

Aerial Application Technology Group Research Update and Plans



USDA-ARS
College Station, TX

Update to Aircraft Fleet

Cessna 206 – Remote Sensing



AirTractor 402B



AgHusky



MD 600 – Will be fitted with spray system

Helicopter Research

- We have not been very active in this area due to limits with our aircraft;
- Would like to hear from chopper pilots on researchable questions and issues?

Introduction

- Many of our projects will be reported on during this session;
- By discussing our plans for 2012 research plans, we hope to pave the way for your input;
- Please talk to any of us during the convention or stop by our booth (#828) to let us know what we might be missing.

2012 Projects

- Update on EPA DRT program;
- Active Ingredient Testing;
- Field and wind tunnel studies with active ingredients;
- Variable Rate and Precision Application Research;
- Atomization models: Smartphone apps and updates.

Drift Reduction Technology

- Continue to partner with EPA as the program implementation goes into effect the first half of 2012 (tentatively);
- We are still not sure exactly how this will be addressed on the label;
- Likely will be a 3 (or 4) star rating system:
* = 50%, ** = 75%, *** = 90%, (**** = 95+%)
drift reduction would translate to buffer zone reduction.

Drift Reduction Technology

- Field and Wind tunnel studies looking at:
 - Adjuvants
 - Best Operating Practices
 - Evaluations of alternative systems (electrostatics, air-induction nozzles, etc...)

Active Product Atomization

- Examine the effects of active products on spray atomization
 - What role do adjuvants play in atomization under aerial conditions?
 - Potentially update or create new, active product spray nozzle models.
 - Insure label restrictions are met

Wind Tunnel A.I. Work PowerMax and Adjuvants Headline and Adjuvants



Insecticide Research

- Examine effect of deposition patterns and rate of products with multiple use levels and modes of action relate to product efficacy
 - Small plot and field scale work looking at:
 - Organic control of corn ear worm in sweet corn
 - Control of pecan aphids
 - Glyphosate resistance issues

Insecticide Toxicity to Brown Stink Bug, an Important Emerging Pest of Numerous Crops, Fruits and Nuts

Research plan is to continue bioassays with current and new insecticides to prevent development of resistance by insecticide resistance management by insecticide mode of action rotation and a more thorough understanding of factors increasing its pest status to target key contributing factors.



Adult Control of Corn Earworm in Organic Sweet Corn Production Using Feeding

Our research shows that corn earworm moths from the laboratory and field-collected will feed on Entrust® (organic formulation of spinosad/Spintor®) at concentrations 1,000 times higher than those that will kill them (1ppm) when mixed with sugar. **Because there is also available a labeled organic spinosad formulation , GF-120 Naturalyte® bait, DowAgroSciences, plans are to evaluate this material when mixed with sugar for adult control.**



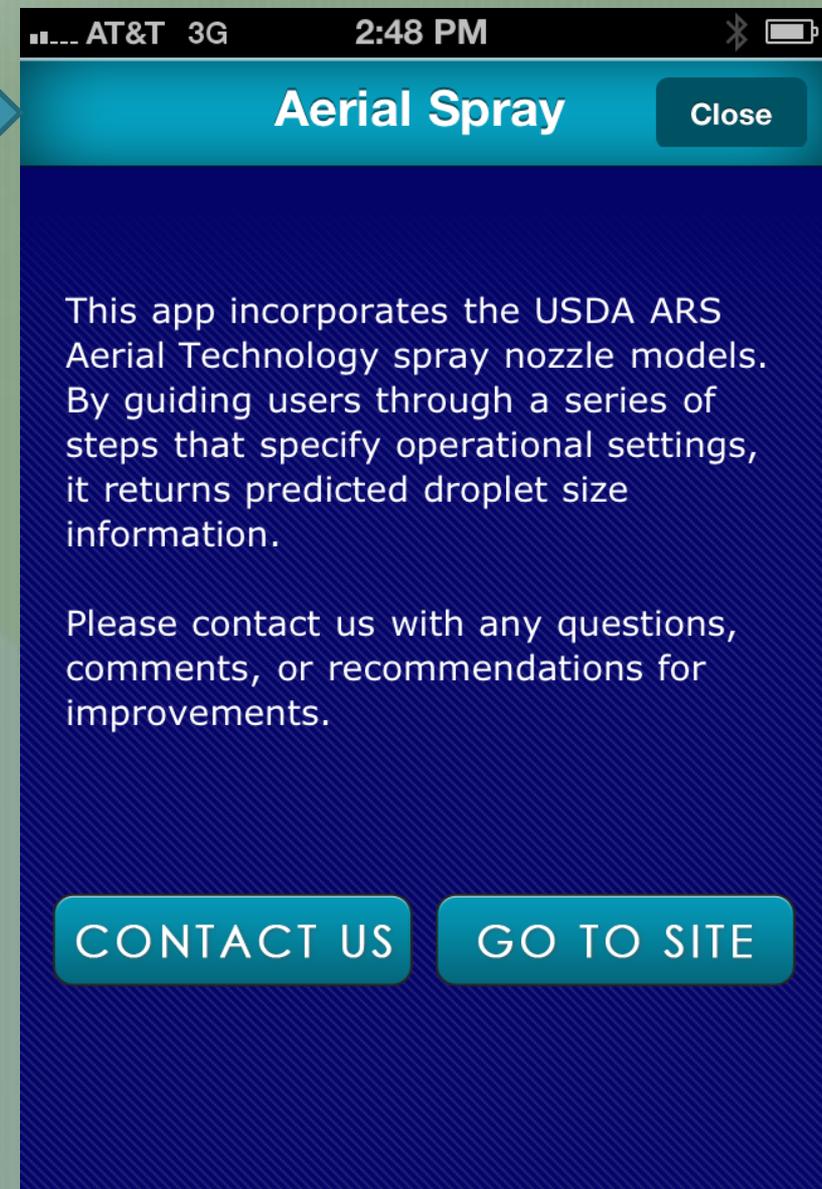
Variable Rate and Precision Applications

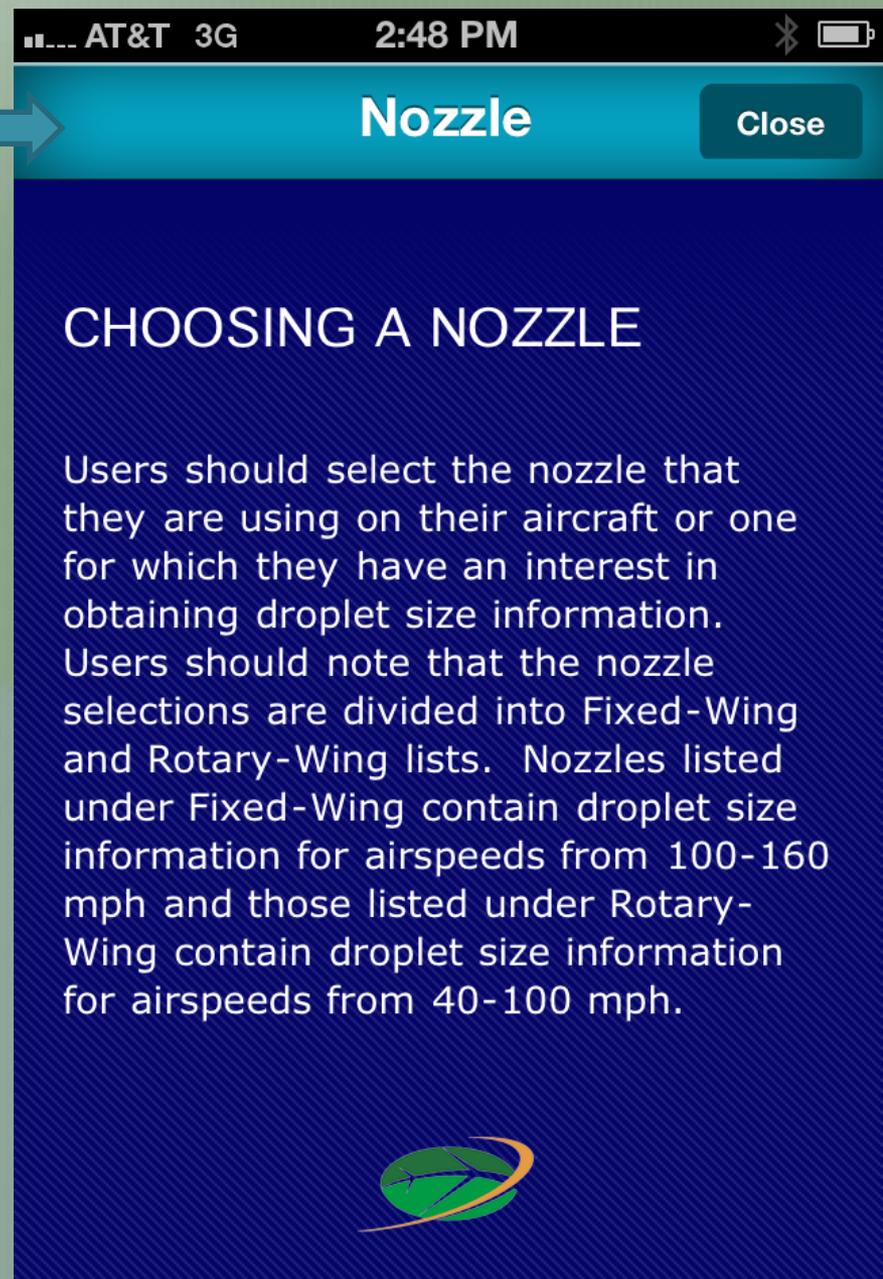
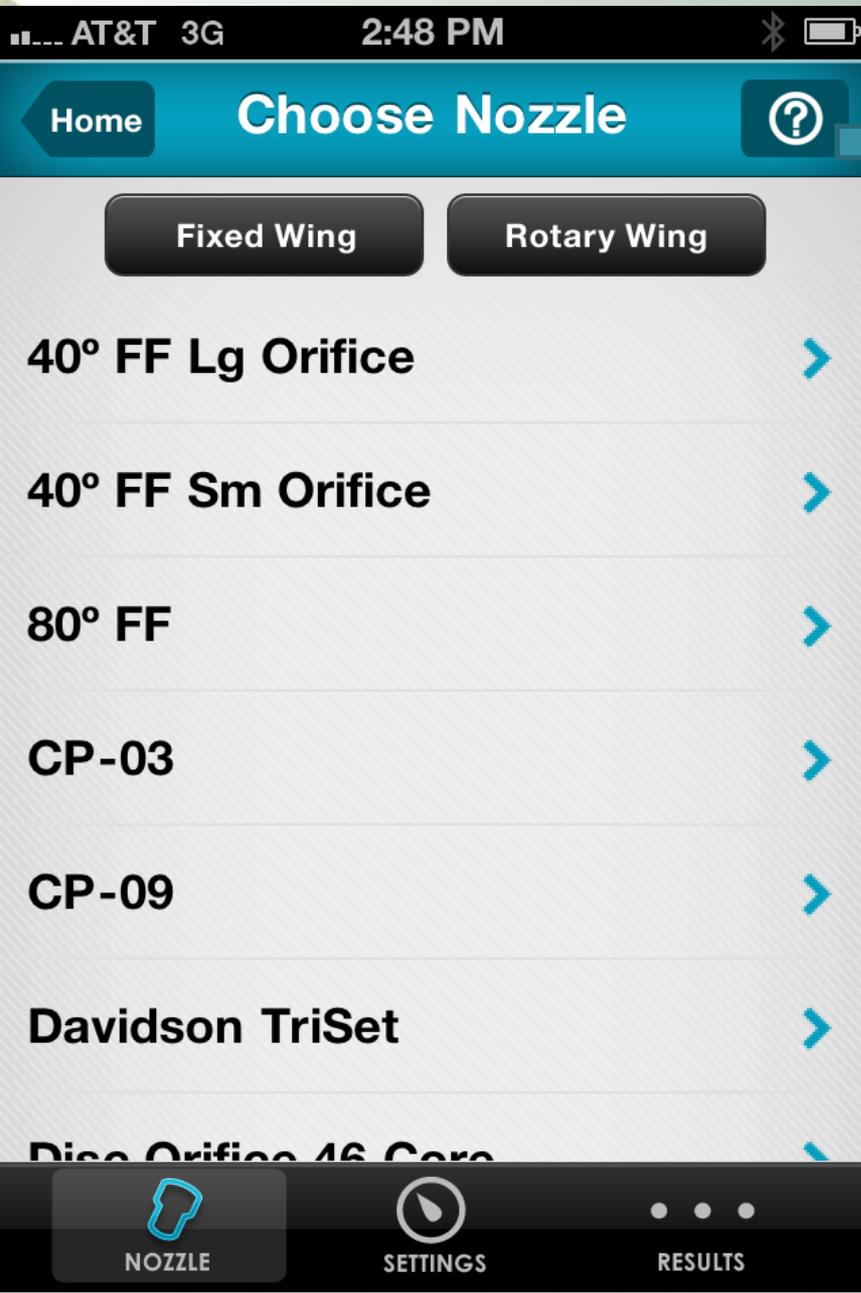
- Examine different nozzles and system for variable rate
- Develop methods for quickly and easily generating prescription maps;
- You will hear more about these from Drs. Martin and Lan.

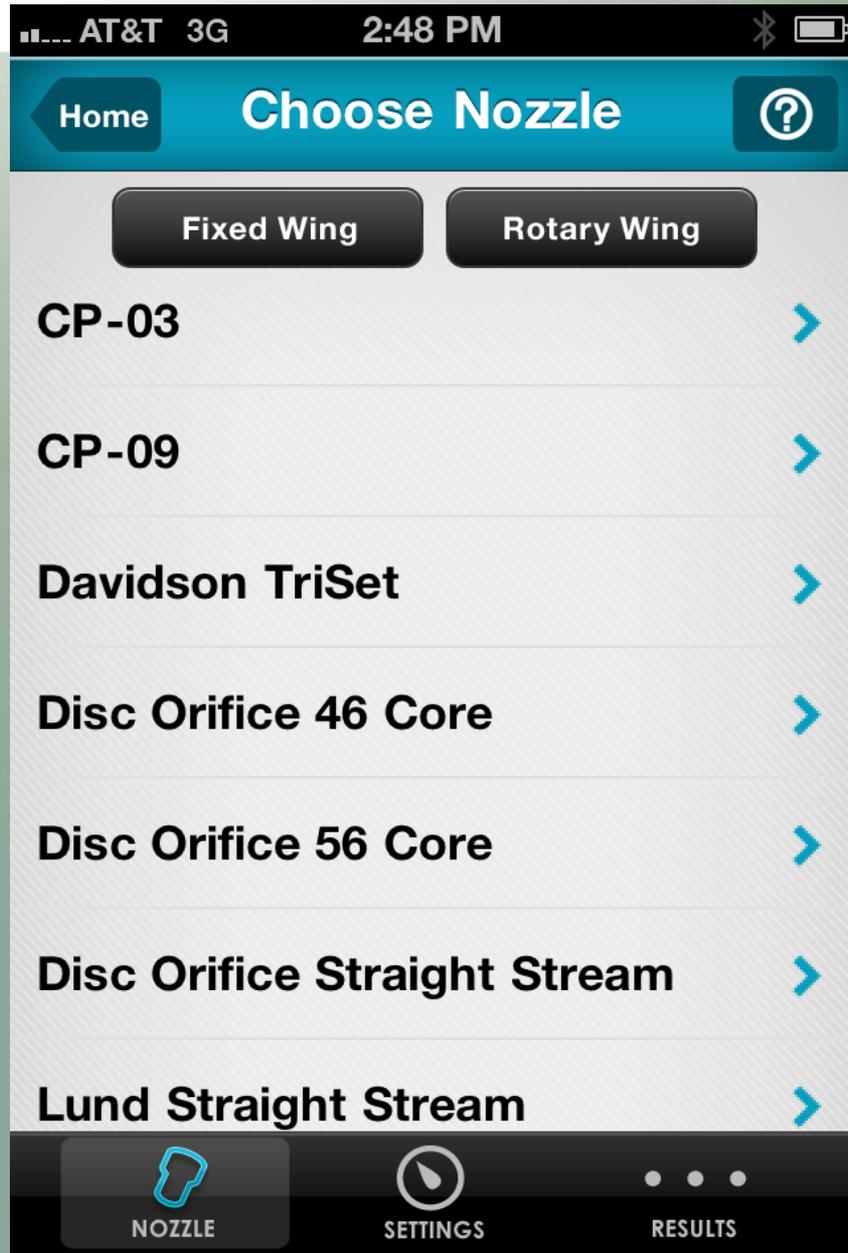
iPhone and Android Apps

- In an effort to better serve our customers, we have converted our aerial Spray Atomization models and all of our ground Vector Equipment testing results into easy to use smartphone apps;
- The user is able to select their application setup and see the droplet size from that setup;
- Results can be saved or emailed (time and date stamp for record keeping).

Start Screen







Back **Current Settings** ?

Select Current Settings for Results

- Orifice
- Angle
- Pressure (psi)
- Speed (mph)

VIEW RESULTS

Cancel

ARS Aerial Results

Send

To:

Cc/Bcc, From: clint.hoffmann@me.com

Subject: ARS Aerial Results

I you thought might be interested in
this.

Date: Nov. 30, 2011 02:48 PM

Wing Type: Fixed Wing

Nozzle: CP-09

Orifice: 0.078

Angle: 30

Back

Nov. 21, 2011...

Edit

Joes field #134-2

Wing Type: Fixed Wing

Nozzle: 40° FF Sm Orifice

Orifice: 6

Angle: 30

Pressure (psi): 40

Speed (mph): 140

DV0.1 (µm): 95

DV0.5 (µm): 291

SEND

To Download



iPhone

- Go to iTunes and search:

Aerial Sprays

(Make sure to use the s)

To Download



Android

- Go to Android Market and search:

Aerial Sprays

(Make sure to use the s)

Your Input

- We really want to be doing the research that will address your needs so PLEASE let us know if we are not addressing your needs;
- Email:

aerialapplication@gmail.com

Need more information about our group

- Apmru.usda.gov/aerial



Aerial Application Technology for Crop Production and Protection

Atomization Models

Publications

ASABE/NAAA Technical Sessions

Current Research Projects

Questions?

Goal Statement

We are dedicated to developing and implementing new and improved aerial application equipment for safe, efficient, and sustainable crop production and protection.

Project Summary

Aerial application of crop production and protection materials is a crucial component of high-productivity American agriculture. This project is focused on optimizing efficacy and minimizing off-target movement of these materials. Project objectives will be accomplished through focus on three main research areas: 1) improving existing aerial application technologies to maximize application efficiency and biological efficacy with minimal spray drift; 2) integration of remote sensing and variable rate systems to enhance and optimize applications of crop production and protection products; and 3) developing decision support systems that provide application equipment selection and operational guidance for optimum biological efficacy. This project combines engineering and entomological expertise to create a research program that defines how sprayed materials move from the aircraft to the target and how efficacy of the applied product is affected and can be optimized by changing deposition characteristics. Results of project research

USDA ARS

Aerial Application Technology Team

Website: apmru.usda.gov/aerial



-- WORKING FOR APPLICATORS --