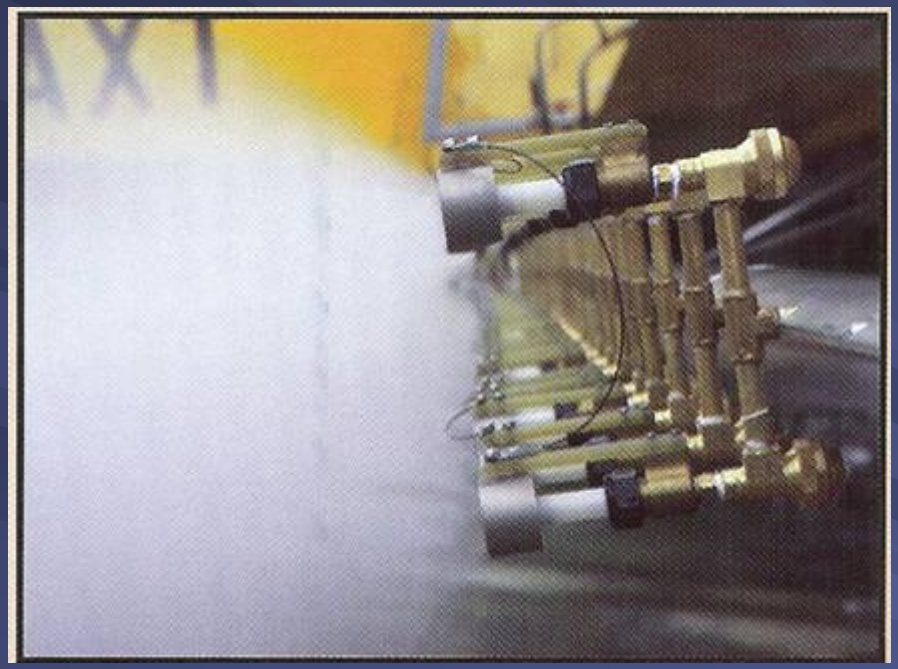
ElectroStatics-Progress Report



David Eby-AgriFlite Services, Inc.
AeroFlow Systems, Inc.

ES-Results from around the world

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AUSTRALIA

The Centre for
Pesticide Application and Safety

2002 Final Report

Field Evaluation and Droplet Spectrum Analysis for the Spectrum Electrostatic System on Cotton

Spectrum Electrostatics vs. Micronair

ELECTROSTATICS

MICRONAIR

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CONCLUSIONS

Both Systems applied droplets at 150 micron.

ES application was made at 10L/ha (1GPA)

Micronair applications were at 30 L/ha (3GPA.)

1. ES and Micronair delivered equivalent levels of deposition.
2. ES had significantly less dye on flat plates at ground level.
3. ES produced a rapid reduction in drift leaving the field.

SUMMARY

" Results obtained in this experiment indicate that the electrostatics system does warrant further investigation, particularly considering that in this experiment the electrostatic system was able to delivery equivalent levels of deposition, lower CV's and similar or less drift at application rates of 10 L/ha when compared with the Micronair au5000 at 30 L/ha."

THE UNIVERSITY OF QUEENSLAND

AGRIFLITE SERVICES INC

AUSTRALIA

1 GPA ELECTROSTATIC

APPLICATION

SORGHUM DESSICATION-MUNGINDI

BRAZIL-RICE-SOYBEANS

RICE

SOYBEANS

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SOYBEAN RUST RESULTS

DR. ULISSES R. ANTUNIASSI, PHD. PROF. AG ENGINEERING, SAN PAULO STATE UNIVERSITY

- 150 micron droplets gives improved penetration and better rust control then larger (250-300 microns).
- ES @ 1gpa delivered 98.9% control @ 71 % humidity & 99.6 % control @ 64% humidity.

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SOYBEAN RUST RESULTS

ALAN POULSEN, TAIM AERO AGRICOLA LTDA, RIO GRANDE DO SUL, BRAZIL

- Operated a ES system for 4 years
- When rust infections were high, treatment is needed within 2-3 days
- Temperatures > 90 degrees rendered conventional applications ineffective due to evaporation causing operators to stop their applications
- Crop oils helped the conventional applications but added additional costs
- ES applications > 90 degrees were 89 % effective even with humidity's as low as 38%

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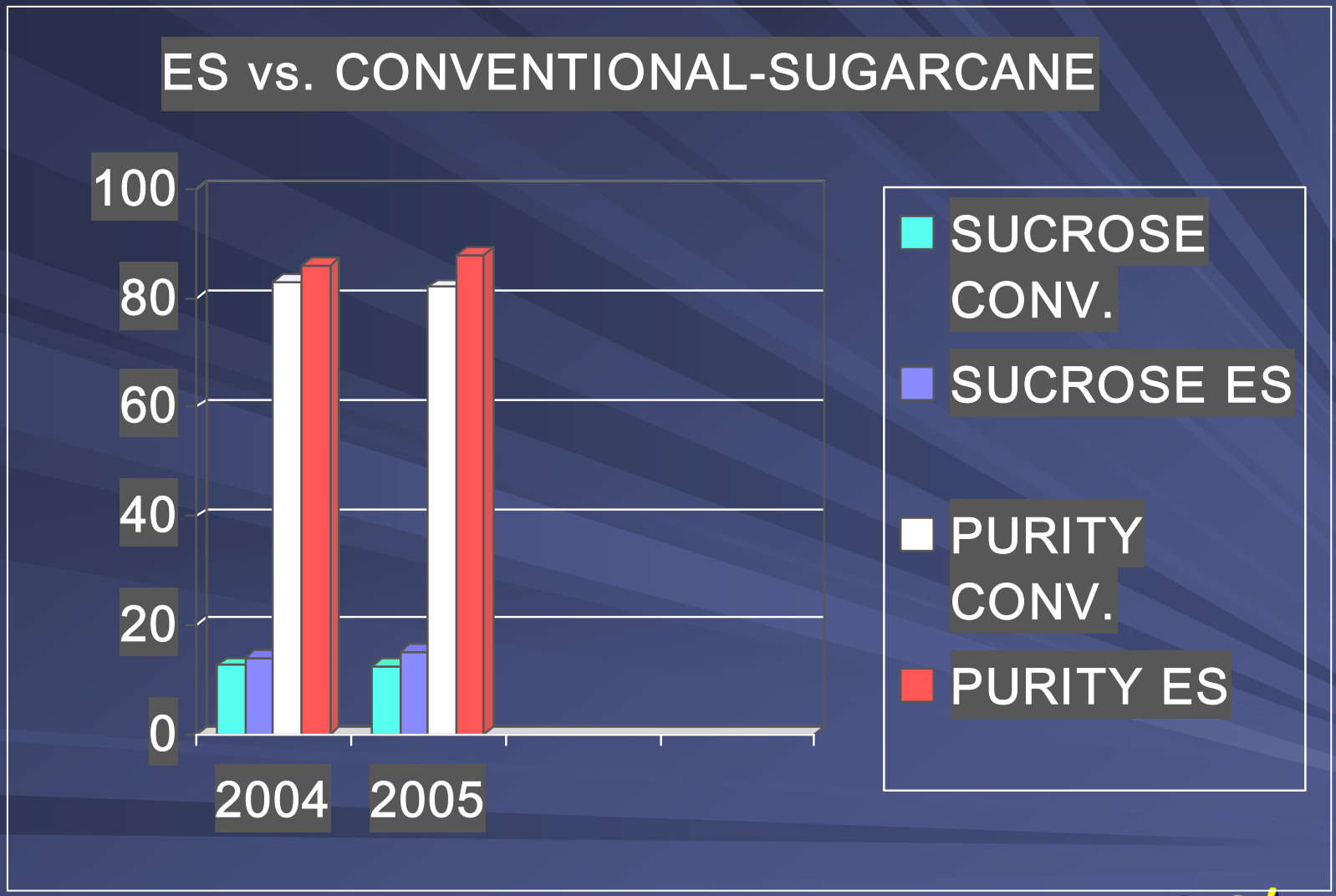
SOUTH AFRICA



GERT BADENHORST, SWAZILAND, AFRICA

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TEXAS-COTTON

1 GPA ELECTROSTATICS **5 GPA CONV.**

SPECK THORNTON, SLATON, TX

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MINNESOTA

ED NEWBURG, MN, ES SYSTEM ON AN EAGLE

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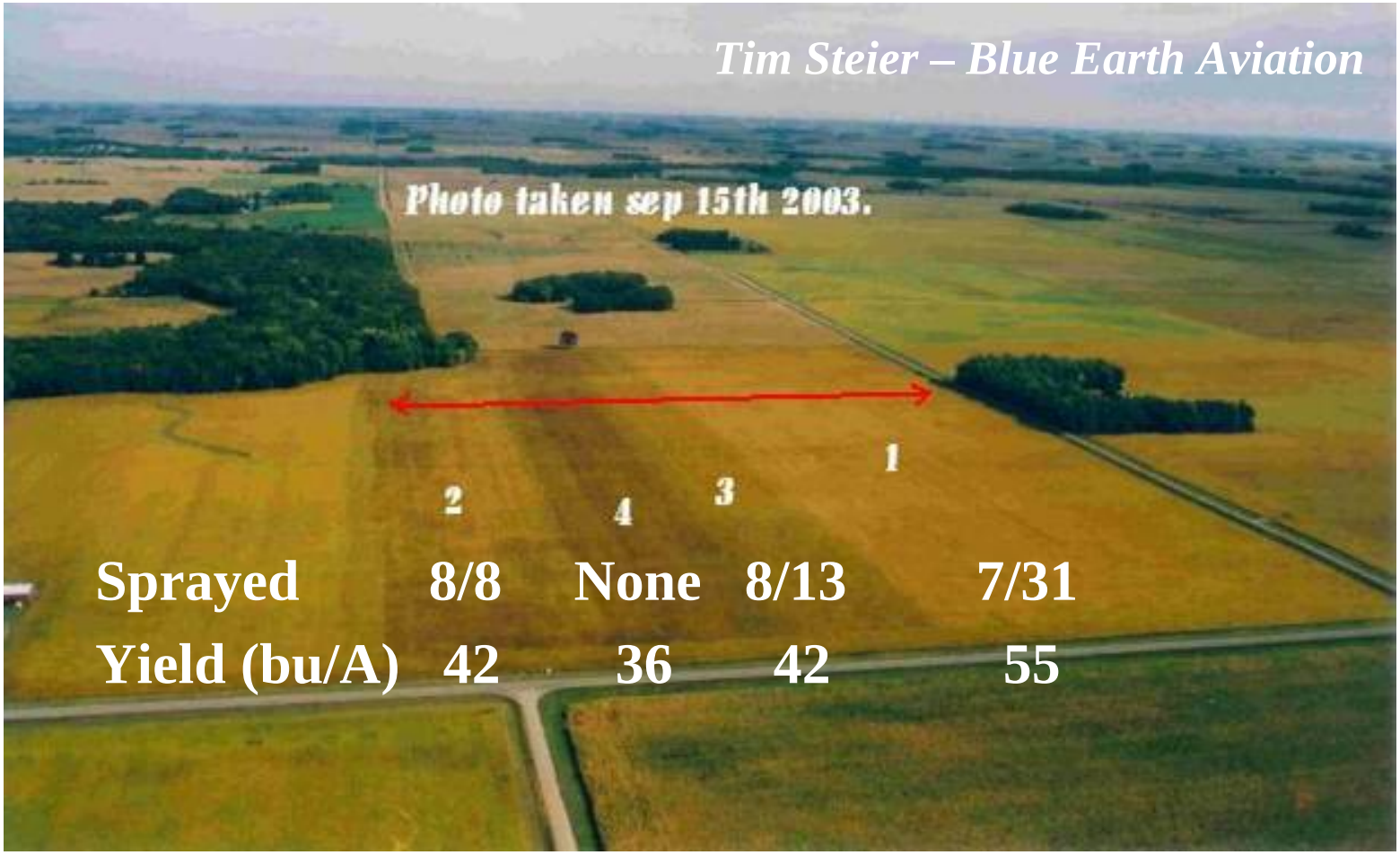
Insecticide Timing is Critical:

Tardy Detection or Delay in Application can have Big Impacts



Insecticides – Warrior @ 3.2 oz/A (7/31, 8/8),

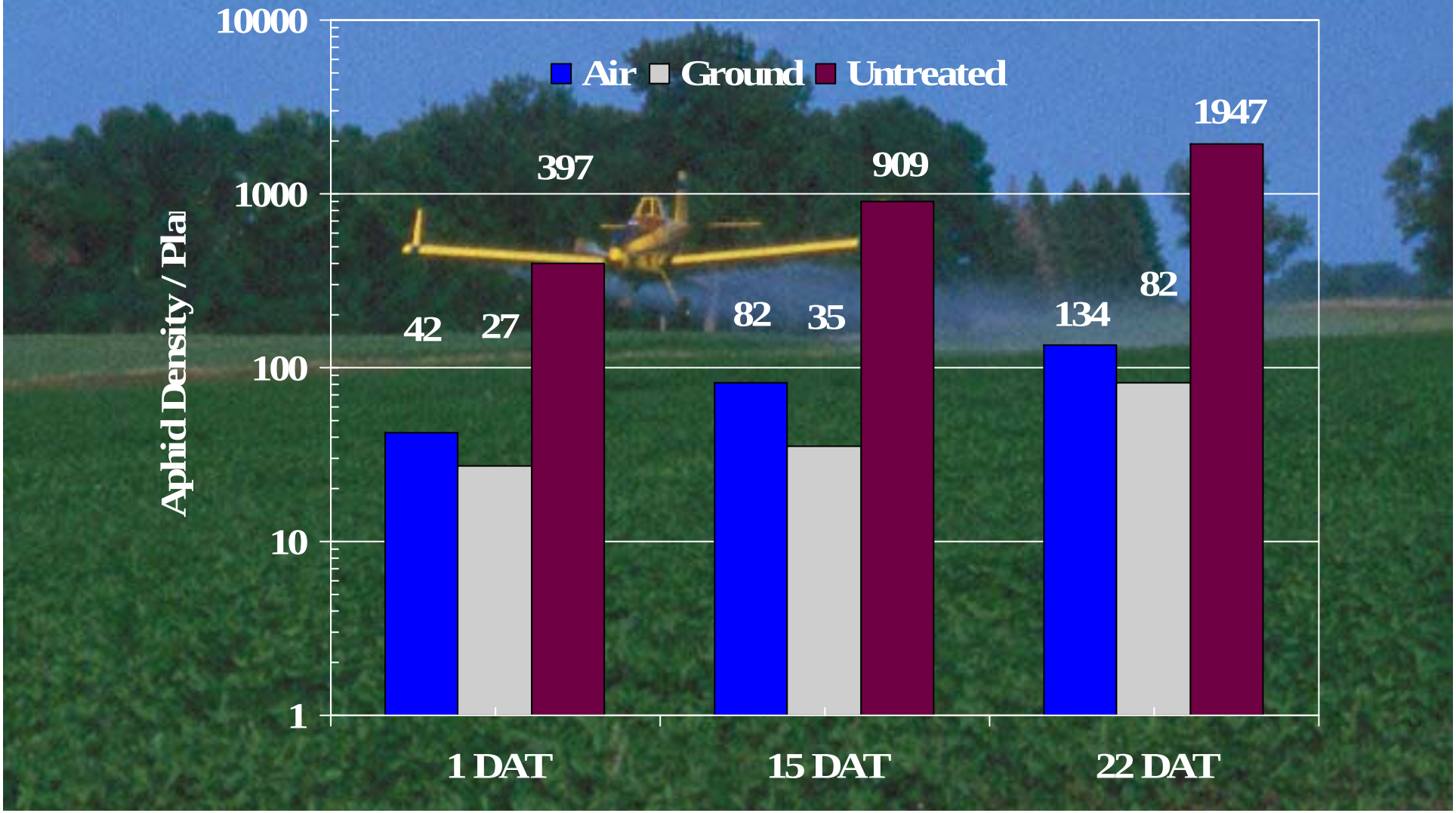
Lorsban @ 1 pt/A (8/13) in 4 gpa by air

Ken Ostlie – University of Minnesota

Soybean Aphid Insecticides: Aerial vs. Ground on Full-Canopy Soybean

Noetzel, Holen, Holder & Holen – Fergus Falls, MN

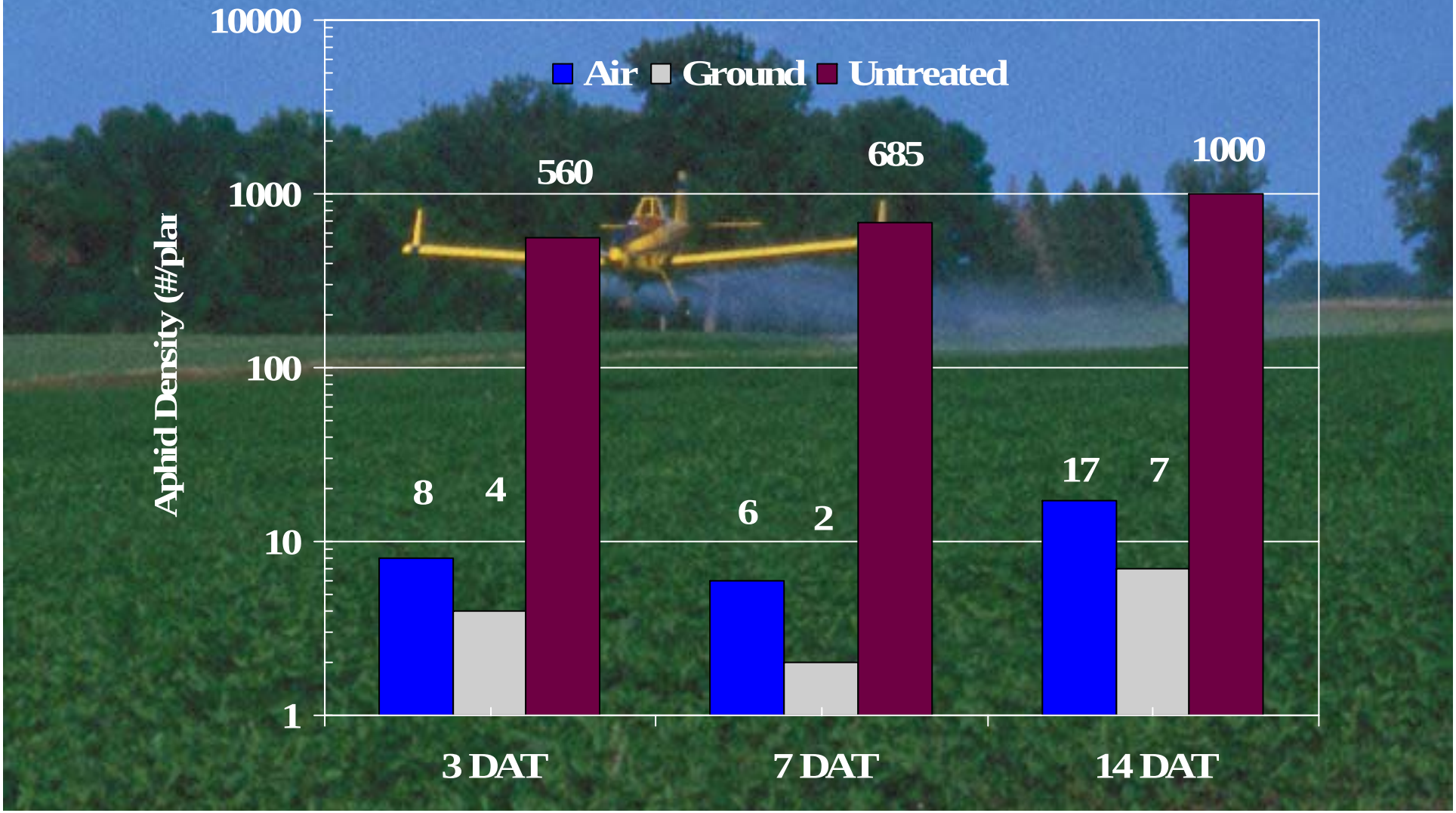
Warrior applied at 3 oz/A in 12 gpa ground and 5 gpa air on July 30, 2003.



Soybean Aphid Insecticides: Aerial vs. Ground on Soybeans after Peas

Ostlie, Ike, Newberg SkySpray, Broderius – Hector, MN

Warrior applied at 3 oz/A in 15 gpa ground and 5 gpa air on July 30, 2003.

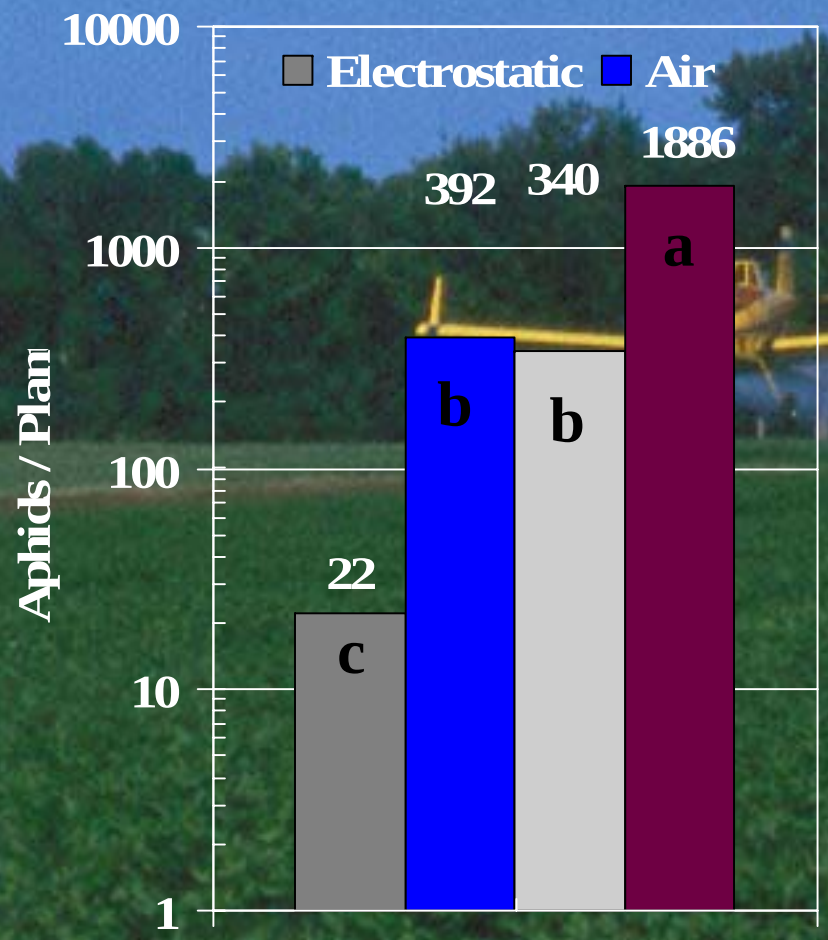


Soybean Aphid Insecticides:

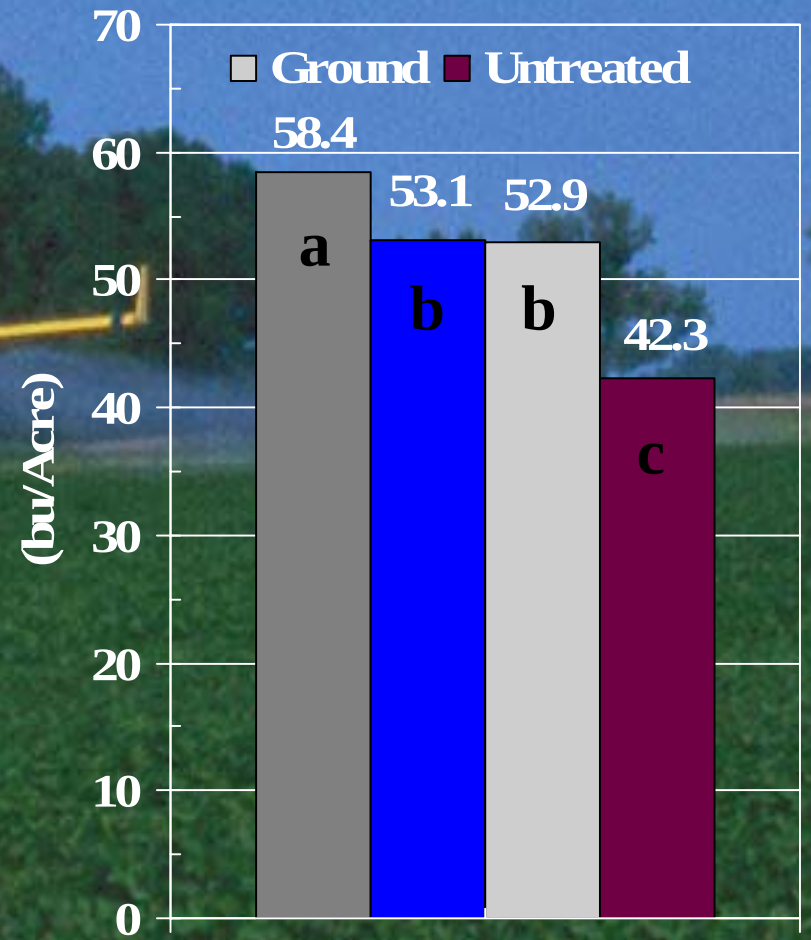
Comparing Technologies on Full-Canopy Soybean

Ostlie, Ike, Newberg SkySpray, Dahlco Seeds – Corvuso, MN

Warrior applied at 2 oz/A in 20 gpa ground, 4 gpa air, 1 gpa electrostatic on Aug. 10, 2005.



Aphids 7 DAT



Yield

Treatment bars with the same letter do not differ (p=0.05).

Results of Spray Technology Study on Soybean Aphid, MN – 2005

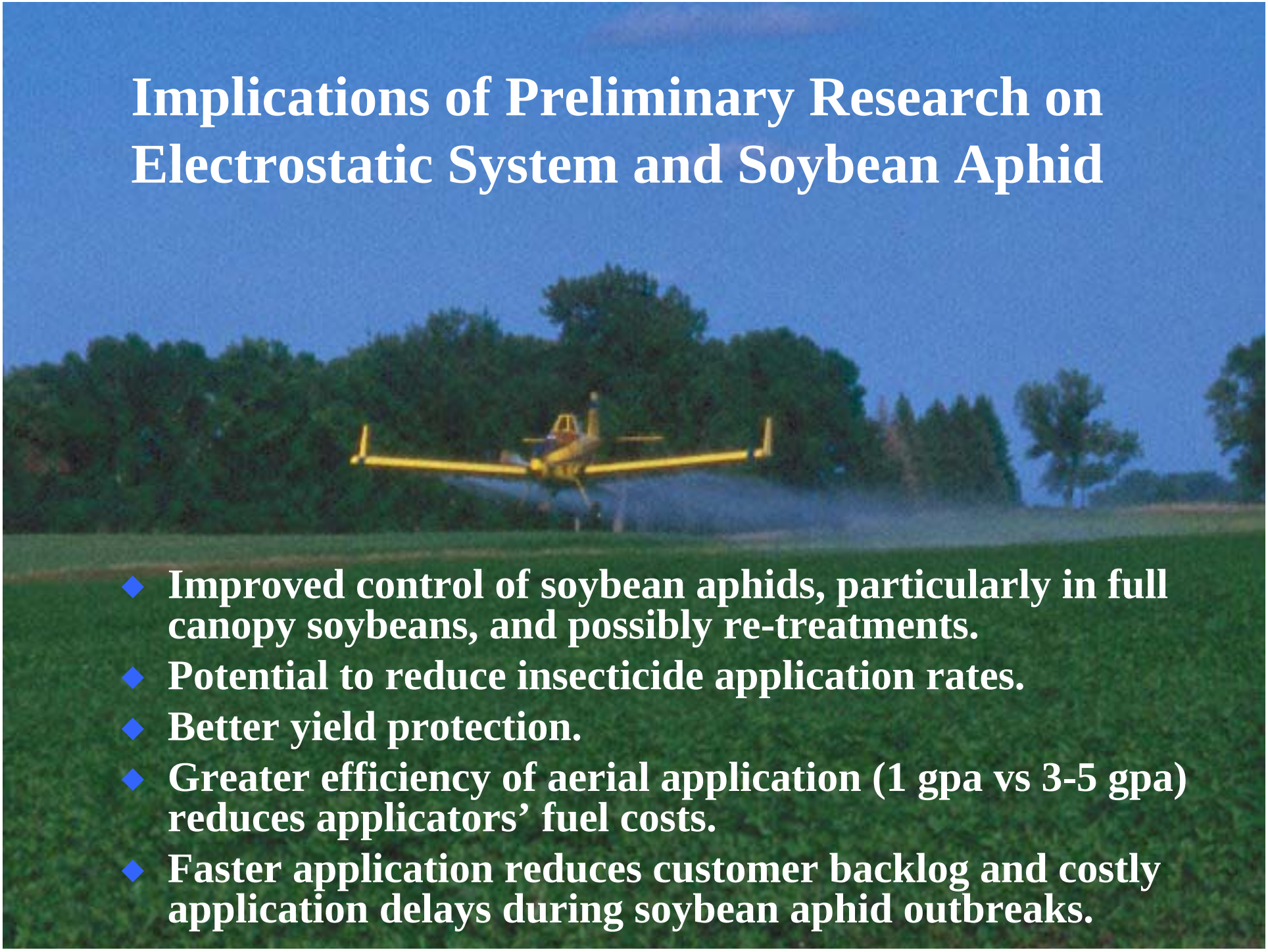
Ostlie, Price, Ike, Newberg SkySpray & Dahlco Seeds

- **The electrostatic system provided significantly better control of soybean aphids (99%) than either conventional air (79%) or ground (82.0%) application of Warrior T (2 oz/A).**
- **Conventional air and ground application were equivalent, as seen in two previous studies.**
- **Yields reflected aphid control 7 days after treatment. Yield protection from electrostatic application (+16.1 bu/A), exceeded conventional air (+10.8) or ground (+10.6).**
- **Observations on distribution of surviving aphids indicates that both conventional air and ground applications only partially penetrated the full canopy while the electrostatic application penetrated completely.**

Funded by MN Soybean Research & Promotion Council

Ken Ostlie – University of Minnesota

Implications of Preliminary Research on Electrostatic System and Soybean Aphid



- Improved control of soybean aphids, particularly in full canopy soybeans, and possibly re-treatments.
- Potential to reduce insecticide application rates.
- Better yield protection.
- Greater efficiency of aerial application (1 gpa vs 3-5 gpa) reduces applicators' fuel costs.
- Faster application reduces customer backlog and costly application delays during soybean aphid outbreaks.

CALIFORNIA

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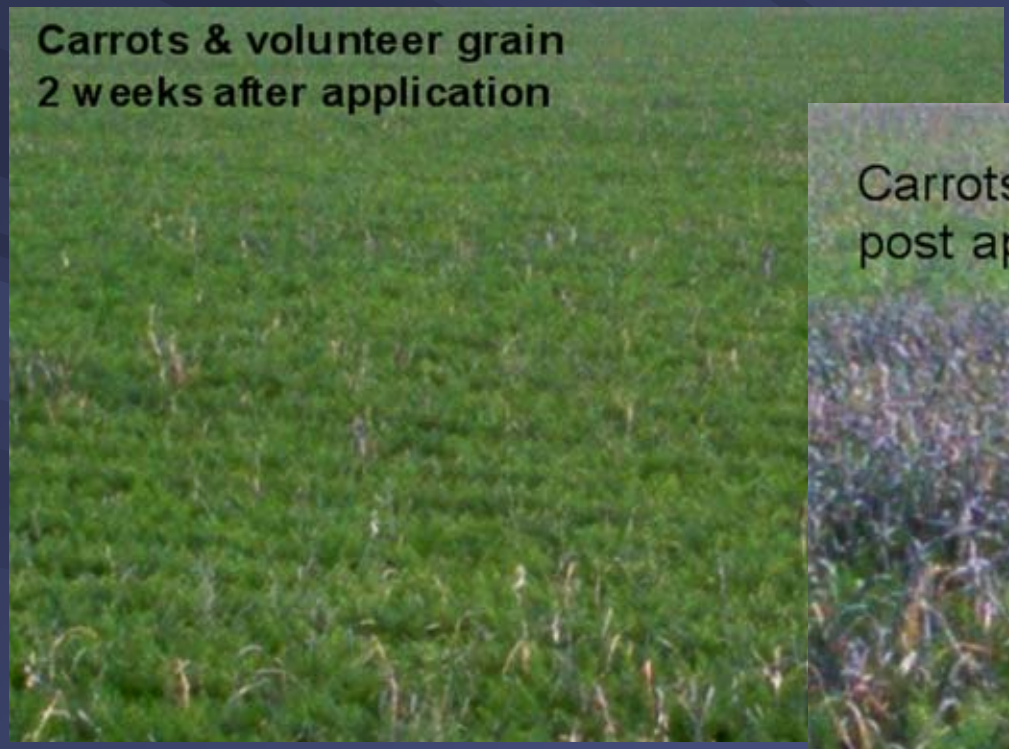
CALIFORNIA



1 GPA ES POST HERBICIDE APPLICATION INSTEAD OF THE NORMAL 10 GPA.

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DRIFT ?

AIRCRAFT HEADING EAST

WIND FROM SOUTHEAST
AT 7 MPH

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RESEARCH NEEDED FOR 2006

- Correlation between spray density and optimum control
- Fungicide studies (reducing 5 gpa applications to 1 gpa ES)
- CPP–which ones are effective with ES and which are not

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CREDITS

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- AGRIFLITE SERVICES, IN