

MSU Sweetpotato Research & Extension Update

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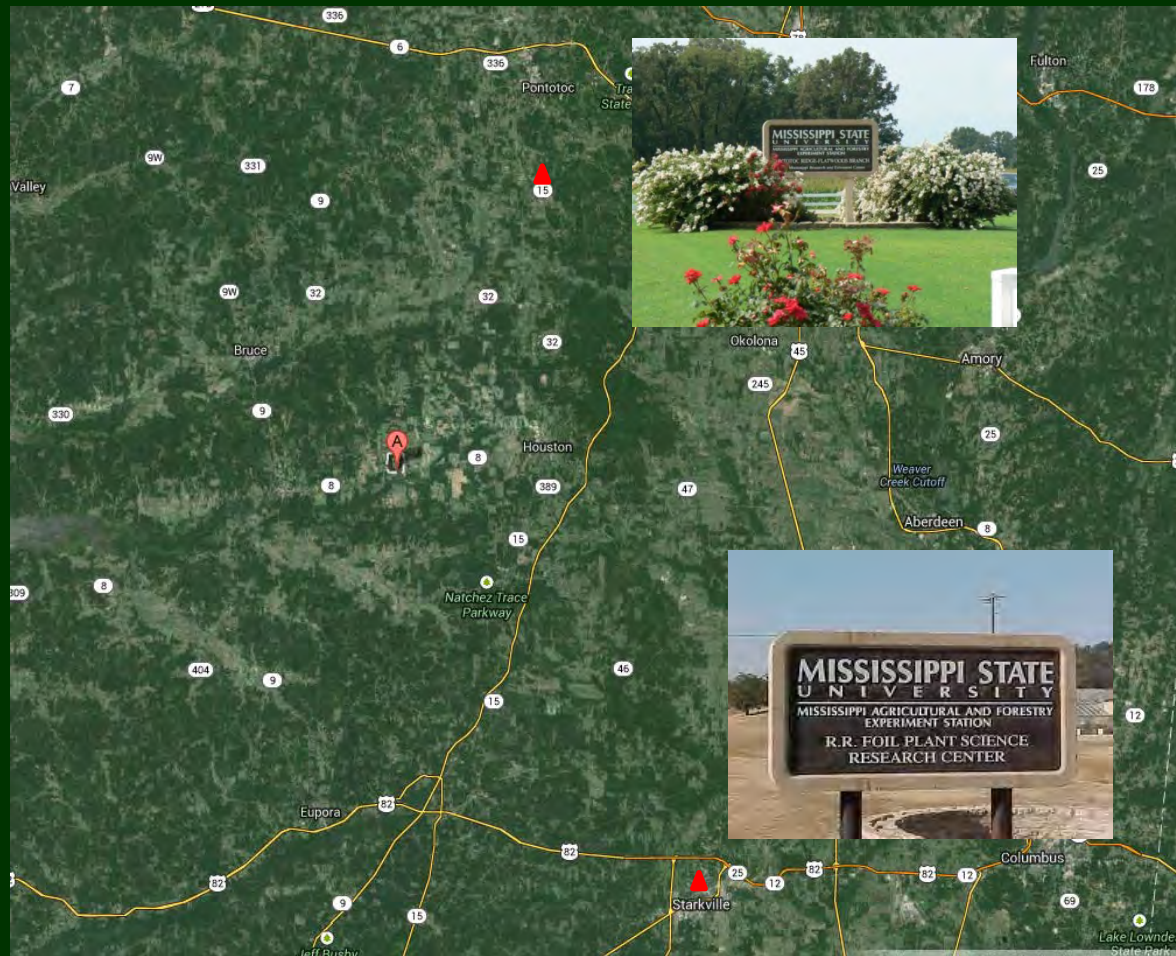
MS Farm Bureau Federation- Sweet Potato Commodity Meeting
July 17, 2013

The Team

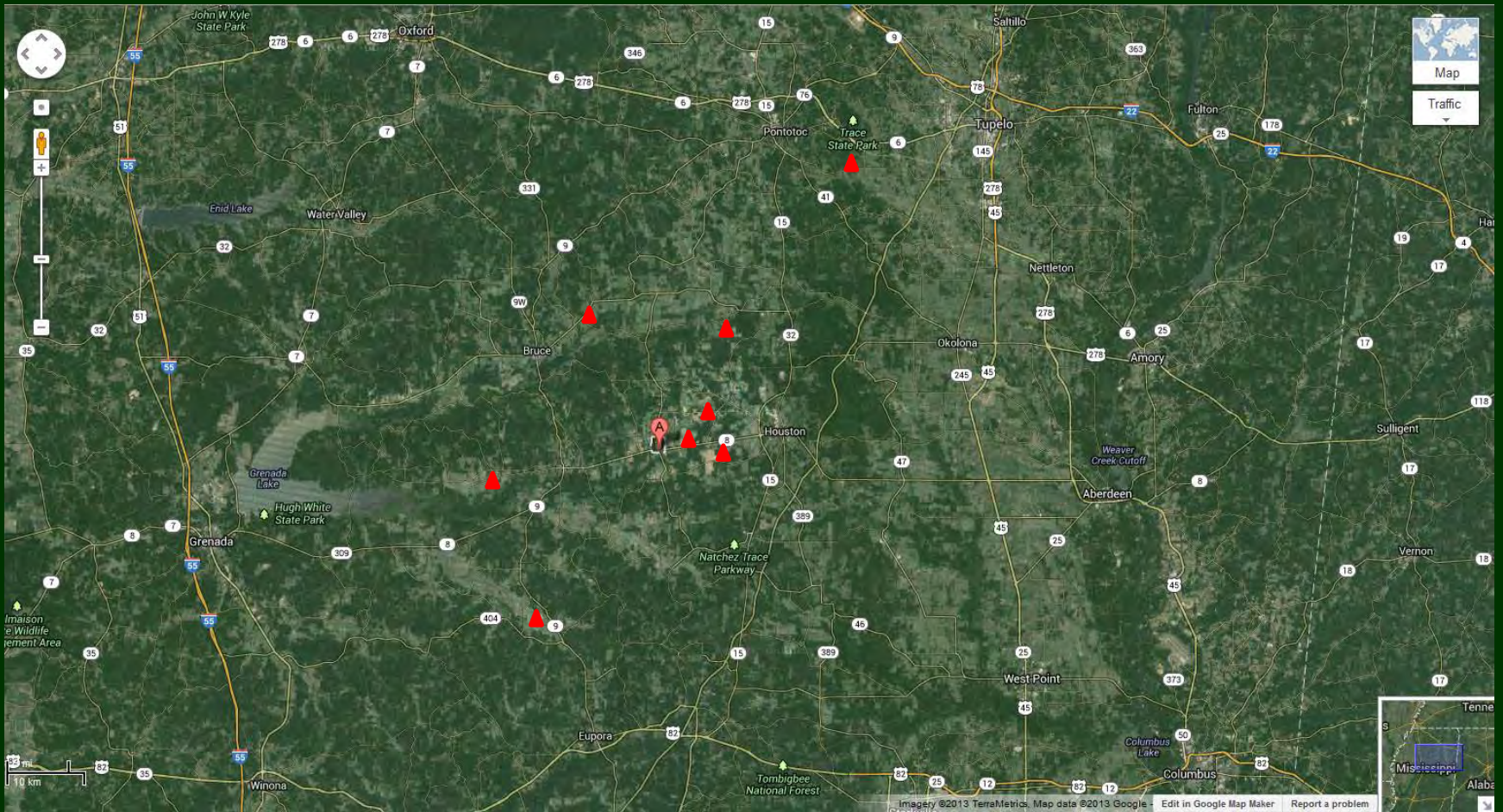
- Production
- Ag. & Bio. Engineering
- Weed Science
- Nematology/Pathology
- Entomology
- Food Science
- Ag. Economics



Research Locations



On-Farm Research



Deciding What to Research

- Grower input and concerns.
 - Producer Advisory Council & word of mouth.
- What funding is available; does it fit?
 - Sustainability, climate change, specialty crops.

Produce Advisory Council Bullet Points 2013

- Variety research and tip rot research.
- Pest management- nematodes, weeds, & insects.
- Added value research for non-marketable sweet potatoes.

Variety Research



National Sweetpotato Collaborators

Variety Trials

- Varieties typically from NC State and LSU breeding programs.
- Evaluate sprout production, yield, skin & flesh color, storage root shape and uniformity.
- Locations vary each year:
 - In 2012: AL, AR, CA, LA, MS, NJ, NC, OK, SC, Canada.

National Sweetpotato Collaborators Variety Trials

- Entries for 2013:
 - Orleans (L05-111)
 - L04-175
 - L06-052
 - L07-146
 - NC07-364
 - Covington
 - Beauregard (B14 & 63)



D. LaBonte

LSU Advanced Lines Trial

- Objective: Determine the suitability of advanced LSU breeding lines in MS production setting.
- Location: 1 on-farm loc. in MS (Webster Co.)
 - 6 locations total.
- Highlights:
 - 16 advanced lines & 3 standards (Beauregard, Orleans, 07-146).
 - Fall harvest- yield, root quality, nematode tolerance.

Variety Research



Drs. LaBonte & Meyers

Variety Resistance to Tip/End Rot

- Objective: To determine varietal resistance/susceptibility to tip/end rot.
- Location: Research station (2011-2012)
- Highlights:
 - Current commercial varieties are among the most tolerant.
 - Ethephon enhanced tip rot in most varieties.
 - Promising new varieties, but still need to improve in other agronomic characteristics.

Tip/End Rot Incidence

- Objectives:
 - Determine the effect of preharvest applications of **ethephon** on the incidence of tip/end rot in MS.
 - Determine the effect of **curing** on tip/end rot incidence.
- Location: Six on-farm studies and at the research station (2010-2012)
- Highlights:
 - Preharvest applications of **ethephon increased** the incidence of tip rot but not end rot.
 - **Fast curing reduced** both tip and end rot.

Biofungicides on Tip/End Rots

- Objective: To determine the **effectiveness of biofungicides** in reducing the incidence of tip/end rot in MS.
- Location: On-farm study and at the research station (2010-2013)
- Highlights:
 - Pre-planting dipping and in-furrow applications at planting have shown variable results in reducing rots.
 - Rain and soil moisture at harvest appears to be a factor.
 - Ethephon application still increases tip rot incidence.

Biofungicide in Transplant Water

- Objective: Determine the influence Serenade Soil & Ridomil Gold on tip/end rots.
- Location: 2 on-farm locations (Chickasaw Co.)
- Highlights:
 - Compare $\frac{1}{2}$ gal/A Soil Serenade, $\frac{1}{2}$ pt/A Ridomil Gold with non-treated. Applications made in transplant water (approx. 150 gal/A).
 - Will harvest, store, and rate for end/tip rots.

Nematodes



Foliar VydateL

- Objective: Determine the impact of at-plant (in-furrow) and foliar applications of VydateL for the management of plant parasitic nematodes.
- Location: R.R. Foil Plant Research Center at North Farm, Starkville, MS.

Nematode Management Systems

- Objective: Determine influence of K-PAM, VydateL, and Mocap preplant and VydateL (foliar 14 and 28 d after planting) on reniform nematode populations and sweetpotato injury.
- Location: 1 on-farm trial (Calhoun Co.)

Nematode Management Systems

- Highlights: Will record nematode numbers at specific periods of time after planting, rate plants for vigor, and collect yields at harvest. This should provide data on the advantages of using this VydadeL in our Mississippi sweetpotato production.

Weed Management



Yellow Nutsedge Interference

- Objective: Determine sweetpotato yield and quality loss caused by nutsedge interference at densities from 0/sq. ft to 10/sq. ft.
- Location: 2 on-farm loc. (Chickasaw Co., MS; Nash Co. NC)
- Highlights: Results will help aid management decisions and determine impact of nutsedge on yield loss.



Weed-free



1/sq. ft



3/sq. ft



10/sq. ft

Nutsedge Management Systems

- Objective: Determine nutsedge response to mechanical and herbicide applications.
- Location: 1 on-farm loc. (Chickasaw Co.) 1 loc. on-station
- Highlights:
 - Fields cultivated or “do-alled”.
 - Received POST herbicides fb or tank-mixed with PREs.





Weedy check



Weed-free



Sandea 0.66 oz/A + MSO



Sandea 0.25 oz + Dual Mag. 0.8 pt + MSO

Continued Evaluation of Fierce

- Objectives:
 - Determine fit in a weed management program.
 - Determine crop safety when application fb heavy rainfall event.
- Location: on-station
- Highlights:
 - A premix of Valor plus pyroxasulfone

Dual Magnum & Root Development

- Objective: Determine the influence of Dual Magnum on root development using a winRHIZO image analyses system.
- Location: Starkville
- Application Time
 - 0 (immediately after transplant), 5 and 10 DAT
- Herbicide rate
 - 0 and 1 pt/A
- Rainfall amount
 - 1 inch



Storage Root Initiation

- Objective:
 - To develop practices to improve storage root initiation under stressing high temperatures.
- Location: At the SPAR unit MSSTATE (2013)
- Highlights:
 - High temperature reduces storage root initiation.
 - Growth regulators may alleviate the stress effect.

Sustainable Production Systems

- Objectives:
 - To determine the beneficial effect of winter cover crops.
 - To determine the feasibility of no till production.
- Location: 2 on-farm studies and at the Pontotoc research station (2010-2013)
- Highlights:
 - Winter cover crops improved soil characteristics.
 - Yields after cover crops were similar to conventional production.

Foundation Seed Program

- Objectives:
 - To maintain virus tested G0 sweetpotato varieties
 - To provide the MS sweetpotato industry with certified propagation material that is disease free and true to type
- Location: At the Pontotoc research station (yearly)
- Highlights:
 - Certified propagation material is produced every year according to demand.
 - New varieties are incorporated into the program according to demand.

Development and Testing of a Sweetpotato Undercutter

- Objective: Develop an alternative method of increasing sweetpotato skin strength prior to harvest.
- Location: Pontotoc Experiment Station & up to two on-farm locations



Development and Testing of a Sweetpotato Undercutter

- Highlights:
 - Initial results indicated that at 6 d after treatment, undercutting increased skin strength over mechanical de-vining in Beauregard.
 - In the future, bulk harvesting or modified harvesters could be an option. This research ensures that growers have options in the tools they use for setting skin pre-harvest to maximize post-harvest performance.

New Post-Harvest Tools

- Objective:
 - Determine the effect of post-harvest conditions (curing method, RH, temperature, air movement) on weight loss (transpiration) and quality over time.

New Post-Harvest Tools

- 2 units comprised of:
 - A platform scale with 4 load cells.
 - Data logger unit measures relative humidity and temperature every hr.
 - Digital read-out for grower to easily view weight change.



Research Pending Funding

- Specialty Crops Block Grant
- Title: Investigating pre-plant soil fumigants for Mississippi sweetpotato pest management.
- Objective: Compare K-PAM fumigation treatments with next best options for disease, insect, and weed management systems.
 - Proposed 2 yr of research: with on-farm each yr.

Research Pending Funding

- Southern SARE
- Title: Developing a sweetpotato-cattle production system for Mississippi.
- Objective: Determine the best means to incorporate sweetpotatoes into cattle diets including minimal processing efforts.
- Submitted pre-proposal
 - Full proposals invited in August.
 - Recipients announced Nov.
 - Acceptance rate: approx. $\leq 5\%$.

Consumer Email

- California consumer emailed Charles Walker asking if consuming a sweetpotato like this one is safe.
- Has noticed this problem (along with internal necrosis) more frequently in recent years.



Sweetpotato Field Day

- August 22, 2013
- Pontotoc Ridge-Flatwoods Branch Station.
- Registration 8 A.M. (tentative).
- More details to come in the next sweetpotato newsletter and by mail.