What Have I Learned After 32 Years of Conducting Weed Science Efficacy Research?

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What do I do?

- Began weed science career in 1987 (Rutgers University)
  - Graduate Assistant

- Research Technician
  - TAMU (1993-97)

- Professor/Extension Weed Specialist
  - 100% extension but?

- Peanut, field corn, soybean, grain sorghum, sunflower, canola, sesame

- Came to UGA in 1999 on tandem trade with Culpepper for 2 future first round draft picks
  - Been carrying him ever since!
Current Applied Research Program

• 50-70 field experiments every year

• Still do most of my own work
  – Planting, spraying, harvesting, rating, etc.
  – Crew of 3 including me

• http://gaweed.com/reports.html
Experience

• Dr. Randy Pausch (1960-2008)
• Former Professor of Computer Science – Carnegie Mellon University
• “The Last Lecture”

• “Experience is what you get when you didn't get what you wanted. And experience is often the most valuable thing you have to offer.”
Two Best Things You Can Have!

ARM Advantages

• Standard for many disciplines
• Easy to learn
• Plot maps
• Randomizations
• Mixing calculations
• Simple stats
• Labels
• much more
Safety First

- PPE
  - Goggles, gloves, boots, Tyvek, respirator
- MSDS sheets
- Clean water
- First aid kit
- Eyewash kit
- Spill cleanup kit
2016 Peach Drift Test
Be A Good Agronomist First!

- Know how to grow the crop well
  - Plant/harvest
  - Cultivars
  - Fertility
  - Planting date
  - Pest Mgt.
  - Irrigation
Valor Formulation Effects on Peanut Yield - 2018

- NTC
- Valor EZ (3 oz/A)
- Valor EZ (6 oz/A)
- Valor SX (3 oz/A)
- Valor SX (6 oz/A)

Weed-free P = 0.6431, CV = 7.65
Sometimes bad s**t happens!
Problems - 2018
Backpack or Tractor?
Nozzles

- Used to spray everything with a 11002DG flat fan
- Now I only use AIXR unless requested otherwise
  - Auxin technologies
$VMD_{50}$ for Common Nozzle Types

11002DG
$VMD_{50} = 322$ (M)

AIXR 11002
$VMD_{50} = 402$ (C)

TTI 02
$VMD_{50} = 524$ (XC)

3.5 MPH - Walking
20\" nozzle spacing
20\" boom height
35-40 PSI
15 GPA
Water Volume (GPA)

- 10 or 15 GPA
- Protocol requirements
- What are growers doing?
2018 - GPAC Grower Survey
Sprayer Output (GPA)

N = 12
August 2018
Treatment Numbers

• Do not try to solve every problem in one test

• More treatments = more variability

• I prefer 10-15 trts

• Trial Types
  – Weed-free
  – Weedy
  – Bare-ground/non-crop
Research Objective?
Crop Response (weed-free)
Research Objective?
Weed Control (weedy)

Prowl + Valor + Strongarm (1 DAP)
Cadre + Dual Magnum (38 DAP)
Non-Crop/Bare-Ground Tests

NTC

Ultra Blazer @ 24 oz/A
2,4-DB @ 16 oz/A
Agridex @ 1% v/v

Tough @ 24 oz/A
2,4-DB @ 16 oz/A
Agridex @ 1% v/v
Plot Size/Replications

• Bigger is better?
• Land/equipment
• Currently:
  – 2 rows/25’
  – Would prefer 4 rows but have land and equipment restraints
  – At east 3 reps, 4 is better
  – 2 NTC per test?
Plot Size
Data Collection

- paper, electronic, drones?
- Micro
  - density
  - biomass
  - height
- Macro
  - visual observations
  - yield
- Photographs
  - never too many
Drones Collecting Data
(density, biomass index, NDVI, height, canopy volume)

Source: https://www.realagriculture.com/2018/07/drones-could-make-crop-research-10-times-more-efficient/
Visual Ratings

- Subjective
- Fast
- Takes lots of practice
- Better when fresh
- Shut phone off!
Timely Reporting

- One of the biggest complaints I hear from industry cooperators about other researchers (*but not me*)!

- Can potentially influence industry cooperators performance reviews
Final Thoughts

- Safety equipment
- Agronomist 1st
- Use ARM
- Get a liquid dispenser
- Keep treatment numbers low (≤15)
- Turn phone off when rating
- **Timely reports**
Questions/Comments?