

# **Management Considerations: Seed to Pre-Square**

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# Significant Changes In Cotton Pest Management – 1967 to Present

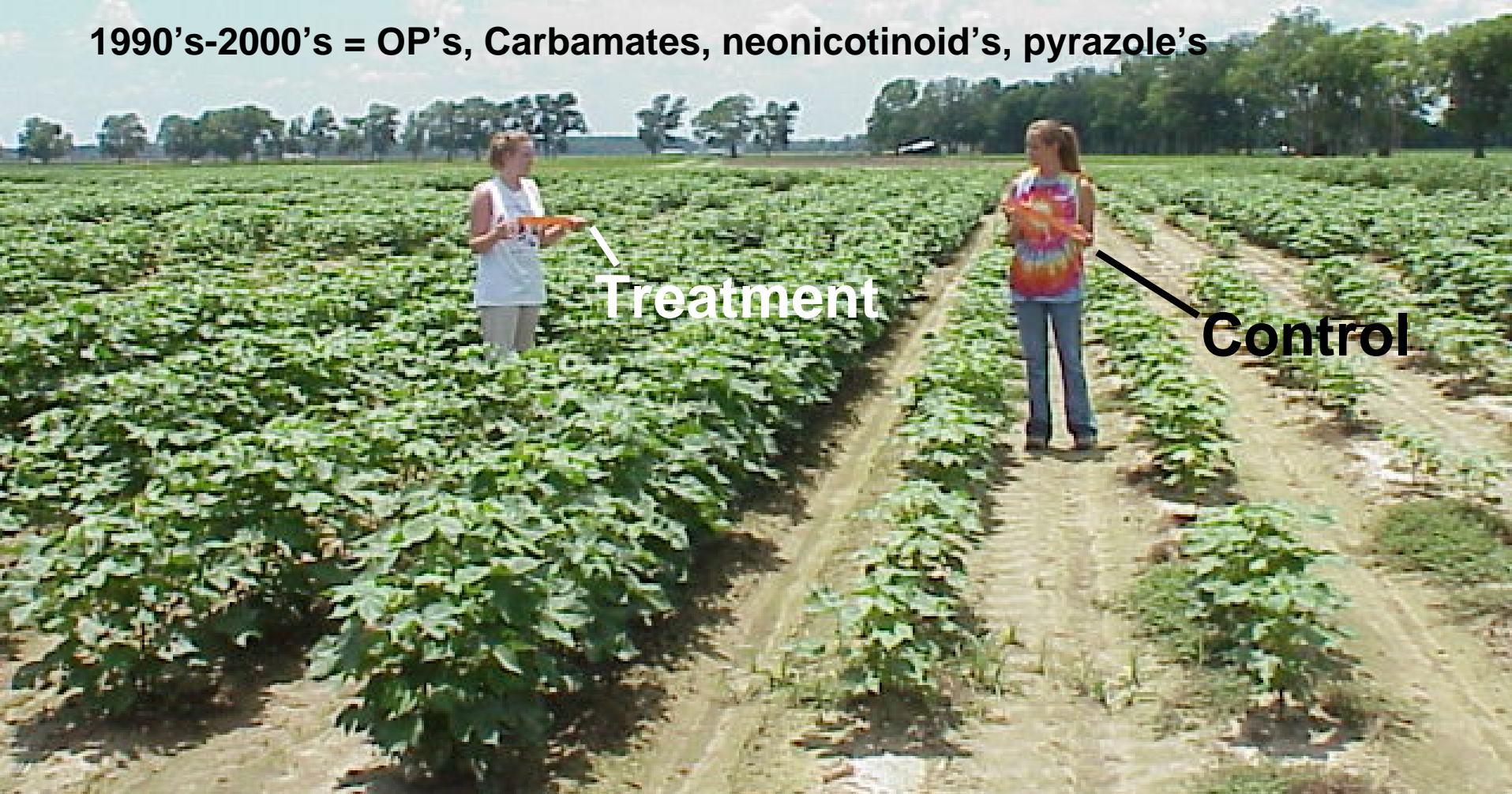
- Synthetic Pyrethroids
- Boll weevil eradication
- Transgenic cotton
- Variety improvements
- New seed treatment technology
- **GIS/GPS technology for zone management and site-specific applications**

# Pesticide use by class and time

1950's-60's = OP's

1970's-80's = OP's, Carbamates

1990's-2000's = OP's, Carbamates, neonicotinoid's, pyrazole's



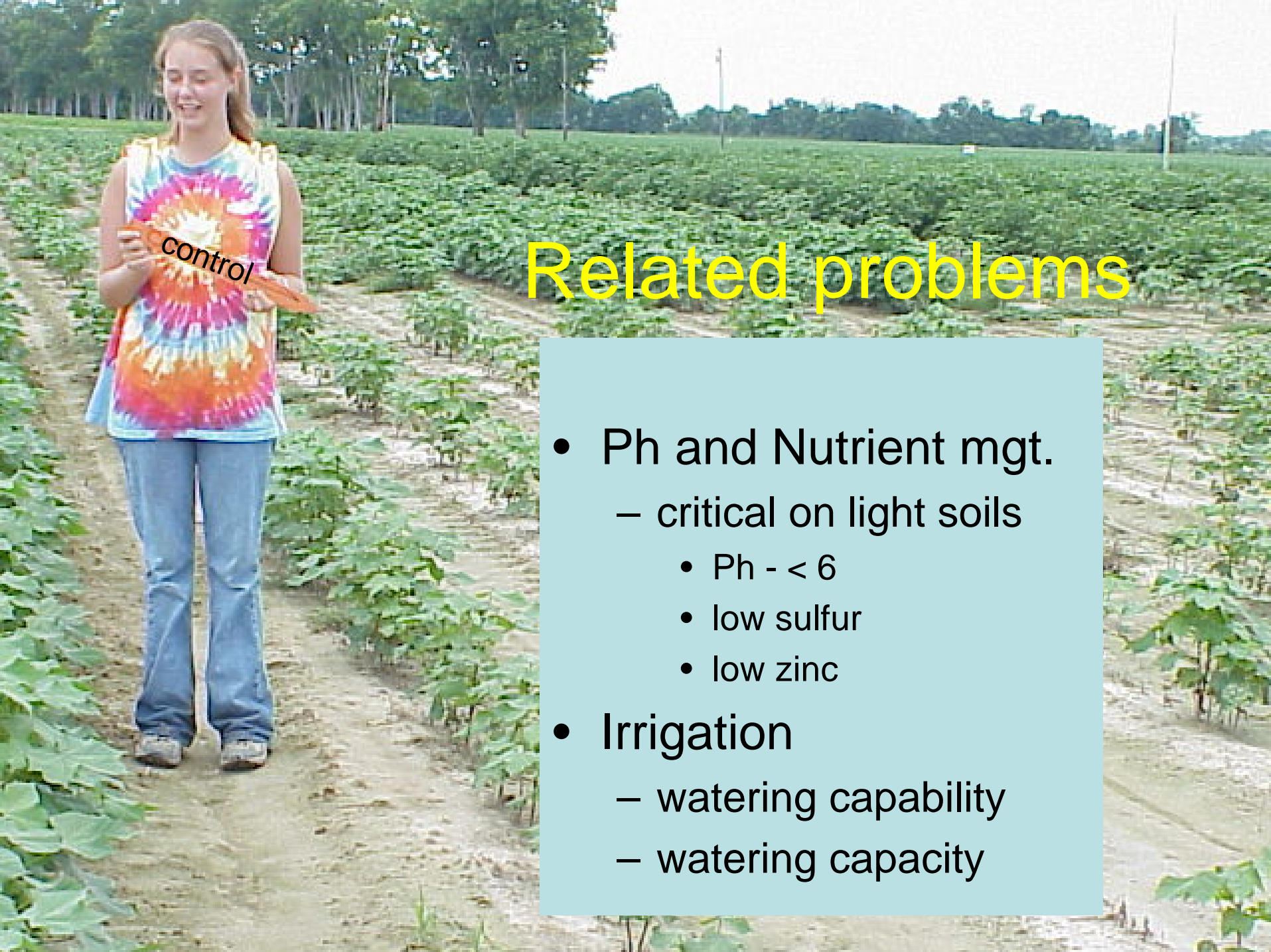
# Early season management issues

- Losses due to nematode damage on light soils may be increasing, especially due to *reniform sp.*
- Increased use of seed treatments has put more pressure on use of foliar treatments
- Tolerances may be increasing for the neonicotinoid insecticides – especially in aphids
- Convenience products and/or production expenses have caused farmers to eliminate useful inputs like granular and liquid in-furrow treatments for insects and disease

# Early Season Pests



- **Seeding pests**
  - fungi
  - nematodes
  - thrips
  - aphids
  - mites
  - plant bugs
  - Lepidoptera
  - weeds



# Related problems

- Ph and Nutrient mgt.
  - critical on light soils
    - Ph - < 6
    - low sulfur
    - low zinc
- Irrigation
  - watering capability
  - watering capacity

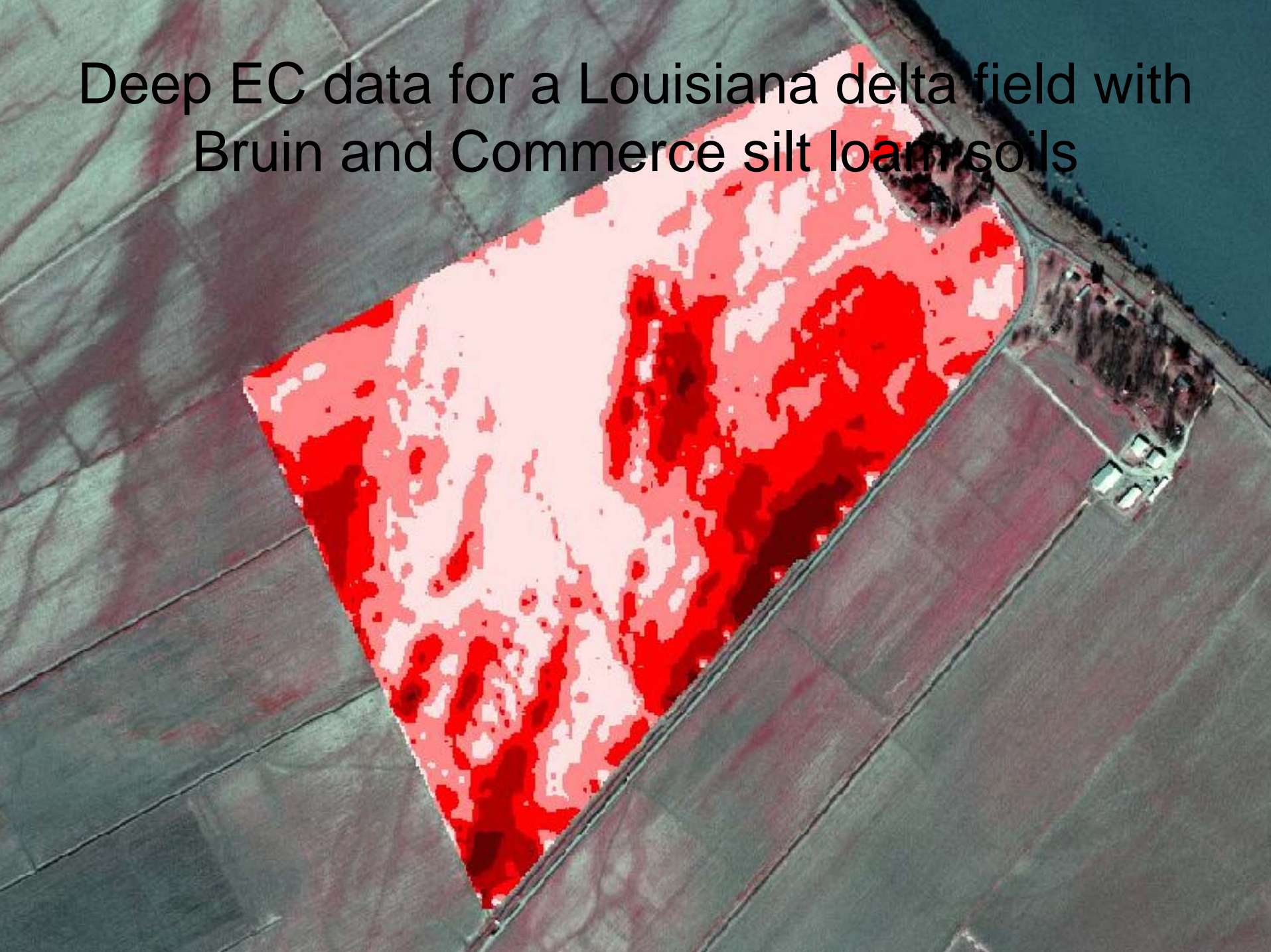


## Other Early Issues

- Compaction
- Weed control ?????
  - Tank-mix problems
  - Other???

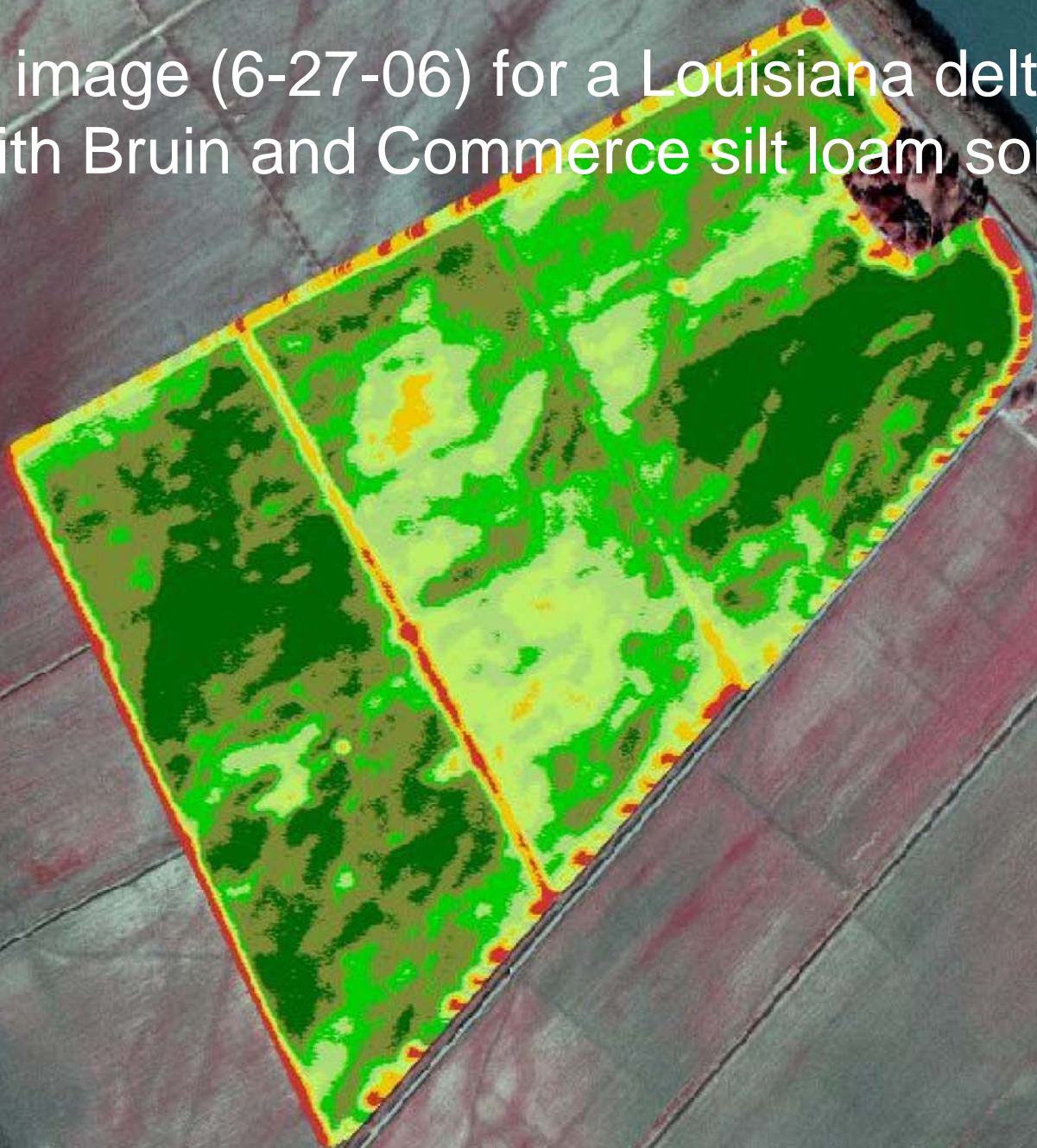


Deep EC data for a Louisiana delta field with Bruin and Commerce silt loam soils

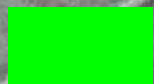




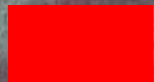
Aerial image (6-27-06) for a Louisiana delta field with Bruin and Commerce silt loam soils



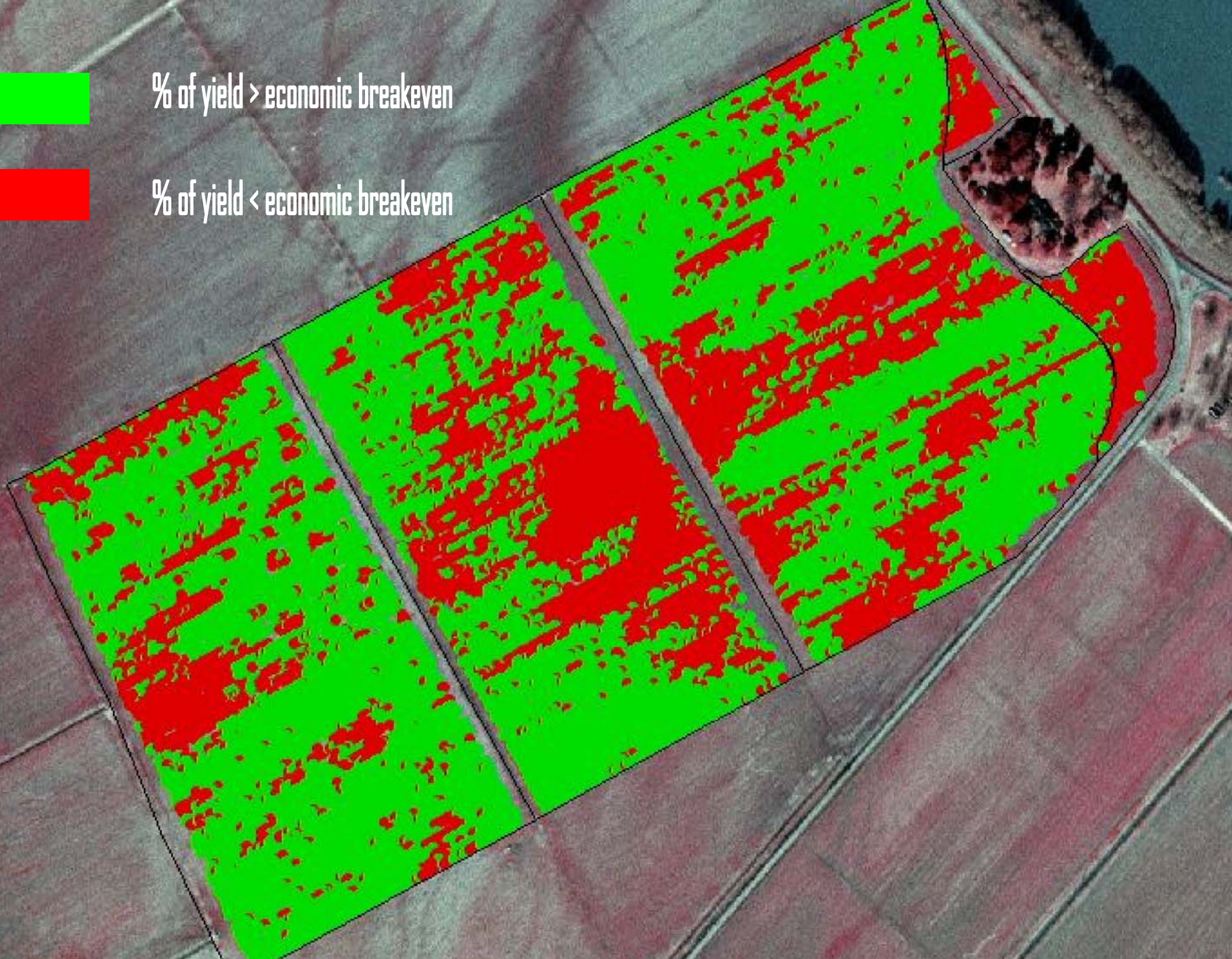




% of yield > economic breakeven



% of yield < economic breakeven

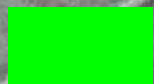




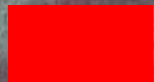
# Remediation Issues

- 51% of the field yields below breakeven
- Optimum N rate 125 lbs 30-0-0-2
- Low yields due to irrigation – 2 percent
  - Reasons for low yields
    - Nematodes – *reniform* + root-knot
    - Low Ph
    - Low zinc
    - Low sulfur
    - Moderate P & K
    - Other ?





% of yield > economic breakeven



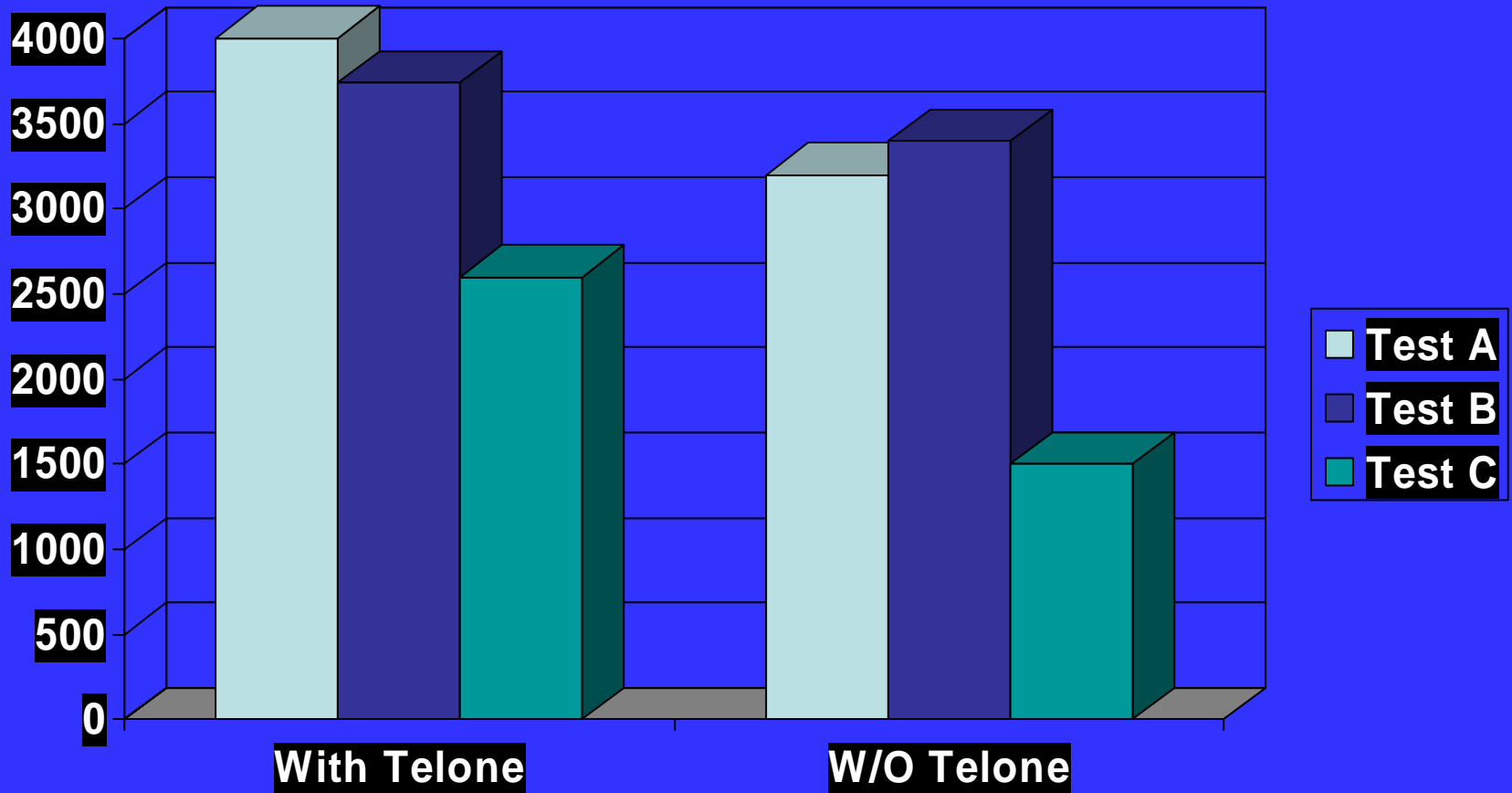
% of yield < economic breakeven



Mechanical Injury?



# Yield increases from Telone II applied at 3 GPA (2006)



# Approximate nematicide cost per acre

- **TEMIK**
  - \$3.53 / LB
  - Use Rate = 3.5 - 7 LB / A
  - \$12.35 – \$24.71 / A
- **K-pam**
  - \$6.75 / Gal
  - Use Rate = 3 – 6.7 Gal
  - \$20.25 - \$45.23
- **TELONE**
  - \$13.79 / GAL
  - Use Rate = 3 - 6 GAL / A
  - \$41.37 – \$82.74 / A

# Approximate seed treatment costs/A based on Seeds/Ft of 38" Rows

	2/ft.	3/ft.	4/ft.
Dynasty	\$ 4.09	\$ 6.14	\$ 8.19
Cruiser	\$ 5.08	\$ 7.63	\$ 10.17
Gaucha Grande	\$ 5.25	\$ 7.87	\$ 10.50
Gaucha Package	\$ 7.48	\$ 11.21	\$ 14.95
Avicta	\$ 13.85	\$ 20.78	\$ 27.70

# Approximate in-furrow pesticide costs/acre for selected liquids

	<b>Rate/A</b>	<b>Cost/A</b>
<b>Orthene</b>	<b>1 lb</b>	<b>\$ 7.50</b>
<b>Acephate</b>	<b>1 lb</b>	<b>\$ 6.00</b>
<b>Quadris</b>	<b>5.5 oz</b>	<b>\$ 9.45</b>
<b>Ridomil PC</b>	<b>2 oz</b>	<b>\$ 10.90</b>



# Efficacy comments

- 1. Products being tested
- 2. Thrips control using seed treatments
- 3. Thrips control using foliar treatments

# Current Seed treatments in tests

## LSUAC Northeast Research Station, St. Joseph, LA

- BASF
  - Fipronil based
- Valent
  - Chemical content unknown
- Bayer
  - Imidacloprid + thiodicarb
- Syngenta
  - Thiamethoxam + abamectin

# Thrips immature control with seed and in-furrow treatments - 2005

	<u>TREATMENT</u>	<u>RATE UNIT</u>	<u>% CONTROL</u>
1.	Dynasty CST	0.51 OZ A/CWT	---
2.	Cruiser	0.3 MG A/SEED	65
3.	Cruiser	0.34 MG A/SEED	68
4.	Avicta	0.34 + 0.15 MG A/SEED	75
5.	Temik 15G	0.5-0.75 lb ai/a	75



# Thrips immature control with seed and in-furrow treatments - 2006

	<u>TREATMENT</u>	<u>RATE UNIT</u>	<u>% CONTROL</u> *
1.	Dynasty CST	0.51 OZ A/CWT	---
3.	Cruiser	0.34 MG A/SEED	53
4.	Avicta	0.34 + 0.15 MG A/SEED	84
5.	Temik 15G	0.5-0.75 lb ai/a	84

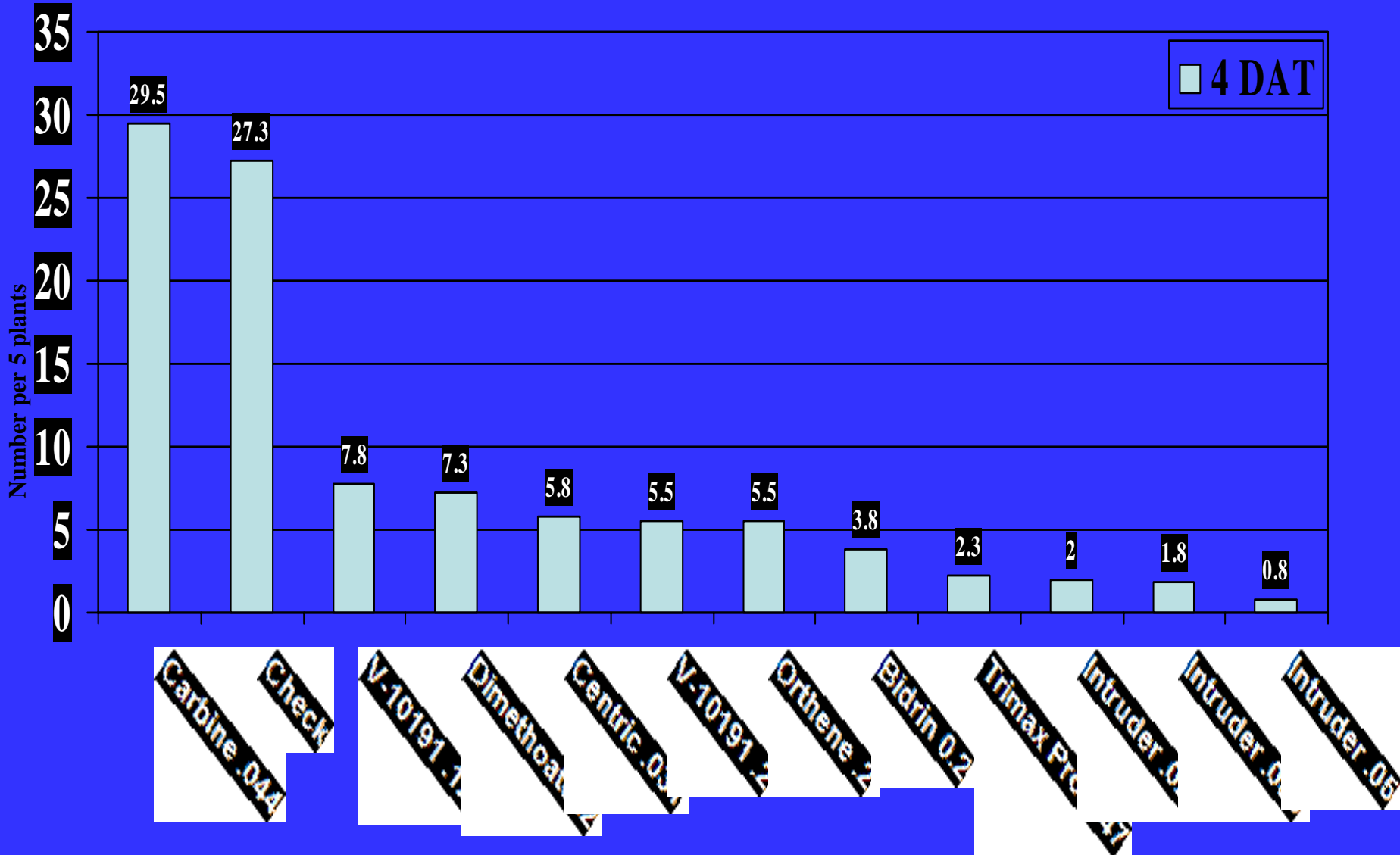
\* Ratings were taken 24 DAP





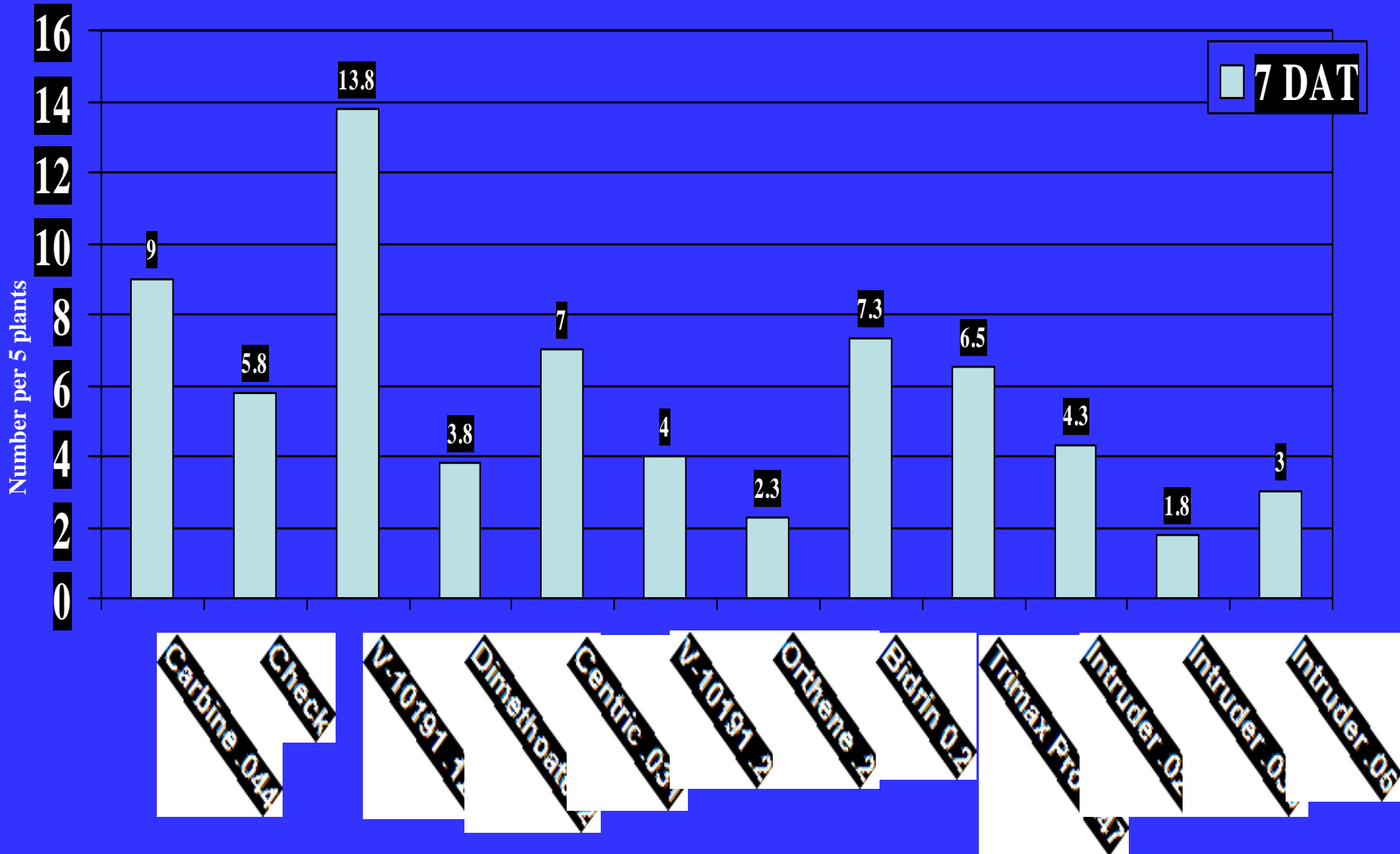
# 2006 Thrips Efficacy

## Starkville, MS (Immatures)



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# Summary comments - soil and nematode problems

- In the lower Mississippi delta other mid-southern states
  - Significant portions of the soils have low EC values. A large percent of those soils are in cotton production.
  - A high percent of soils are infested with nematodes, have a hard pan, and require irrigation. There are numerous fertility issues like low Ph and/or nutrient deficiencies that create many interactions that limit yields and impact pest management.
  - The extent of nematode damage on the light soils is highly variable, some fields are infested with multiple species of nematodes including root-knot and *reniform*.
  - Recent data collected by LSU AG Center research teams indicates use of zone management and site-specific application techniques would be useful tools to assist with the above problems.

# Summary comments – early season insect problems

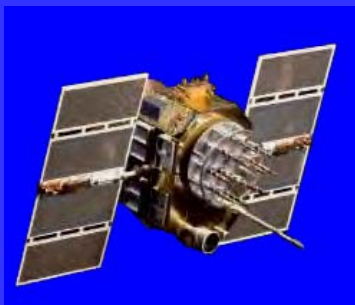
- **Thrips are a universal pest across fields in the mid-south and southeast**
  - **Seed treatments have become the product of choice for early season management of both thrips and nematodes.**
  - **There are early warning signs that excessive usage may be aggravating pests like mites and aphids.**
  - **Use of GIS/GPS technology to correct nematode and soil deficiencies may increase efficiency of early season pest management, including insect control, because of the potential to increase yields using zone management and site-specific applications.**

# Publications to Help Identity Pests

- **Thrips a multi-state summary – 2000-2001**
    - Louisiana – 2000
    - Mississippi – 2001
    - Tennessee – 2001
    - Alabama - 2001
  - **Reed, et al., 2006. A key to thrips on seedling cotton in Midsouthern United States,MAFES**
- CI - Reports**

# Publications that aid in pest identity

- **Muller S. C. et al., A field key to the most common *lygus* species found in agronomic crops of the San Joaquin Valley of Calif.**
- **Aphids on cotton – Pub 2455(8M), 9/91,LSUAC**
- **Spider Mites – Bolland H. R. et al., World Catalogue of the Spider Mite Family (Acari: Tetranychyidae) with References to Taxonomy, Synonymy, Host Plants and Distribution.**



**THANK YOU**

