



2010 Soybean Update

Jared Whitaker

Planting Considerations

- In-row sub-soiling in Coastal Plain region
- Planting Date
 - Optimum: May 10-June 10
 - Late: June 11-June 30
 - Avoid planting Group V after June 15
 - ½ bushel/A yield loss per day for delays after June 10
- Row Spacing
 - 15-36"
- Seeding Rates
 - Final Stand – 85,000 to 100,00 plants
 - Two planted seed for every one expected plant

Soybean Inoculants

- Use inoculants if soybeans have not been planted in last 3 years
 - Soybeans = *Bradyrhizobium japonicum*



University of Illinois

Nematodes on Soybeans

- Root-knot, cyst, reniform, Columbia lance, sting
 - Nematodes can cause significant yield losses.



Tattnall County 2009

Nematodes on Soybeans

1. Determine nematode population and species
2. Consider appropriate rotation
3. Choose varieties with resistance to nematodes
4. Nematicides
 - Temik 15G at planting (5-8 lb/A).
 - Telone II (3 gal/A) fumigation?
 - Nematicide seed treatments in the future?



Recent Interest in Alteration of Row Spacing in Georgia Soybean

- Top yield obtained w/ row widths of 20 to 30"
- Similar yield w/ widths of 30 to 36" when planted at optimum time
- Much of the Coastal Plain on 36" to 38" widths because of other crops (cotton)
- With soybean prices, there has been interest to maximize yields
 - What about decreasing row spacing?



15" Row width



36" Row width

Advantages of Narrow Row Soybean Production

- Increased light interception
- Reduction in within-row competition
- Earlier canopy closure
- Reduced soil erosion
- Higher podding on the stem
- Typically resulting in increased yields



Row Spacing Effects on Soybean Yield In Georgia

- Carter and Boerma, 1979 (Athens, GA)
 - 38" to 19" = 11% yield increase
- Boerma and Ashley, 1982 (Plains, GA)
 - 36" to 20" = 17% yield increase
- Ethredge et al., 1989 (Plains, GA)
 - 30" to 20" = 8% yield increase
 - 30" to 10" = 11% yield increase
 - 20" to 10" = 3% yield increase
- Woodruff, 2007-2008 (Camilla, GA)
 - 36" to 24" = 8% yield increase



Every 1" = +0,7%
 Narrowing 10" = +7%
 15" = +11%
 18" = +13%

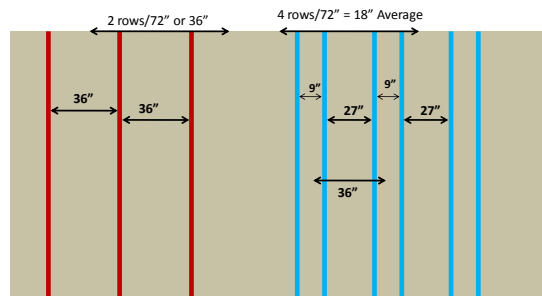
What about twin-row soybean?

- Decreasing row spacing increases yields.
- Upfront investment
 - New planter
 - In-row subsoiling in Coastal Plain?
 - Incorporation into cropping system?
- What about twin-row spacings?
 - Existing equipment
 - Already fits in cropping system



36" Single-row

Twin 9" on 36" Center



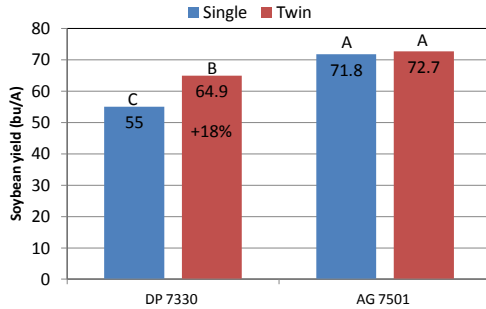
Twin-row Work in the South

- **Mississippi** – (Trey Koger)
 - 40" single rows; 10" twins on 40" center
 - Yield increase – 9.5% or 7 bu/A
 - Single row – 73 bu/A
 - Twin row – 80 bu/A
- **Texas** – (Bowers et al. 2000)
 - 30" single rows; 6" twin rows on 30" center
 - 1985 – 20% increase
 - 1986 – 34% decrease
 - 1987 – 0.4% increase
 - 1988 – 28% increase
 - AVERAGE RESPONSE = 3.6% increase
 - Yield advantage associated with late-season rainfall
- **Louisiana** – (Mascangi et al. 2008)
 - 40" single rows; 9.5" twin row on 40" center
 - Increased yields with twin-row in 2 of 3 studies
 - 46.0 bu/A – 47.0 bu/A (NS)
 - 55.5 bu/A – 62.5 bu/A (+13%)
 - 58.1 bu/A – 65.7 bu/A (+13%)
 - AVERAGE RESPONSE = +8.6%
 - Observed differences in response likely attributable to variety.

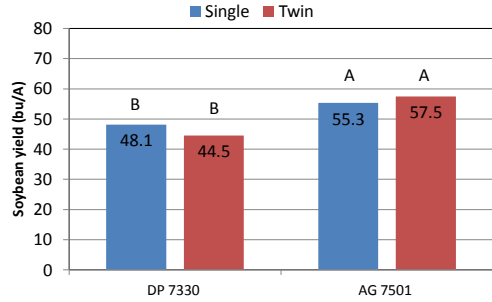
Experiment Methods

- Locations in 2009
 1. UGA Southeast Research and Education Center
Midville, GA (6-1)
 2. On-farm in Washington County, GA (5-13)
Cooperator - Glen Waller
- Factorial arrangement of treatments
 - Row Spacing – Single 36" and Twin 9" on 36" center
 - Varieties – DP 7330 and AG 7501
- Seeding rate - 174,000 seed/A
 - 12 seed/ft – Single 36"
 - 6 seed/ft – Twin 9"

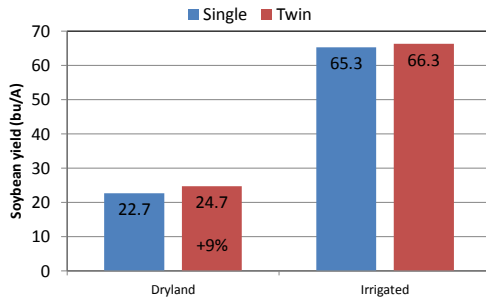
Soybean Yield – Washington Co.



Soybean Yield – Midville

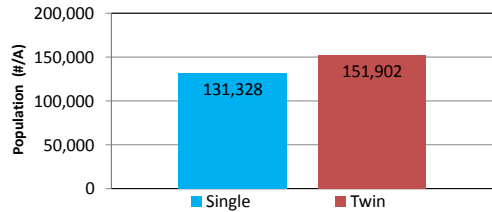


Another Comparison Twin-row vs. Single-Row - Bulloch Co. - 2009*



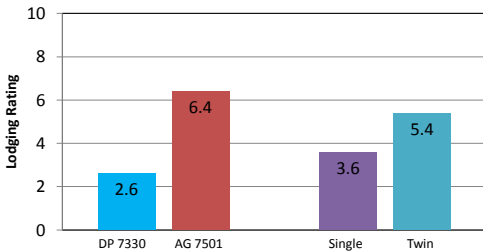
*Variety – AG 7501; Single-row - 38" Twin-row - 38-9"
NOT REPLICATED – Large plots

Effect of Row Spacing on Final Soybean Population



- Within-row competition likely lower in twin-row compared to single-row
- Likely due to greater natural thinning (Cooper 1971; Ethredge et al. 1989)
- Planted 174,000. POTENTIAL FOR SEED SAVING!

Lodging – Midville and Washington Co. (1 = on ground; 10 = fully upright)



- Lodging appeared to be lower in twin-row than single-row.
- Both varieties tested were considered "tall"

Conclusions

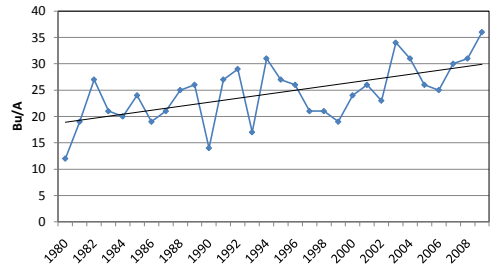
- No consistent statistical yield advantage from twin-row spacing **(+4% or 2 bu/A)**
- Twin-row did not adversely affect yield
- Why was there a lack of response?
 - Planting date - narrow rows increase yield with later plantings
 - Sub-soiling –
 - No sub-soiling in Washington County
 - Sub-soiling in Midville (4.5" away from soybean row)
 - Variety may have played a response?

Variety Selection for Twin-row Production

- Proper variety selection will likely play a role in success of twin-row production
- Short, narrow-profiled cultivars may respond more readily to twin-row planting
- Varieties that showed increased yield from narrower rows: AGS 568 and AGS 758 (Woodruff 2007 – 2008)



Soybean Yield in GA – Yield



Better Varieties?

Variety Selection in Georgia 2010 Recommended Varieties

- Tremendous number of varieties available
 - Over 84 commercial varieties tested in 2009 UGA OVT
 - 2010 UGA Recommended Variety List
 - Based OVT data from 6 locations over 2 years
 - Recommended varieties have demonstrated good yield potential and stability
- (43 varieties)
- MG V = 14
 - MG VI = 10
 - MG VII = 17
 - MG VIII = 2

****HANDOUT****

Recommended Variety Characteristics

- Contains important information about recommended varieties on:
 - Herbicide technology
 - Growth Characteristics
 - Nematode Resistance
 - Stem canker
 - Metribuzin tolerance
- ****HANDOUT****

Variety Recommendations – MG V (Early Planted)

Variety	Herbicide Tolerance	Yield (2008-2009)	Southern Root-Knot Nematode Resistance	Peanut
AGSouth AGS 568	RR	58.4	R	-
Asgrow AG 5905	RR	58.7	-	-
Asgrow DP 5915	RR	57.1*	-	-
Dyna-Gro 33X55	RR	57.3	R	-
Pioneer 95Y20	RR	57.8	R	-
Progeny P5650	RR	61.0	-	-
Progeny P5706	RR	57.7	-	-
SS RT 5160N	RR/STS	57.4	-	-
SS RT 5540N	RR	52.5*	-	-
SS RT 5760N	RR	57.6	-	-
SS RT 5930N	RR	57.5	-	-
SS RT 5951N	RR	56.1	-	-
USG Allen	RR	54.8	-	-
USG 7582n	RR	54.1*	-	-

Variety Recommendations – MG VI (Early Planted)

Variety	Herbicide Tolerance	Yield (2008-2009)	Root-Knot Nematode Resistance	
			Southern	Peanut
AGSouth AGS 606	RR	58.0	-	-
Asgrow AG 6702	RR	57.0	M	-
Dyna-Gro V61N9	RR	57.4*	M	-
NC Roy	CV	55.5*	-	-
SS RT 6207N	RR	58.4	-	-
SS RT 6451N	RR	55.7	R	-
SS RT 6600N	RR	55.8	-	-
USG 620n	RR	58.0	-	-
USG 7635n	RR	56.7	-	-
USG 76S17	RR	58.0	-	-

Variety Recommendations – MG VII and MG VIII (Early and Late Planted)

Variety	Herbicide Tolerance	Root-Knot Nematode Resistance		Variety	Herbicide Tolerance	Root-Knot Nematode Resistance	
		Southern	Peanut			Southern	Peanut
AgSouth AGS 756	RR	R	R	NC Raleigh	CV	-	-
AGS Woodruff	CV	R	-	NK S78-G6	RR	R	-
Asgrow AG 7501	RR	M	-	Progeny P7208	RR	-	-
Asgrow AG 7502	RR	R	-	SS RT 7270N	RR	-	-
Asgrow DP 7330	RR	R	-	SS RT 7355N	RR	-	-
Asgrow DP 7670	RR	-	-	USG 7732n	RR	R	R
AGSouth Benning	CV	R	M	USG 77U28	RR	-	M
Dyna-Gro V72N7	RR	-	-	USG 77S27	RR	-	-
Dyna-Gro V76N9	RR	-	-	NK S80-P2 (MG VIII)	RR	-	-
				Pioneer 97M50 (VIII)	RR	R	-

Top Performers in 2009 (MG V) (Not in recommended list – not tested in 2008)

Variety	State-wide		South (M, P, T)		SRN
	Rank	% Avg.	Rank	% Avg.	Resistance
Dyna-Gro 32B57	1	+ 10 %	1	+ 21%	R
Pioneer 95V70	2	+ 9%	6	+ 8%	R
Dyna-Gro 33C59	4	+ 8%	2	+ 12%	-
SS LL 511N	8	+ 6%	5	+ 9%	-
SS LL 595N	9	+ 5%	9	+ 6%	-

Top Performers in 2009 (MG VI) (Not in recommended list – not tested in 2008)

Variety	State-wide		South (M, P, T)		SRN
	Rank	% Avg.	Rank	% Avg.	Resistance
USG 76579	5	+ 3%	1	+ 11%	M

Roundup Ready 2 Yield Soybean

- **The Deal**
 - “2nd” generation RR soybean
 - RR gene was inserted into a “high yield” region of DNA
- **Varieties**
 - Two varieties in GA for 2010 (both MG VI)
 - Acceleron seed treatment?
 - \$\$\$??
- Not in OVT during 2009

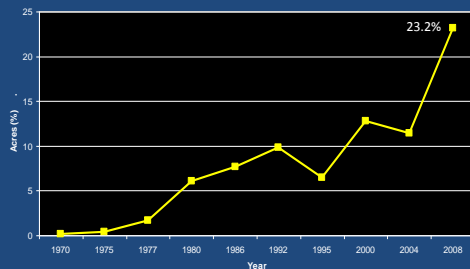


Soybean Irrigation

- Soybeans will produce ~ 2 bu/A for every 1” of water use.
 - 40-50 bu/A = 20-25” water
- **Water Use by Stage (in/day)**
 - Germination/Seedling = 0.05-0.01”
 - Vegetative = 0.10-0.20”
 - Flower to Pod Fill = 0.25-0.35”
 - Maturity to Harvest = 0.05-0.20”
- **When to stop?**
 - Pod-fill (R6)
 - 50+% of pods
 - green seed touching in pod



Soybean Irrigation in Georgia



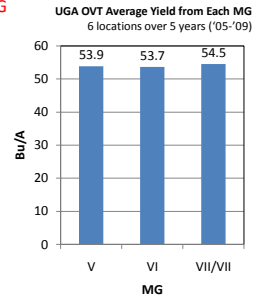
Source: Kerry Harrison, UGA Extension Engineer

Planting Early and Late Maturing Varieties Can Spread Drought Risks and Optimum Harvest Time

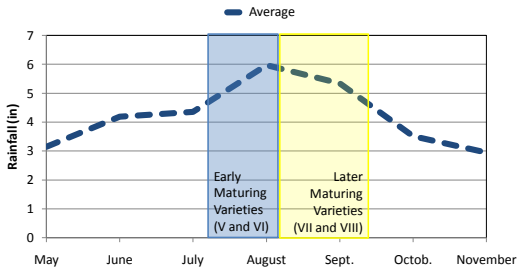


Why diversify soybean crop among maturity groups?

- Yield potential similar between MG
- Need to spread risks (Esp. Dryland)
- Critical rainfall periods are different between MG groups
- Spread Harvest – 2009?

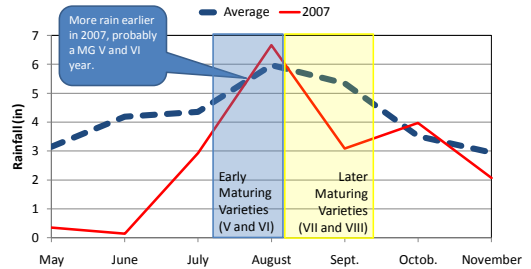


Rainfall per month in Metter, Georgia (1955-2009)



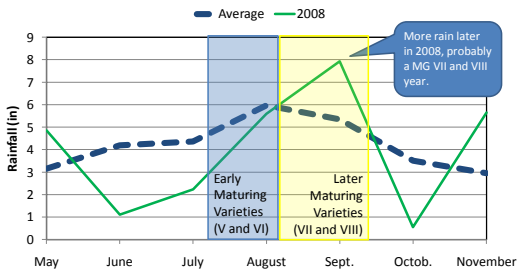
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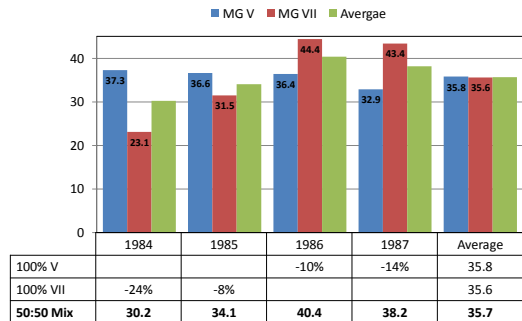
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Soybean Yield in Midville, GA - 1984-1987



	1984	1985	1986	1987	Average
100% V			-10%	-14%	35.8
100% VII	-24%	-8%			35.6
50:50 Mix	30.2	34.1	40.4	38.2	35.7

Liberty Link Soybean

- The Deal
 - LL soybean allow for POST applications of glufosinate (Ignite)
 - May help with control of Roundup- and ALS-resistant Palmer amaranth

- Varieties
 - Six varieties tested in 2009 OVT
 - Group V's (Southern States and US Seeds/HALO)



- Cost
 - Likely more expensive than tradition RR varieties

- Seed Availability in 2010
 - Likely limited (SS LL595N)



- Weed Control

HANDOUT



Ignite 23 oz/A



Ignite 23 oz/A



APPLY IGNITE PRIOR TO 3 INCH PALMER

WATER VOLUME AND NOZZLE TYPE IS CRITICAL

Timeliness is key

(LL Soybean Weed Control - Jefferson County 2009)



Ignite 29 oz + Reflex 1 pt. (2" Weeds)



Ignite 29 oz + Reflex 1 pt. (2" + 5 Days)

Liberty-Link Soybeans - 2009



NTC

54 DAP
Ponder Farm



Boundary 6.5EC @ 1.5 pt/A (PRE)
Ignite 2.34SL @ 22 oz/A (19 DAP)

Ignite-based Systems

- Good control of most broadleaf weeds
 - Excellent on morningglory
 - Poor on Florida pusley
 - Weak on pigweeds unless small
 - Weak on tropical spiderwort
- Weak on most grasses unless small
- Inadequate on nutsedge and goosegrass
- STILL NEED RESIDUALS!!
- What about varieties?????

Liberty Link Soybean Varieties 2009 OVT Data (Six locations)

Variety	Statewide Rank (36 entries)	Compared to MG V Avg.		Compared to Top Group V Varieties	
		% Diff.	Bu/A Diff.	% Diff.	Bu/A Diff.
SS LL 511N	5	8%	4.6	-7%	-4.4
SS LL 595N	9	5%	3.0	-9%	-6.0
HALO 4:65	36	-35%	-20.0	-44%	-29.0
HALO 4:94	26	2%	1.4	-11%	-7.6
HALO 5:25	20	3%	1.7	-11%	-7.3
HALO 5:65	14	6%	3.0	-8%	-6.0



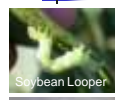
Soybean IPM

Scouts / Consultants

- Offers great value to growers.
- Must know insect pest populations and species makeup to make Good Decisions.
 - Economic Thresholds
 - Insecticide Selection
 - Timing of Applications
 - Evaluation of Sprays
 - Early Detection of Potential Problems
 - Insects/Weeds/Fertility/Diseases/etc.

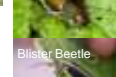
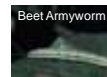


Foliage Feeders









• Determine what insects are foliage feeding and degree of defoliation throughout the season.

• A drop cloth and/or sweep net should be used to aid in quantifying insect pest populations and species.



Foliage Feeder Thresholds for Soybeans

			
	Green Cloverworm	Velvetbean Caterpillar	Soybean Looper
Avg. / 25 Sweeps	60	40	20 sm. or 15 lg.
Avg. / Row Foot	10	8	8 sm. or 6 lg.

<i>Prior to Full Bloom</i>	<i>Full Bloom-Mid Pod Fill</i>	<i>After Full Pod Fill</i>
30% 	15% 	25% 

Dimilin / Boron

- Apply at R2-R3 Stage
 - Dimilin 2 ozs/acre
 - Controls GCW and VBC, suppresses SBL
 - Long Residual
 - Boron 0.25 lbs B/acre
- R2-Full bloom – an open flower at one of the two uppermost nodes on the main stem with a fully developed leaf.
- R3-Beginning pod growth – pod 3/16 inch long at one of the four uppermost nodes on the main stem with a fully developed leaf.

Dimilin / Boron +?

- + Glyphosate
 - Is this the best time for Roundup? (V3)
 - Crop injury?
 - No more than 0.25 to 0.5 lb/A of Boron
- + Fungicide???



Stinkbugs



Southern Green / Green Stink bug



Brown Stink bug



Southern Green



Green



Photos by Herb Pilcher, www.ipmimages.org

Trap Cropping is an effective management strategy.

Stinkbug Damage

- Most damaging during pod fill
- Damage results in unfilled, malformed or shrunken pods
- Aborted pods
- Can significantly affect yields



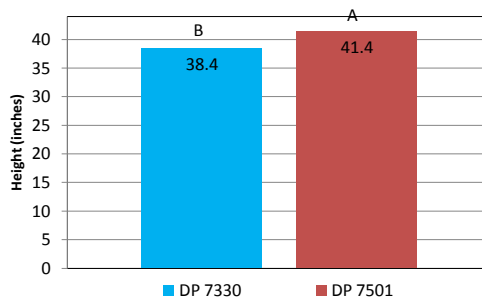
Stink Bug Thresholds for Soybeans

	Bloom-Mid Pod Fill	Mid Pod Fill-Maturity
Avg. / Row Foot	0.33	1
Avg. / 25 Sweeps	3	6

*Seed bean threshold, 1 stink bug per 6 row feet.



Effect of Variety on Soybean Height
(Averaged over row-spacing and location)



Stinkbug Insecticide Susceptibility

- Southern green, green, and brown stink bugs are the primary stink bugs in the southeast.
 - Species makeup varies by location, crop, and in time.
- Pyrethroids provide good control of southern green and green but only fair control of brown stink bugs (high rates improve control).
- OPs provide good control of southern green, green, and brown.

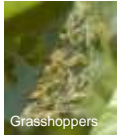
Glyphosate/Boron/Dimilin *Tank Mixes*



- full-bloom to early pod-fill
- R2-R3 stage
- Is this the best time for Roundup? (V3)
- Crop injury?
- No more than 0.25 to 0.5 lb/A of Boron

- GREAT TIME TO PIGGYBACK FUNGICIDES!!!

Seedling Pests



Grasshoppers



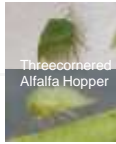
Lesser Cornstalk Borer

Increased Risk
Hot and dry
Late plantings
Burnt residue
Light soils

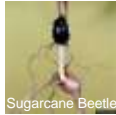
- Look until plants are 12" tall.
- Look for insects on plant or in soil around base of plants.
- Evaluate stand loss and try to determine if future stand loss is probable (insects present and actively damaging plants).



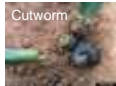
False Chinch Bug



Three-cornered Alfalfa Hopper



Sugarcane Beetle



Cutworm

Insecticide Seed Treatments?

Cruiser / Gaucho

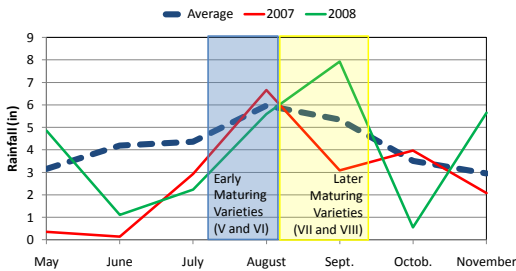
- Limited data in Georgia
 - 2008 and 2009
 - No consistent yield response
- Most research in Mid-South
 - Early Soybean Production System
- Potential targets in GA
 - Lesser cornstalk borer (not on label)
 - Three cornered alfalfa hopper
 - Late planting vs ESPS?



Thrips injury

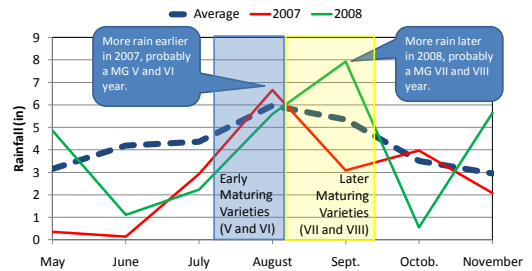
- Cruiser label**
- Aphids
 - Bean leaf beetle
 - Grape colapsis
 - Leaf miners
 - Leaf hoppers
 - Mexican bean beetle
 - Seedcorn maggot
 - TCAH
 - Thrips
 - White grubs
 - Wireworms

Rainfall per month in Metter, Georgia (1955-2009)



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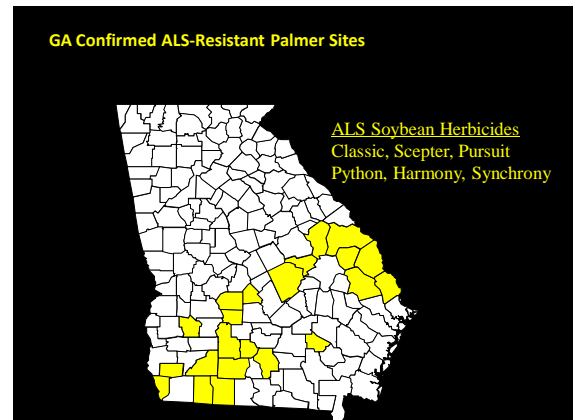
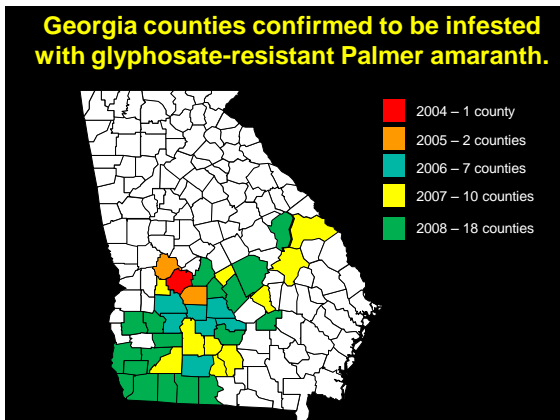
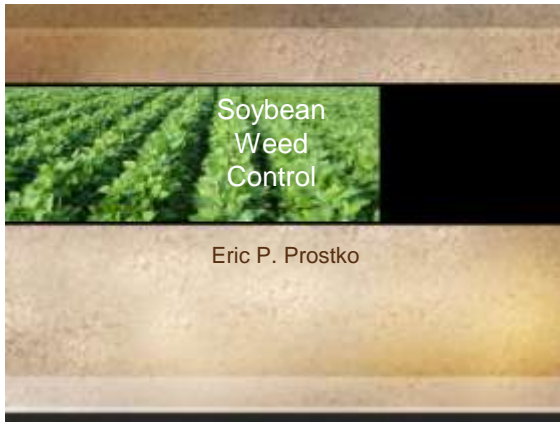
Liberty Link Soybean

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 - May help with control of Roundup- and ALS-resistant Palmer amaranth
- Varieties
 - Six varieties tested in 2009 OVT
 - Group V's (Southern States and US Seeds/HALO)
- Cost
 - Likely more expensive than tradition RR varieties
- Availability in 2010
 - Likely limited (SS LL595N)
- Weed Control
 - More in weed control section



Liberty Link Soybean Agronomic Performance 2009 OVT Data (Pooled over six locations)

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SS LL 595N	9	5%	3.0	-9%	-6.0	Midville, Griffin, & Athens
HALO 4:65	36	-35%	-20.0	-44%	-29.0	----
HALO 4:94	26	2%	1.4	-11%	-7.6	Athens & Calhoun
HALO 5:25	20	3%	1.7	-11%	-7.3	----
HALO 5:65	14	6%	3.0	-8%	-6.0	Athens, Griffin, & Tifton



What makes Palmer a super weed?

1. Herbicide resistance
2. Growth rate, large stature
3. Competitive ability
4. Prolific seed production
5. Rapid spread



Weaknesses of a super weed?

1. Shallow Emergence depth!
2. Short seed life longevity?
3. Light requirement for emergence.

Herbicide programs can be very effective, but...
economic survival will depend on managing the
seedbank by exploiting it's weaknesses!!

Deep Tillage and Cover Crops*






*Stanley Culpepper 2008 - 2009



Macon County, Georgia 2008.*

No Deep Tillage

Deep Turn


No Herbicide Treatment

Cover Crops*



MUST APPLY PRE APPLICATION!!!!!!!!!!

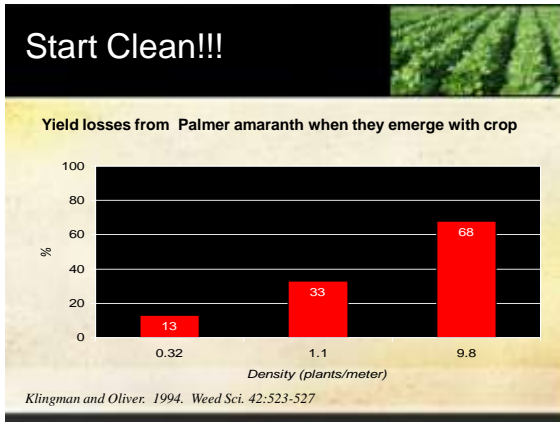
GR-Palmer Amaranth Control in Soybeans – 2008 (NC) Narrow rows (15")



Valor @ 2 oz/A + Prowl H2O @ 2.1 pt/A(PRE)
Roundup W-Max @ 22 oz/A (POST)

Basics of Palmer amaranth Control in Soybean

1. Start Clean - The best way to control Palmer is to never see it!
2. Use it's weaknesses against it
 - Light required for germination – Cover crops, row spacings
 - Poor emergence from more than 1" below surface, short seed life – deep tillage
3. Take advantage of the tools we have
 - Herbicide selection much greater than in cotton and corn
 - Use residual herbicides
 - Apply POST herbicides timely
4. Reduce seed bank
 - Don't allow them to go to seed
 - If not for soybeans, think about cotton and other crops



Burndown Options for Reduced Tillage Soybean Production Systems

- Primary**
 - Glyphosate
 - Gramoxone/Inteon/Firestorm/Parazone
 - Ignite
- Tank-mixes**
 - 2,4-D (7-15 DBP)
 - Aim (0 DBP)
 - ET (0 DBP)
 - Valor (0 DBP)
 - Harmony Extra (14 DBP)
 - Express (14 DBP)
 - Clarity/Vision (14 DBP + 1" rainfall)
 - FirstShot (7-14 DBP)
 - Sharpen (0-30 DBP)

DBP = days before planting

Basics of Palmer amaranth Control in Soybean (Resistant or Susceptible)

- Start Clean
 - The best way to control Palmer is to never see it!
- Use it's weaknesses against it
 - Light required for germination - Cover crops, row spacings
 - Can't emerge from more than 1" below surface - deep tillage
- Take advantage of the tools we have
 - Selection much greater than in cotton
 - Residual herbicides
 - Apply herbicides timely
- Reduce seed bank
 - Don't allow them to go to seed
 - If not for soybeans, think about cotton and other crops

Burndown Options for Reduced Tillage Soybean Production Systems

- Primary**
 - Glyphosate
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 - Harmony Extra (14 DBP)
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 - Clarity/Vision (14 DBP + 1" rainfall)
 - FirstShot (7-14 DBP)
 - Sharpen (0-30 DBP)

DBP = days before planting

Paraquat most effective on emerged Palmer amaranth - but size matters.

Gramoxone Inteon 2SL @ 2.5 pt/A + 80/20 @ 0.25% v/v



AMAPA Height
Low = 8"
High = 23"
Average = 17"

Residual Herbicides for Palmer amaranth Control

USE A PRE HERBICIDE!!

- Treflan, Prowl
- Dual, Intrro (Lasso)
- **Metribuzin Products**
 - Authority MTZ, Boundary, Canopy, Sencor/Metribuzin
- **PPO's**
 - Valor, Valor XLT, Reflex, Envide, Prefix

Palmer Amaranth Control with Gramoxone Inteon 2SL @ 2.5 pt/A + 80/20 @ 0.25% v/v



6 hours



4 days



7 days



19 days

AMAPA Height
Low = 5"
High = 23"
Average = 11"

Pigweed Control in Soybeans



- Use a PRE herbicide
 - **Canopy, Boundary**, Valor, Valor XLT, Prefix, Dual Magnum/Generics, Sencor, Prowl, Intro, Treflan, Envide
- ALS or Glyphosate Resistance!!!!
- Spray POST herbicides early!!!!!!

Burning Wheat Stubble Good or Bad idea?



- probably not good if you need a residual herbicide for pigweed control
- Why??
- may reduce the performance of residual herbicides
 - 60% adsorption by ash



GR-Palmer Amaranth Control in Soybeans with PRE's (2008) - Macon Co.



NTC



Canopy 75WG @ 6 oz/A

SB-05-08
49 DAT

GR-Palmer Amaranth Control in Soybeans with PRE's (2008) - Macon Co.



NTC



Prefix 5.29EC @ 2 pt/A

SB-05-08
49 DAT

GR-Palmer Amaranth Control in Soybeans with PRE's (2008) - Macon Co.



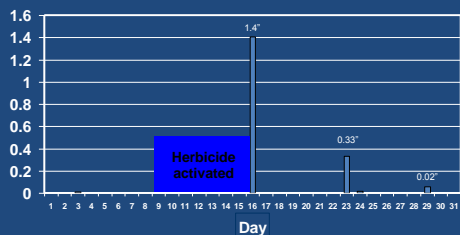
NTC



Envide 41.3WG @ 3 oz/A

SB-05-08
49 DAT

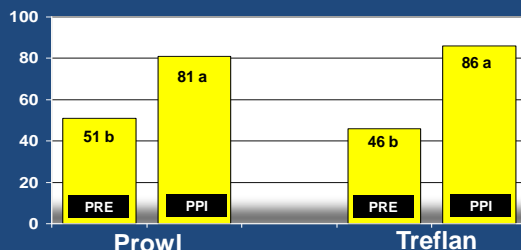
May 2008 Rainfall Distribution in Tifton (CPES)



- Only 5 to 6 days for adequate PRE activation
- Can't plant entire crop in that time period!

Prostko 2009

Incorporation of YELLOWs GR Palmer amaranth control 28 DAP. Macon Co., GA. 2009.



RAIN 12 d after planting

POST OPTIONS

- PPO's
 - Ultra Blazer, Cobra, Storm, ET, Aim, Reflex, Prefix, Flexstar GT (RR), Cadet
- ALS
 - Harmony SG, Pursuit, Synchrony
- Must be applied before 3"!!!!



There is no cure for tall Palmer amaranth!



Most POST soybean herbicide labels specify 6-leaf or 4-inch maximum Palmer amaranth

Harmony SG label specifies 8-inch maximum Palmer amaranth

2008 – Prowl H2O PRE, fb R'up POST, fb R'up + Harmony SG



York 2008

GR-Palmer Amaranth Control in Soybeans – 2009 (Macon Co.)



NTC



Valor @ 3 oz/A (PRE)
Roundup + Dual POST

58-09-09
46 DAP

The Overuse of PPO Herbicides - RESISTANCE



- Resistance reported in other areas
- Common waterhemp**
 - 2001 (Kansas)
 - 2002 (Illinois)
 - 2003 (Missouri)

PPO-Resistant Waterhemp
(Dr. Bryan Young, Southern Illinois Univ.)

Logos for herbicides: COBRA, Goal, Syngenta Prefix, VALOR, GADET, Aim, SPARTAN, ET, KIXOR, Reflex.

Why Metribuzin on soybean?



- Not a PPO!!!!**
- Good on pigweed
 - Not quite as good as some PPO's
- Can be applied PPI
- More options POST
 - Save PPO's if they're needed POST

Logos for herbicides: Boundary 6.5 EC, DuPont Canopy, TriCor 75DF, Metribuzin 75DF.

GR-Pigweed Control in Soybeans - 2008



NTC

Canopy 75DG @ 6 oz/A + Prowl H₂O 3.8ASC @ 2.1 pt/A (PRE)

SB-06-08
Macon County
48 DAP

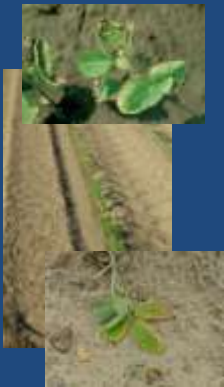
GR-Pigweed Control 2009 Macon County

NTC

Boundary 6.5EC @ 1.75 pt/A (PRE)
Roundup W-Max 5.5SL @ 28 oz/A (36 DAP)

SB-06-09
65 DAP

Metribuzin Headaches



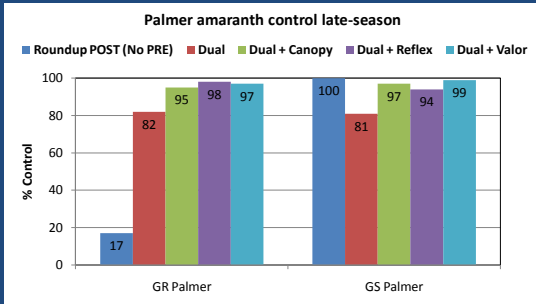
- Soil texture, OM
 - Metribuzin should not be used on sands, loamy sands, and sandy loams with less than 1% OM!
- pH
- Varieties
- Rotational Restrictions

Conventional Soybean Weed Control Many Options



- AgSouth AGS Woodruff – Top performing MG VII variety in GA.**
- What about weed control?
 - Preemergence
 - Grasses – Treflan, Prowl, Dual/Generics, Intro, Micro-Tech, Outlook, Command
 - Broadleaf – Boundary, Canopy, Sencor, Pursuit, Scepter, Lorox, Python, Valor, Reflex, Valor XLT, Envive, Prefix
 - Postemergence
 - Grasses – Assure/Targa, Fusilade, Poast, Select/Arrow
 - Broadleaf – Ultra Blazer, Basagran, Cobra, Storm, Classic
 - Sicklepod – Canopy, Sencor, or Python fb. Classic

Conventional Herbicide Systems (NC '07 - '08; 3 GS and 4 GR Locations)*



*All conventional systems included an application of Reflex 24 oz/A POST

Prostko's Picks for Pigweed



- Know your enemy!
- Drill a well!
- Start Clean!
- Use a residual!
- POST treatments when 3" tall or less
- Remove escapes before seed production
- Think About the Future
 - Overuse of PPO's



Although extremely effective, we are overusing the PPO herbicides!!!!!!!



- Resistance has already been reported in other areas!!!
- Common waterhemp
 - 2001 (Kansas)
 - 2002 (Illinois)
 - 2003 (Missouri)
- Common ragweed
 - 2005 (Delaware)
- Wild poinsettia
 - 2004 (Brazil)

PPO-Resistant Waterhemp

(Dr. Bryan Young, Southern Illinois Univ.)



Why metribuzin on soybean?



- Not a PPO
- Not a PPO
- Good on pigweed
- Can be applied PPI
- Issues
 - soil texture, OM, pH
 - Varieties
 - Rotations
 - Company support
 - Lack of incentive at dealer level
 - Cost/A



Metribuzin Injury



Metribuzin Soybean Variety Tolerance



- **Group V:** *Asgrow 5905RR*, *AGS 568RR*, Delta Pineland DP5634, *Pioneer 95Y20*, Pioneer 95Y40, *Pioneer 95Y70*, *Southern States RT5951NRR*
- **Group VI:** *Asgrow 6301RR*, Delta Pineland DP6568, Pioneer 96M60, *Southern States RT 6451NRR*, Vigoro V61N9
- **Group VII:** AGS 758RR, Asgrow H7242, *Benning*, Dekalb H7242, Northrup King NKS 76L9, Northrup King NKS 78G6, *Pioneer 97M50*, USG 7732nRR, Vigoro V74N9, *Woodruff*
- **Group VIII:** Northrup King NKS 80P2, Prichard RR

Metribuzin Crop Rotations



Crop	Authority MTZ	Boundary	Canopy	Metribuzin TriCor
Field corn	4 months	8 months	10 months	4 months
wheat	4 months	4.5 months	4 months	4 months
cotton	12 months	8 months	10 months	18 months
peanut	12 months	12 months	18 months	18 months
sorghum	12 months	12 months	12 months	18 months
onions	18 months	18 months	18 months	18 months

*not for use on sands, loamy sands, or sandy loams with less than 1% OM.

GR-Pigweed Control in Soybeans - 2008



NTC



Canopy 75DG @ 6 oz/A + Prowl H₂O 3.8ASC @ 2.1 pt/A (PRE)

SB-05-08
Macon County
48 DAP

GR-Pigweed Control 2009 Macon County



NTC



Boundary 6.5EC @ 1.75 pt/A (PRE)
Roundup W-Max 5.5SL @ 28 oz/A (36 DAP)

SB-06-09
65 DAP

Liberty-Link Soybeans



- Not necessarily a direct replacement for Roundup!
- Use a residual herbicide in this system!!!!!!
- Not usually good on pigweed bigger than 3"
- Tank-mixes with POST grass herbicides may reduce grass control
- Variety performance?

This is what a 2" pigweed looks like!!!!



LL Soybean Weed Control - Jefferson County 2009



Ignite 29 oz + Reflex 1 pt. (2\"/>



Ignite 29 oz + Reflex 1 pt. (2\"/>

There is no miracle cure for large pigweed!!!!



NTC



Cadet 0.91EC @ 0.90 oz/A
80/20 @ 0.25%
Applied to 11\"/>

Liberty-Link Soybeans - 2009



NTC

54 DAP
Ponder Farm



Boundary 6.5EC @ 1.5 pt/A (PRE)
Ignite 2.34SL @ 22 oz/A (19 DAP)



Any Questions?

Other New Products Floating Around

- **Flexstar GT (POST)**
 - Touchdown + Reflex (PPO)
- **Authority MTZ (PRE)**
 - Spartan (PPO) + Sencor
- **Cadet (POST)**
 - Another PPO product
- **ET (POST)**
 - Another PPO product
- **Kixor**
 - Sharpen (*sulfufenacil*)
 - Crop injury problems on our soils
 - Another PPO



GR-Palmer Amaranth Control with Flexstar GT – 65 DAP



NTC



Flexstar GT 3.31SL @ 3 pt/A
AMS @ 2.5% v/v
Applied 18 DAP

On the Weed Control Horizon

- **DHT Soybean (Dow AgroScience Herbicide Tolerance)**
 - Enhanced tolerance to 2,4-D
 - Stacked with glyphosate
 - 2013?
- **GAT Soybean (Glyphosate ALS Tolerance)**
 - DuPont
 - 2011?
- **Dicamba Resistant Soybeans**
 - Monsanto/BASF
 - Stacked with glyphosate
 - 2013?

DHT Soybeans

Soybeans treated with 2 qts 2,4-D 6 WAT

Transformed

Asian Soybean Rust

Kemerait

Symptoms = many "spots" on leaves can look like soybean rust.
 True soybean rust pustules will have a 3-D quality.
 Best to use a hand lens for confirmation.

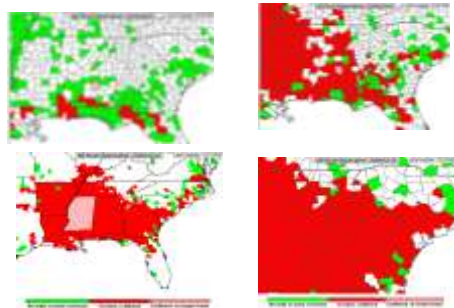


Soybean Leaves

Kudzu Leaf

Asian Soybean Rust Spread in 2009

(www.sbrusa.net)



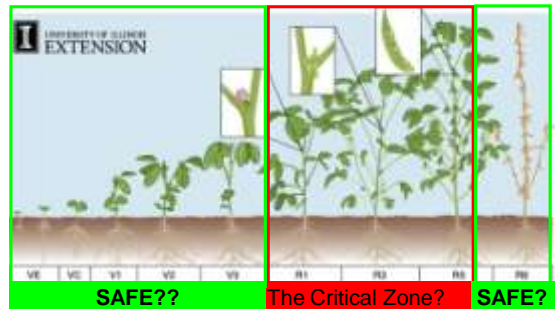
DISEASE Recommendations for 2010

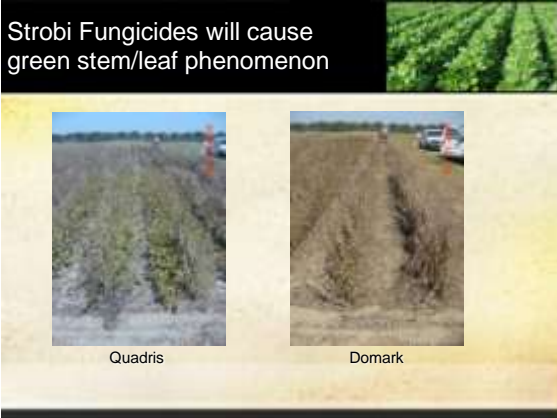
- We have effective arsenal of fungicides.
- Be prepared to spray; follow scouting reports.
 - Consider crop potential and condition before spraying.
- **Outside circle:**
 - Spray when rust detected in local area **and** crop in reproductive growth (hopefully not earlier than R2-R3) **and** consider if weather is favorable.
- **Inside circle:**
 - consider preventative spray if - **great yield potential;** R2-R3 growth stage
 - Applying Dimilin/boron.



2009 Jeff Davis County

Growth Stages of the Soybean Plant





Caution with Soybean-Peanut Rotation

- With projected price of soybeans, growers likely to grow soybean in rotation with peanuts.
- Peanut-soybean rotation could increase:
 - CBR
 - Peanut root-knot nematode
 - White mold
- Try not to plant back-to-back
 - SB less affected than peanut
 - Two years away from legumes
 - Consider planting peanut cultivars with CBR resistance



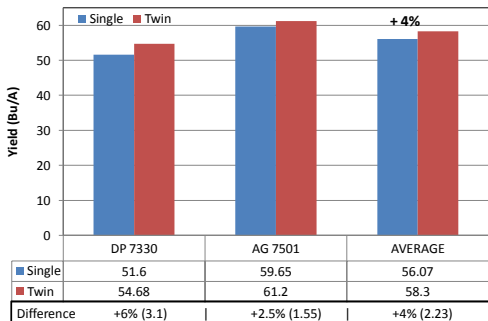
Red crown rot (CBR) in soybean rotated with peanut in Midville, M. Crosby

What about twin-row soybean?

- Decreased row spacing almost always increases yields.
- What about twin-row?
- Existing equipment.
- Other states:
 - Louisiana + 9%
 - Mississippi + 10%
 - Texas + 11%
 - Georgia?



Twin-row Soybean (GA 2009)



Variety Characteristics List

- Gives important information about these varieties
 - Herbicide technology
 - Growth Characteristics
 - Nematode Resistance
 - Disease Packages
- Available on-line at UGA Soybean Page

Soybean Variety Selection

- Tremendous number of varieties available
- Over 84 commercial varieties tested in OVT

- 2010 UGA Recommended Variety List (**Handout**)
 - Based OVT data from 6 locations over 2 years
 - Varieties have yield potential and stability (43 choices)
 - MG V = 14
 - MG VI = 10
 - MG VII = 17
 - MG VIII = 2