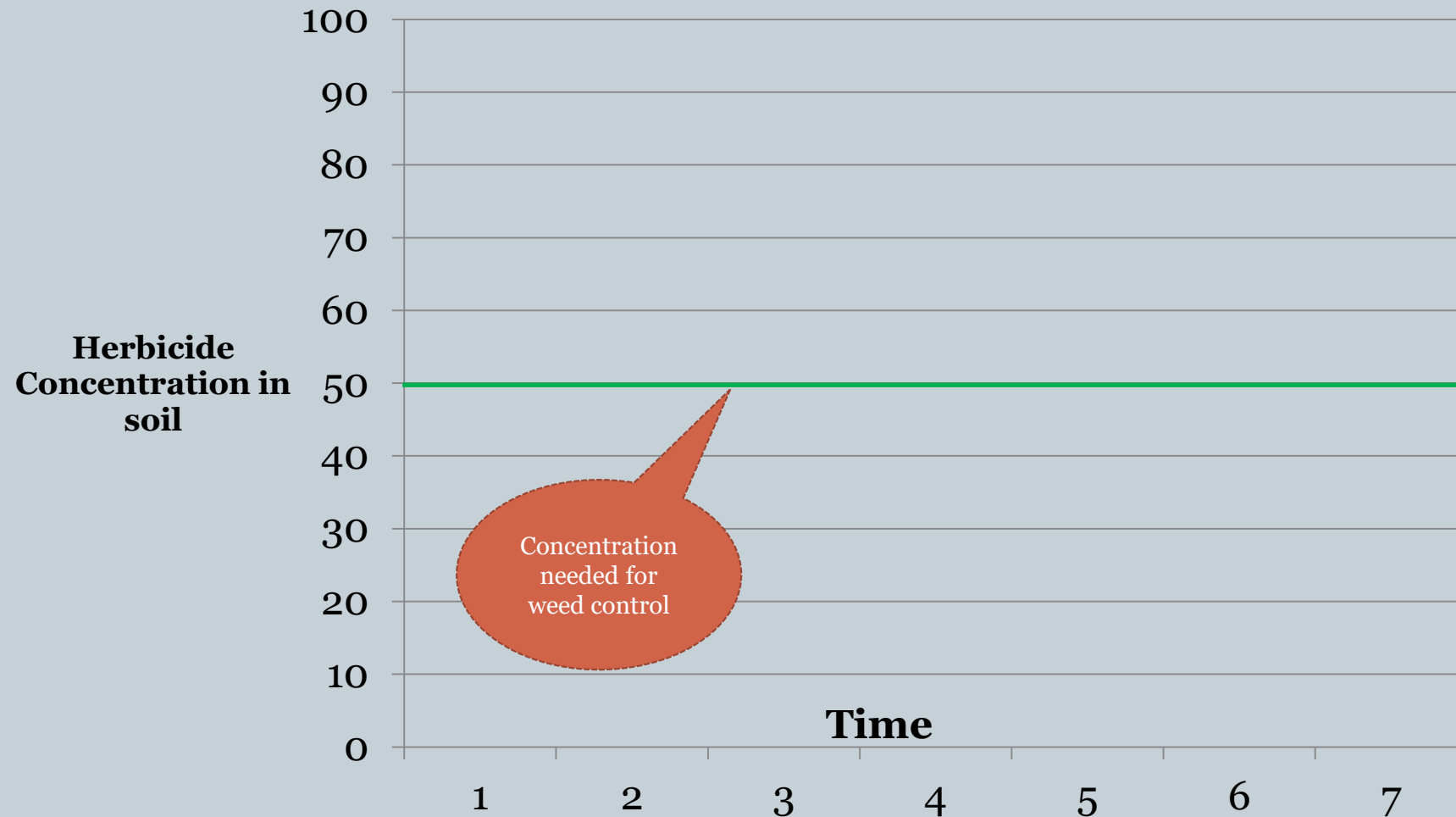
- Finer particles
- Drier conditions



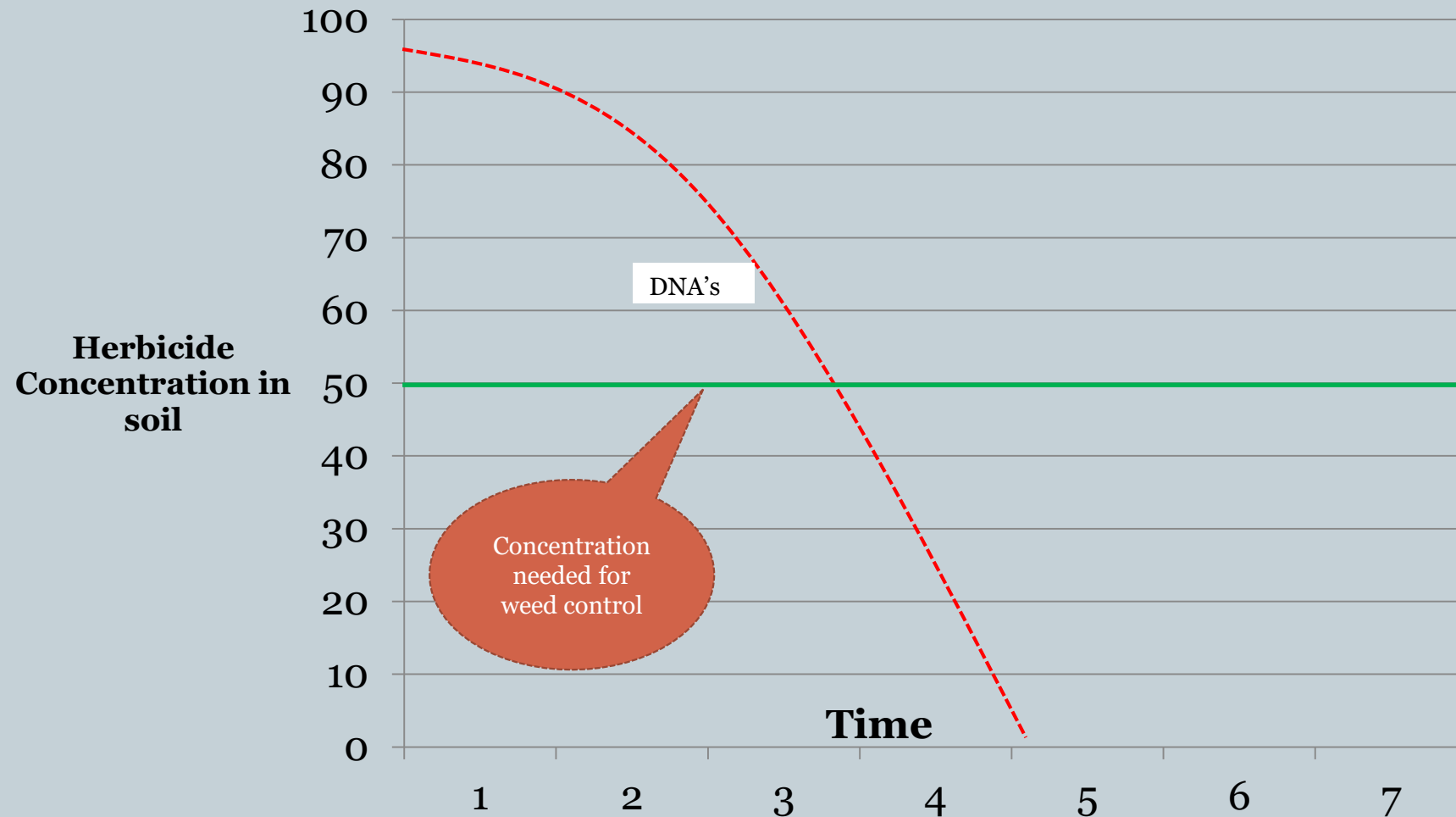
Specticle **Desorbed**
from soil and OM
particles

- Coarser particles
- Wetter conditions

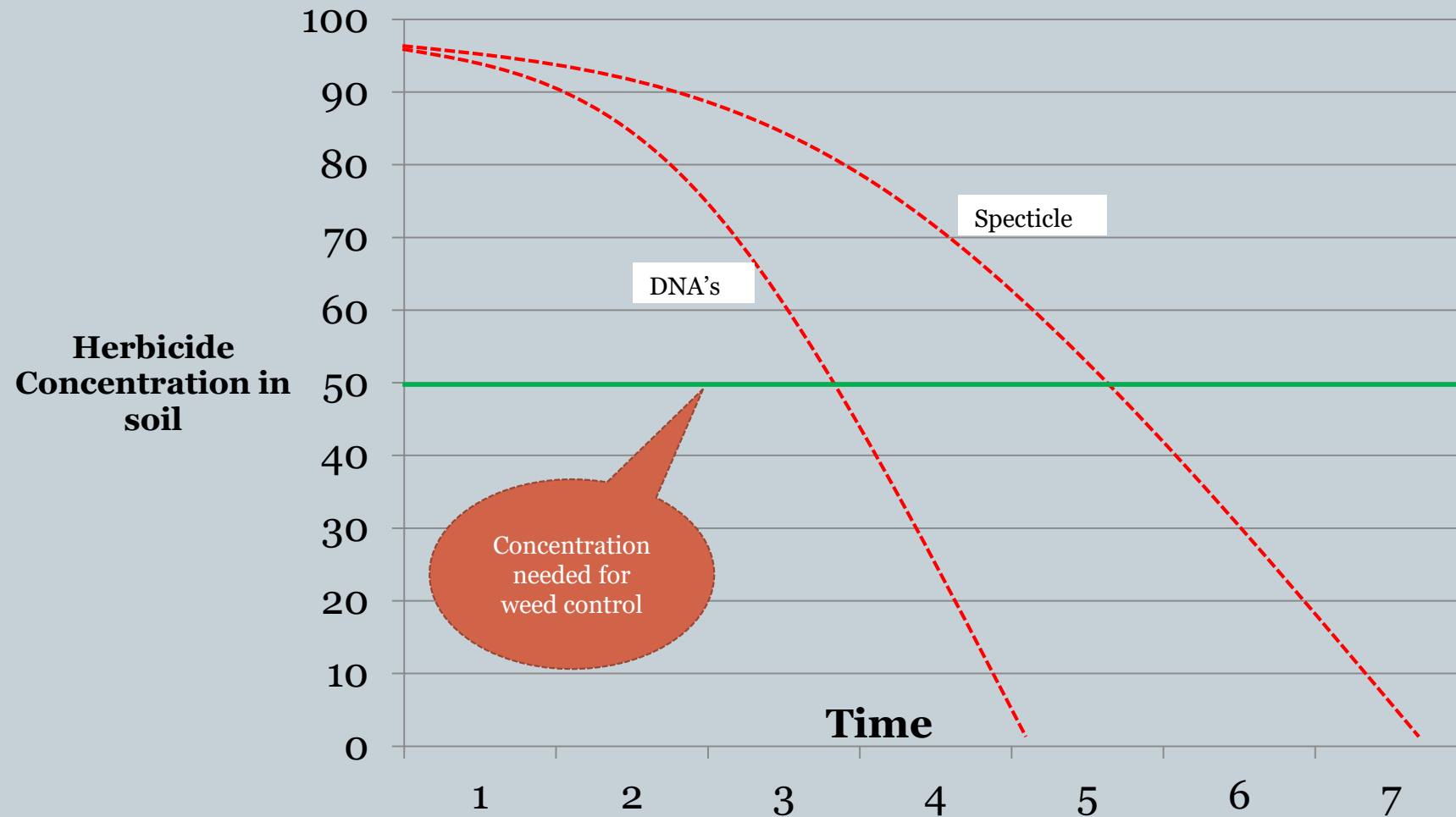
Preemergence Herbicide Degradation



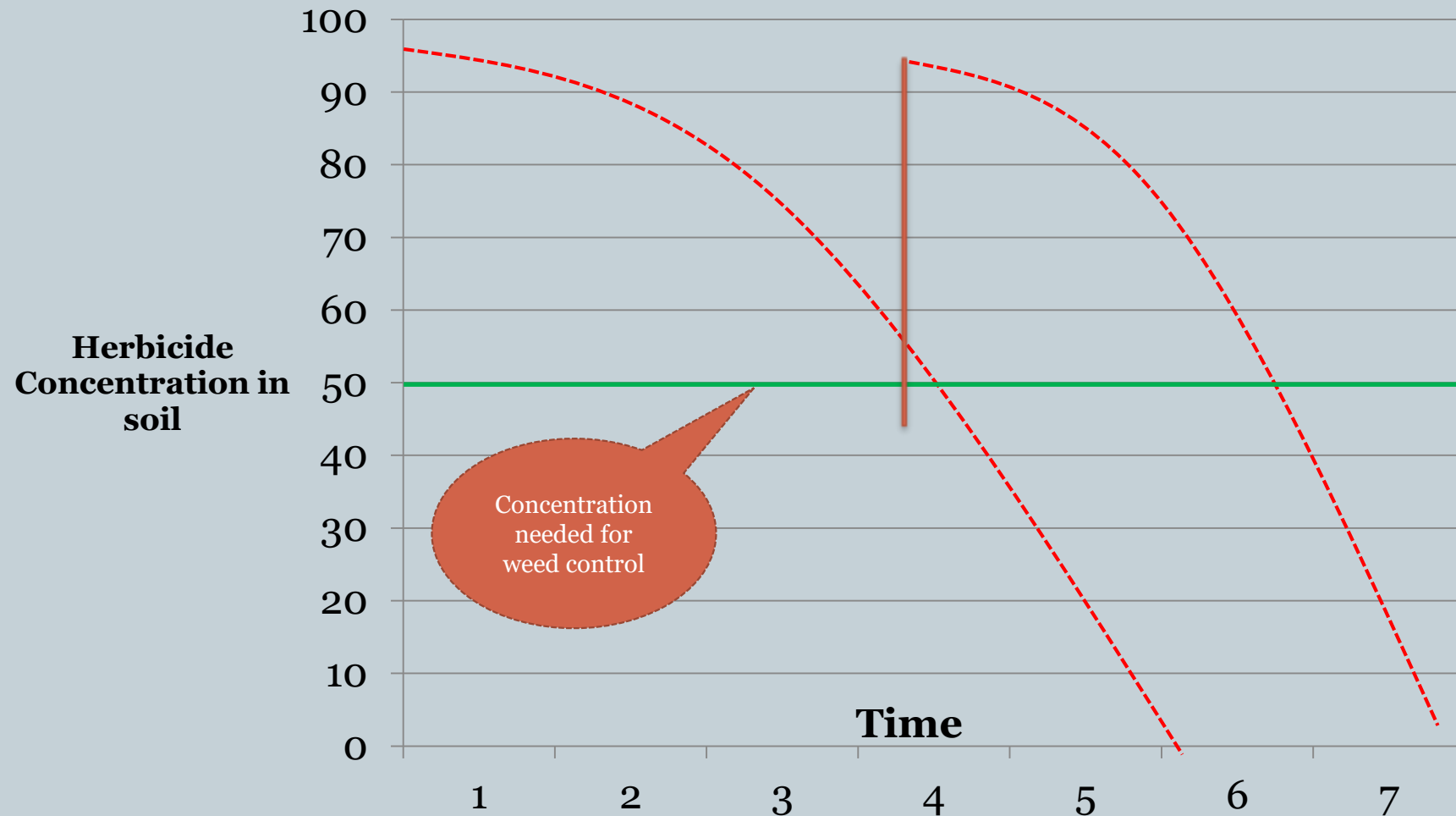
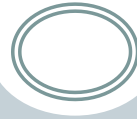
Preemergence Herbicide Degradation



Preemergence Herbicide Degradation



Split applications





Preemergence Herbicide Comparison - Weed Control

E=Excellent (>89%) G=Good (80 to 89%) F=Fair (70 to 79%)

Herbicide	Crabgrass	Goosegrass
Balan (benefin)	G	F
Barricade (prodiamine)	E	F-G
Betasan/Bensumec (bensulide)	G	F
Dimension (dithiopyr)	E	G
Pendulum (pendimethalin)	E	F-G
Ronstar (oxadiazon)	G	E
Specticle (indaziflam)	E	E
Surflan (oryzalin)	E	F-G



Preemergence Herbicide Comparison

Herbicide	Effects on Rooting*	Residual	Green Use
Barricade	poor	good	NR
Betasan/Bensumec	poor	good	R**
Dimension	poor	good	R**
Pendimethalin	poor	good	R**
Ronstar	none	good	R**
Specticle	poor	excellent	NR
Surflan	poor	good	NR

*Refers to non-established turf only

**R=Some formulations are registered

NR=Not registered for green use.

Consult label for overseeding grass tolerance.



SPECTICLE G LABEL UPDATE

Production Information

Key Changes

- // Added sod farms and sports fields
- // Added seashore paspalum
- // Added natural areas as new use site
- // Sprigging - changed from recommending sprigged areas be treated no sooner than 16 months after sprigging to 10 to 12 months after depending on rates

More Weeds...

- // Now labeled for 98 weeds – Up from 84 weeds

More Tolerant Plants...

- // Now 281 tolerant plants on – Up from 122 plants



Altus[®]



Lawn & Landscape Product Overview





Altus[®] Insecticide

- // Highly effective on sucking insects on ornamentals
- // Compatible with honey and bumble bees - it can be used prior, during, or after bloom
- // Foliar spray primarily, can be drenched on annuals

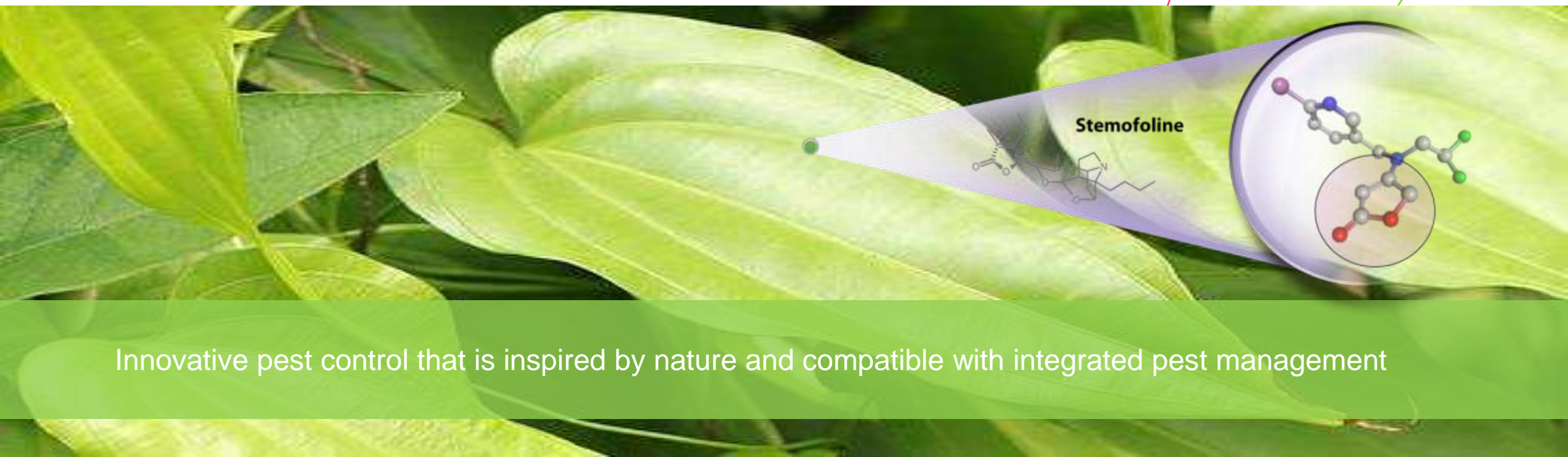


Photos: Bayer



Stemofoline

// Flupyradifurone, the active ingredient in Altus[®], was inspired by the natural product stemofoline – a derivate from the Asian plant *Stemona japonica*



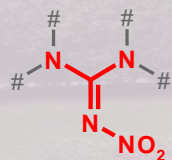
Innovative pest control that is inspired by nature and compatible with integrated pest management



Butenolides

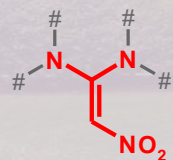
Neonicotinoids (4A)

N-Nitroguanidines



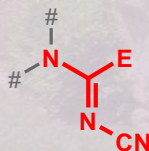
Imidacloprid
Thiamethoxam
Clothianidin
Dinotefuran

Nitromethylenes



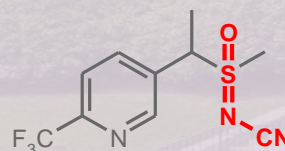
Nitenpyram

N-Cyanoamidines



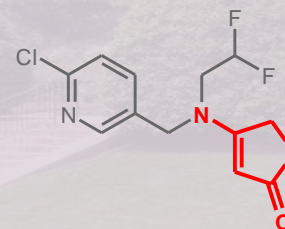
Thiacloprid (E = SCH₂CH₂)
Acetamiprid (E = CH₃)

Sulfoximines (4C)



Sulfoxaflor

Butenolides (4D)



Flupyradifurone

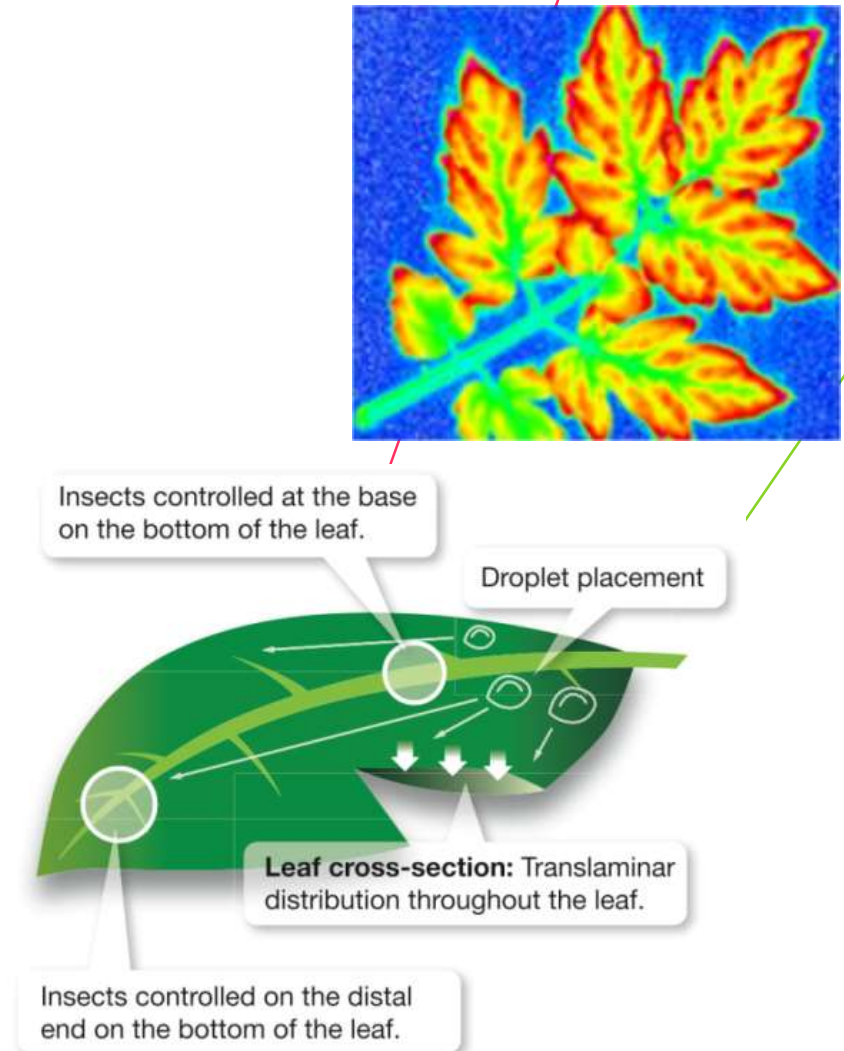
**Altus® = 1st
butenolide**

The butenolide structure dictates a novel binding site in the insects nervous system making Altus® chemically unique from neonicotinoid chemistries.



Systemic

- // Systemic – moves upward through the xylem
- // Translaminar – moves to adjacent plant cells so will control insects feeding on the underside even when applied only to the upper leaf surface





Honey/Bumble Bee Compatible

- // Take home message about bees
 - // No Bee Box
 - // Approved for application before, during, and after bloom
 - // Increased flexibility in application timing



Photo: Bayer



Effective

- // Aphids
- // Lace bugs
- // Leafhoppers
- // Leaf miners (suppression; feeding damage reduction)
- // Mealybugs
- // Plant Bugs
- // Psyllids
- // Scales
- // Thrips (suppression; feeding damage reduction)
- // White Flies



Additional Problems: honey dew, sooty mold & ants



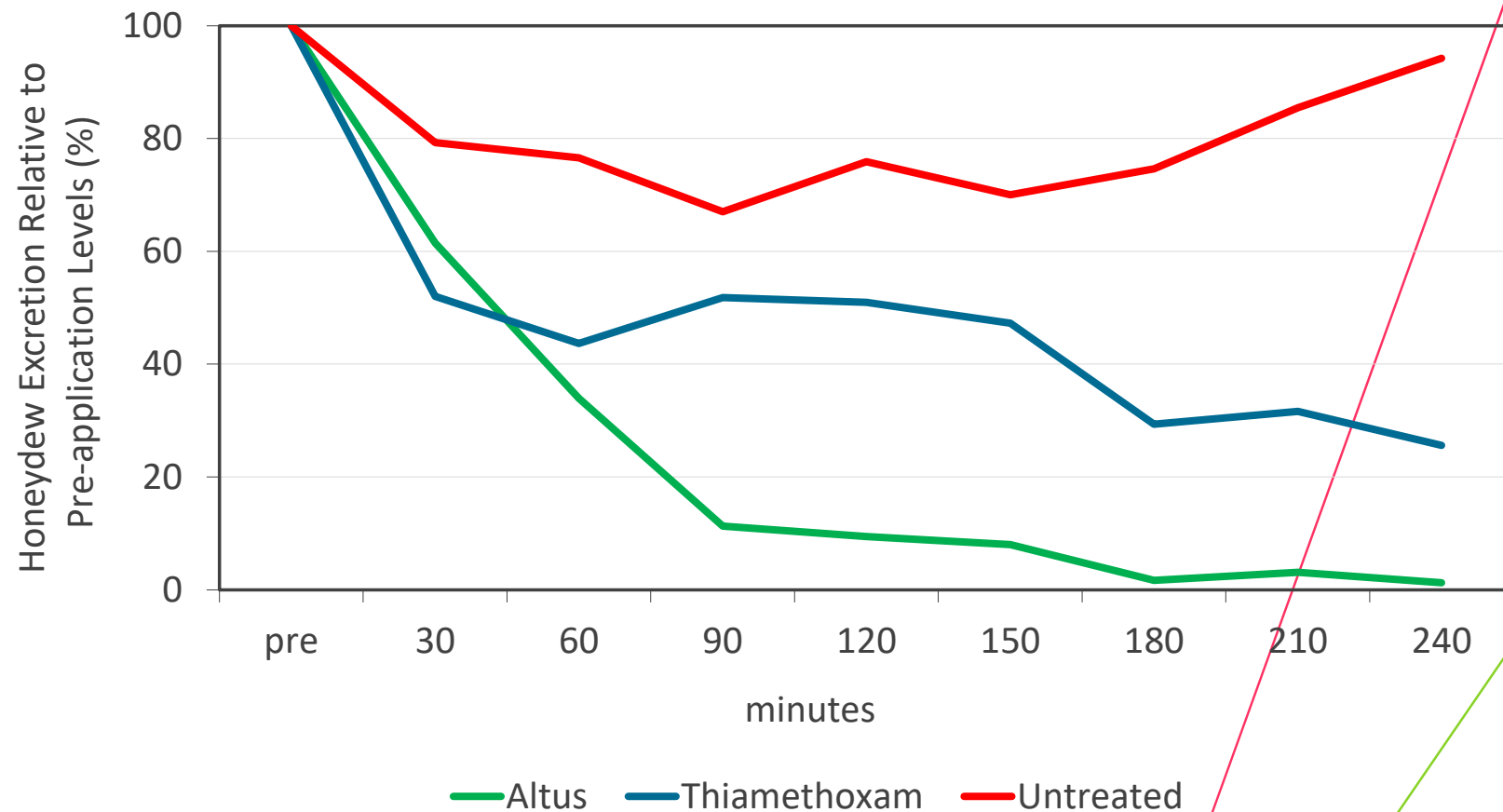


Time it takes for complete control?

- // Insect mortality doesn't happen immediately
 - // Insects stop feeding quickly, within hours
 - // Takes hours to days to see fewer insects on plants but they are no longer damaging plants
- // Aphids
 - // Mortality within hours after a foliar application (24-48 hrs)
- // Other sucking insects including scales, mealybugs and whiteflies
 - // Mortality for whiteflies took up to 5 days in some demo trials



Rapid Feeding Cessation in Aphids



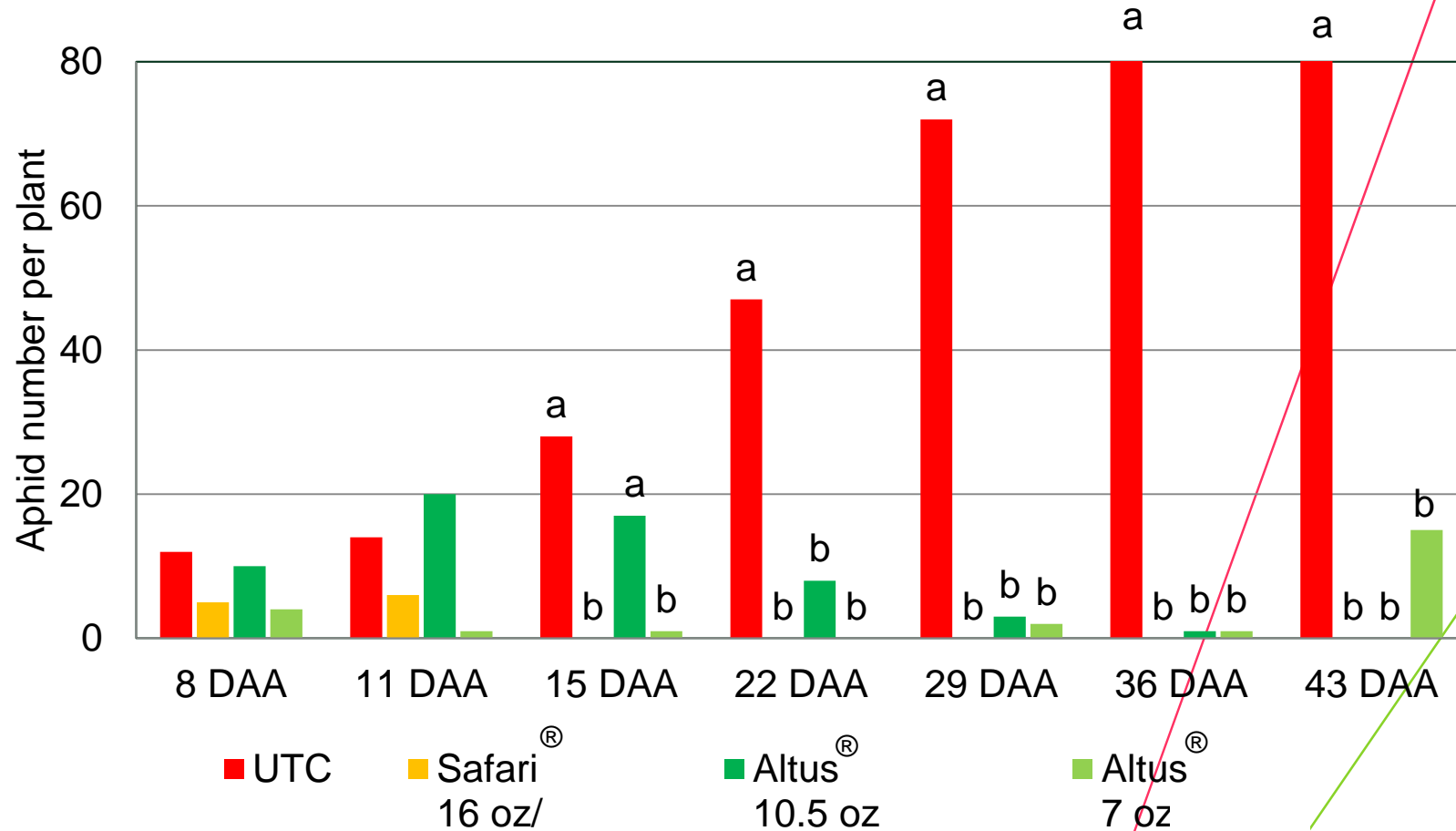
Source: Internal Bayer Study

Aphid Research





Efficacy: Altus[®] vs. Aphids on Impatiens



Erfan Vafaie, Texas A&M: IE17USAKYIERN1

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

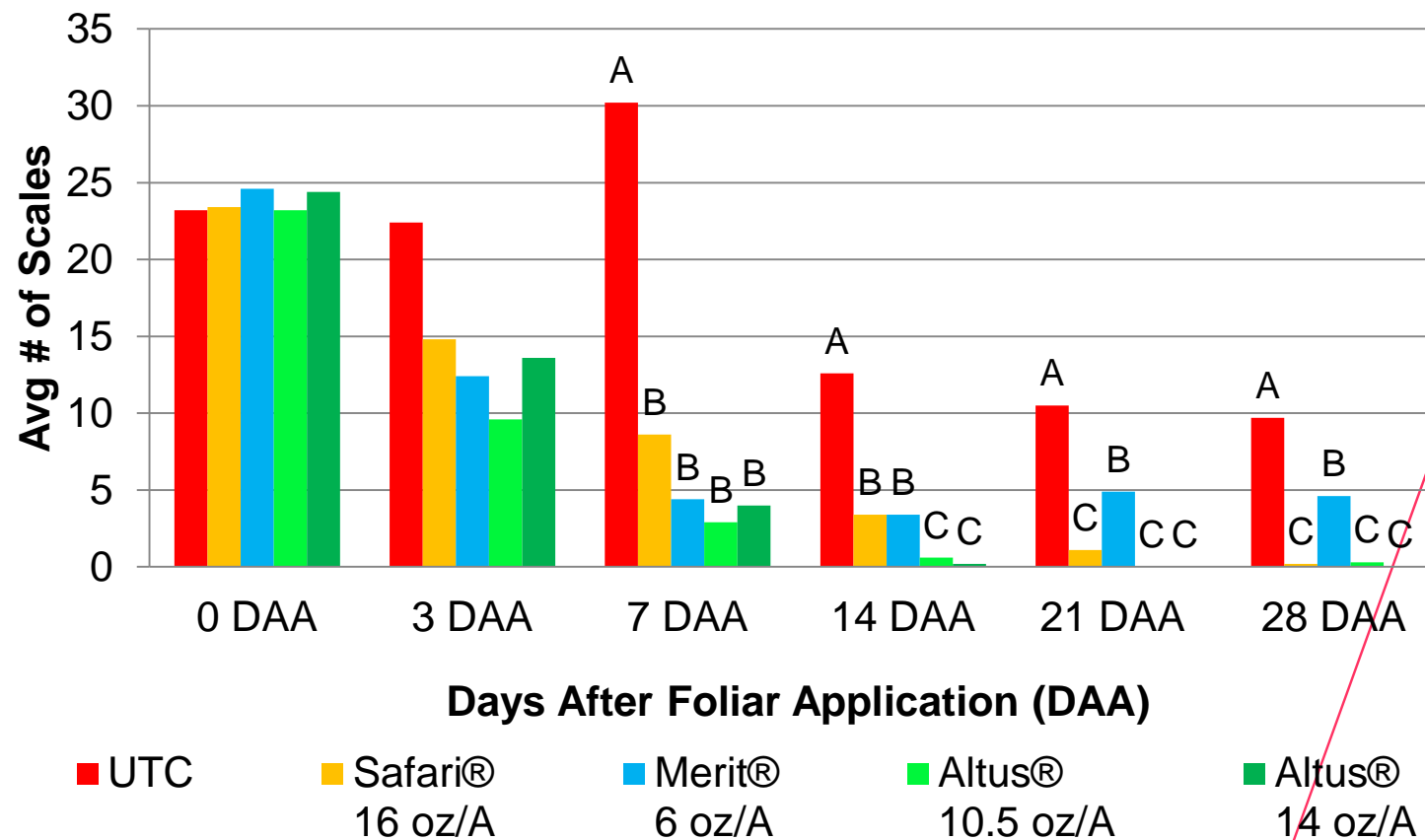
Scale Research



Photo: Bayer



Efficacy: Altus® vs. Juniper Scale on Juniper

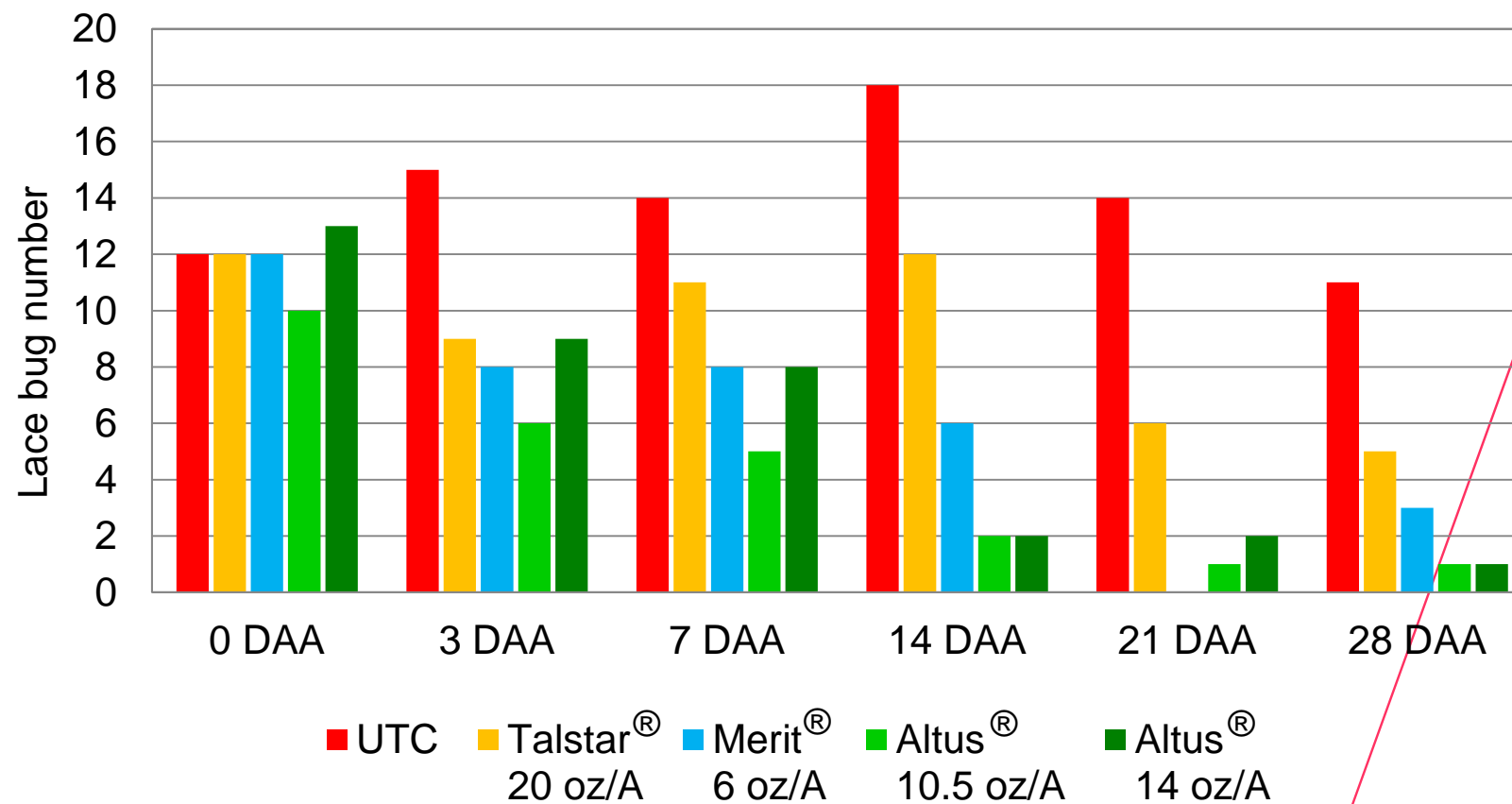


Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Lace Bug Research



Efficacy: Azalea Lace Bug, Azalea

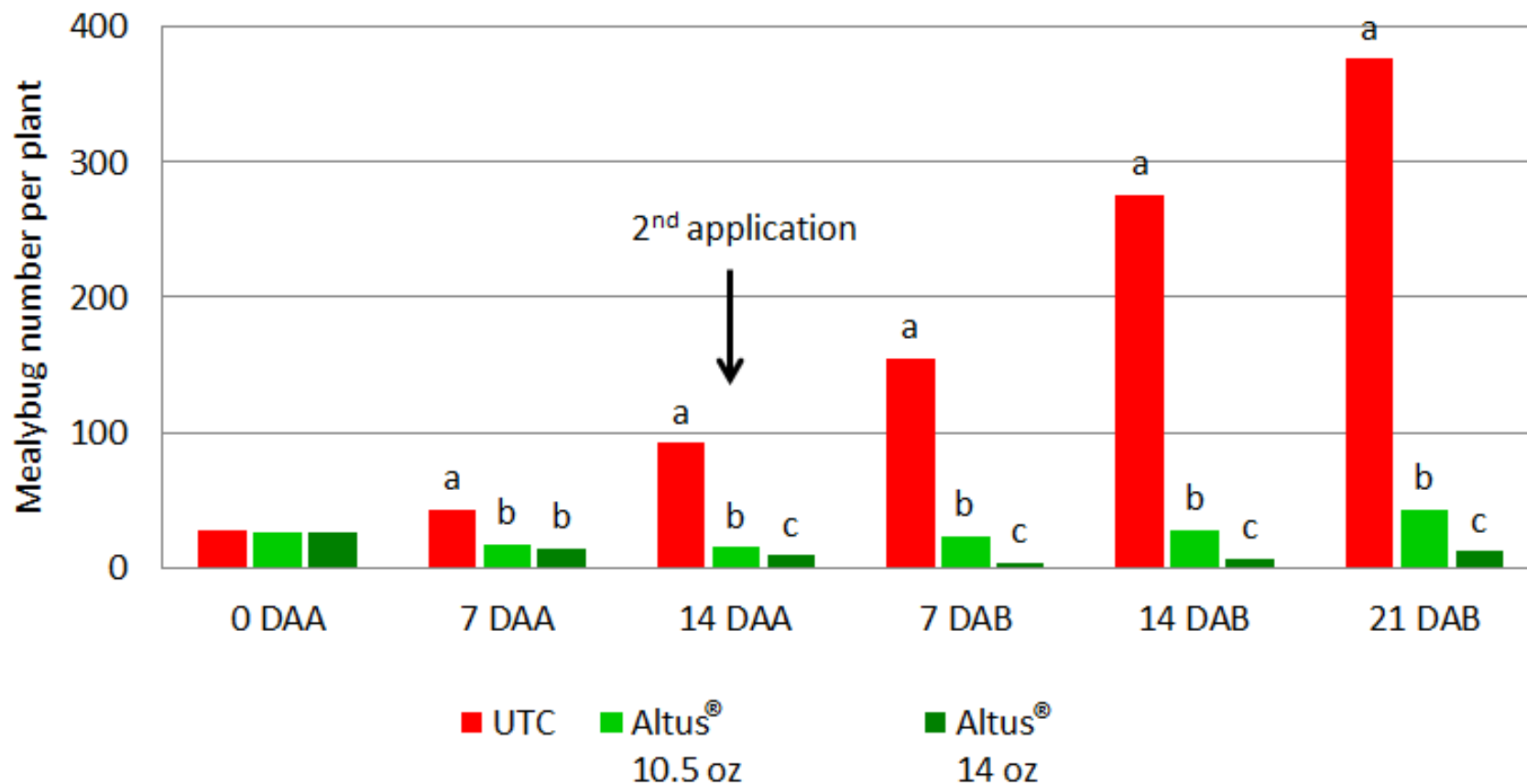


Mealybug Research





Efficacy: Madeira Mealybug on Coleus



Bayer internal trial: IE15USATCEETC3

Means followed by same letter do not significantly differ ($P=0.05$, Student-Newman-Keuls)

Psyllid Research

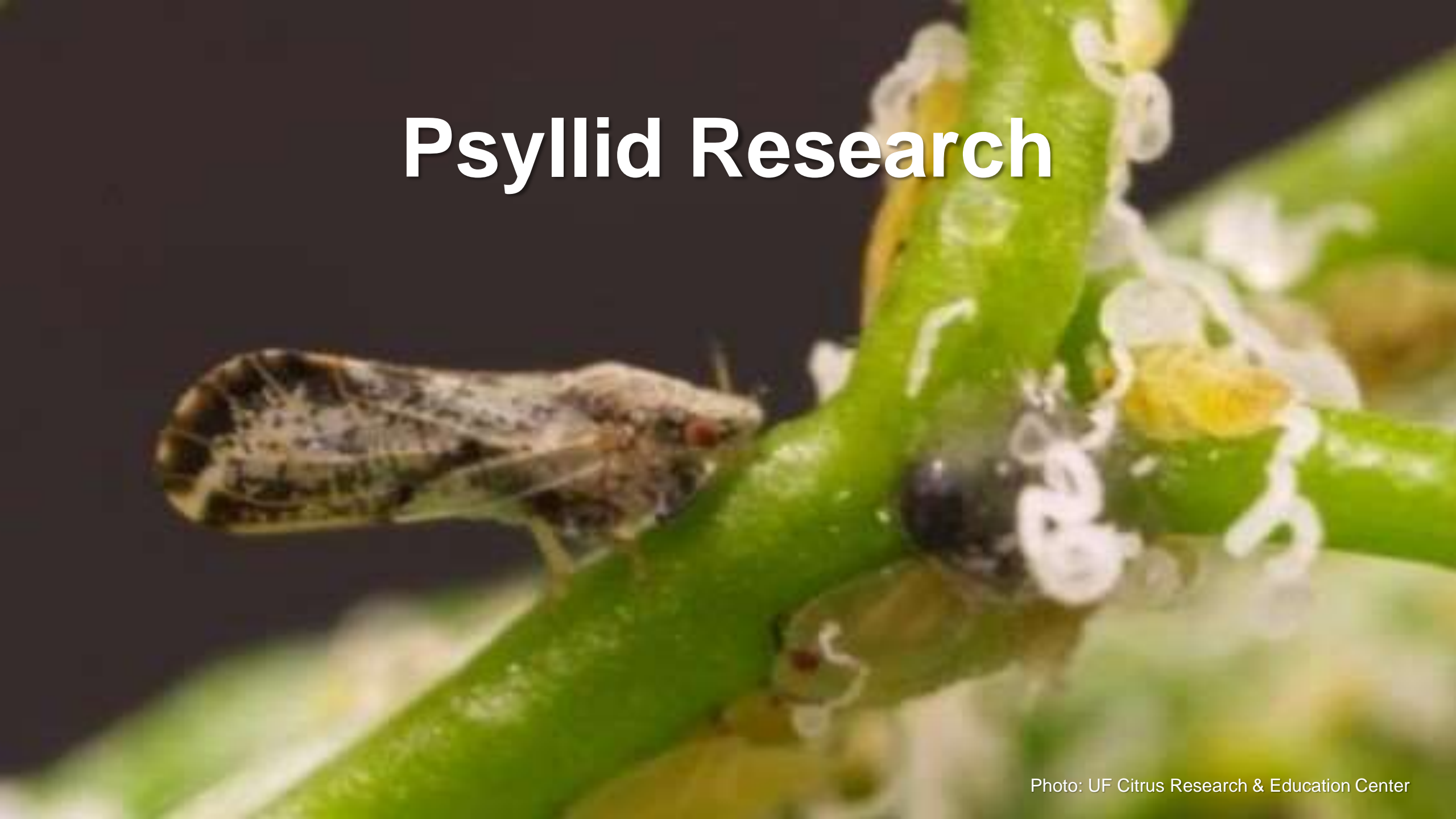
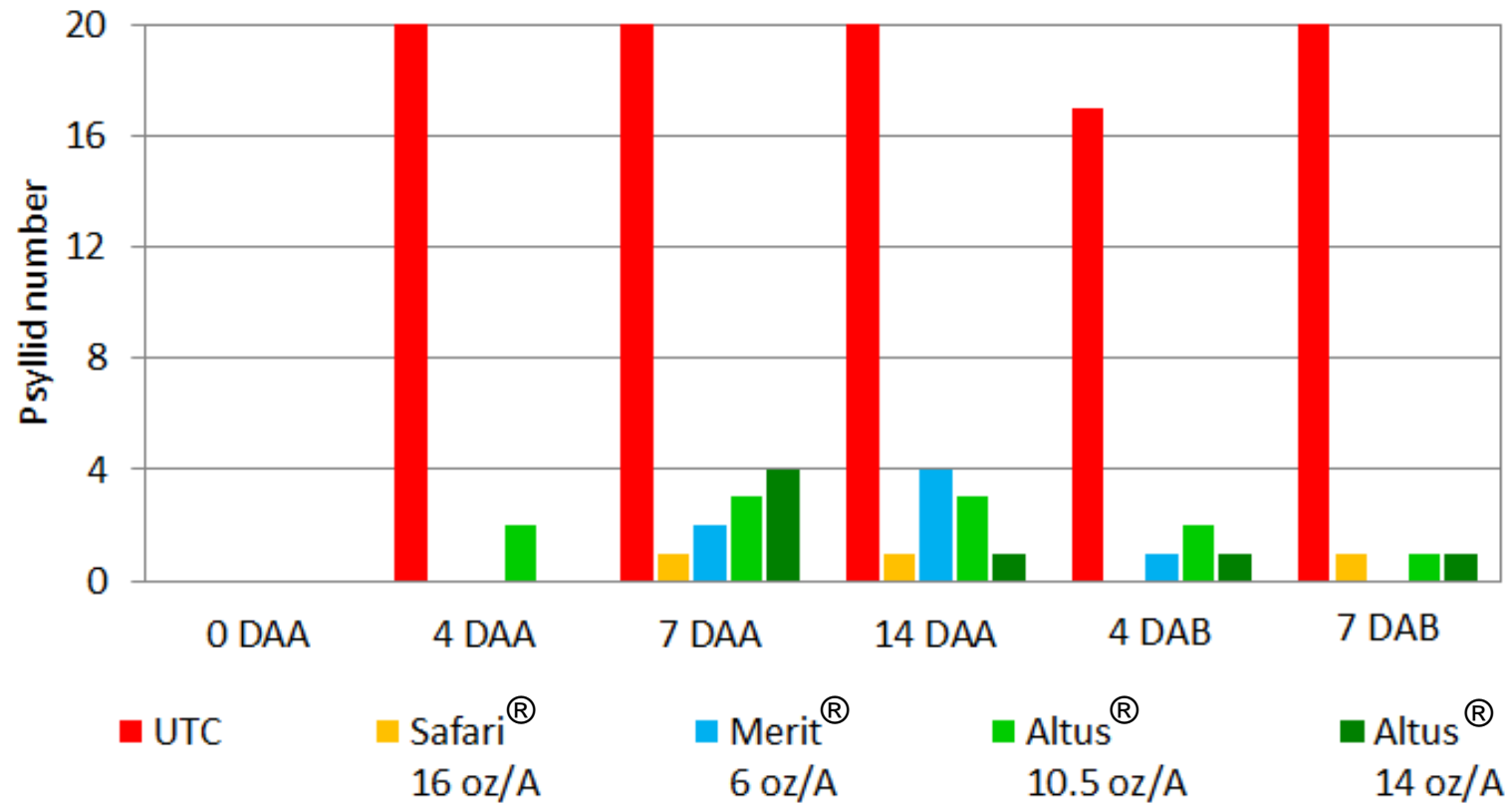


Photo: UF Citrus Research & Education Center



Efficacy: Altus[®] vs. Asian Citrus Psyllid on Orange



Vero Beach, Florida: IE16USAKYOEWL1



Convenient

// Sites

- // Landscape ornamentals
- // Landscape fruit and nut trees

// Use Pattern

- // Foliar spray or drench (annuals)
- // Before, during and after bloom
- // IPM program compatible

// PPE

- // Long sleeve shirt and long pants
- // Shoes and socks
- // Chemical resistant gloves

// Signal word: Caution (reduced risk pesticide by EPA)



Thank You!

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