2010 PEANUT UPDATE

Table of Contents

INTRODUCTION

The members of the University of Georgia Extension Peanut Team are pleased to present the *2010 Peanut Update*. The purpose of this publication is to provide peanut producers with new and timely information that can be used to make cost-effective management decisions in the upcoming growing season. Contact your local county extension agent for additional information, publications, or field problem assistance.

John P. Beasley, Jr., Editor

The University of Georgia Extension Peanut Team

David Adams – Entomology
John Beasley – Agronomics
Tim Brenneman – Plant Pathology
Albert Culbreath – Plant Pathology
Glen Harris – Soil Science
Bob Kemerait – Plant Pathology
Eric Prostko – Weed Science
Amanda Smith – Economics
Nathan Smith – Economics
Scott Tubbs – Agronomics

*Printing of the *2010 Peanut Update* was made possible through the generosity and a grant provided by the **Georgia Peanut Commission**

PEANUT OUTLOOK AND COST ANALYSIS FOR 2010

Nathan B. Smith and Amanda Smith

Peanut Supply and Demand Highlights

- **Acreage** - U.S. peanut plantings dropped by over a quarter in 2009 to 510,000 in Georgia and 1.1 million in the U.S. The U.S. acreage was the lowest since 1915. The drop in acreage was in response to low prices driven by oversupply and a salmonella outbreak in peanut products at the beginning of 2009.

- **Production Down 30%** - Total U.S. peanut production for 2009 dropped to 1.844 million tons, down 30% from the previous year record of 2.58 million tons. Georgia peanut growers produced a record 3,530 pound per acre average yield while the U.S. average yield was 14 pounds short of last years record at 3,412 pounds per acre.

- **Domestic Consumption of Peanuts Rebounds from the Salmonella Outbreak** - Total use of peanuts dropped to 2.075 million tons during the 2008/09 marketing year, however, domestic food use of peanuts grew a total of 2.3% according to USDA. Peanut butter use rose by 9% on the heels of the salmonella outbreak demonstrating a strong trend in growth. Total use is expected to rebound to 2.14 million tons for the 2009/10 marketing year in response to plentiful supply, lower prices in 2009, and growth in peanut butter products during an economic recession.

- **Export Uses Holds Steady** – Exports of U.S. peanuts are pegged at 375,000 tons. Exports represent about 18% of total use of peanuts.

- **Carryover Being Drawn Down** – The reduction in production will draw down stocks from a near record 1.065 million tons to around 750,000 in 2010. Another 250,000 could be drawn down in 2010 if acreage increases no more than 5%.

- **Tightening of Supply will Lead to Better Prices** – The early forecasted price for Spring contracts is $425 per ton. This is likely to be a floor price if cotton prices remain 68 to 70 cents per pound and corn stays in the $3.75 to $4.00 range.

2010 Cost and Returns Potential

The income from production picture for the 2010 season is looking better than last year as prices are expected to improve. Higher income projection is a result of higher expectations for price and yield. The expected yield assumed in the non-irrigated peanut budgets is raised by 100 pounds to 2,800 per acre in 2010. The irrigated expected yield is raised by 200 pounds to 4,000 pounds per acre to reflect the higher yield potential of new varieties. Margins have the potential to improve for peanuts with stabilizing costs, higher expected yields and higher prices. Credit availability is a major concern as banks have tightened their lending limits and terms in response to the banking crisis last year and regulators steering banks to tighten lending practices. Variable costs are shown to be less than the 2009 budgets after fuel and

seed prices came down in the spring of 2009 more than anticipated. 2010 costs are expected to be close to 2009 actual costs as long as inflation does not kick in which is not forecasted at this point.

Seed, Fertilizer and Chemicals - Seed cost is projected to remain the same in 2010 and is estimated at 75 cents per pound in the peanut budgets. An argument can be made for seed prices to come down given prices paid for seed peanuts were $400 to $425 per ton and shelled prices are lower than this time last year. Fertilizer prices have come down from the 2008 highs. However, peanut growers have generally gone to not using fertilizer other than gypsum and lime. Chemical costs in general have been on the rise for brand name products, but the alternative of popular generics, such as tebuconazole, are widely utilized by growers lowering spray program costs.

Cost of Borrowed Funds – The interest rate charged is dependent upon what lending institutions pay for funds they lend. Most loans are based on the prime rate plus 1 to 2 percent. The prime lending rate has dropped recently and farmers in good financial standing should be able to qualify for a lower rate in 2010 on operating loans, estimated in the budget at 7.25%. Credit availability could be a concern for growers as lenders will likely tighten limits and look to greater utilization of FSA guaranteed loans.

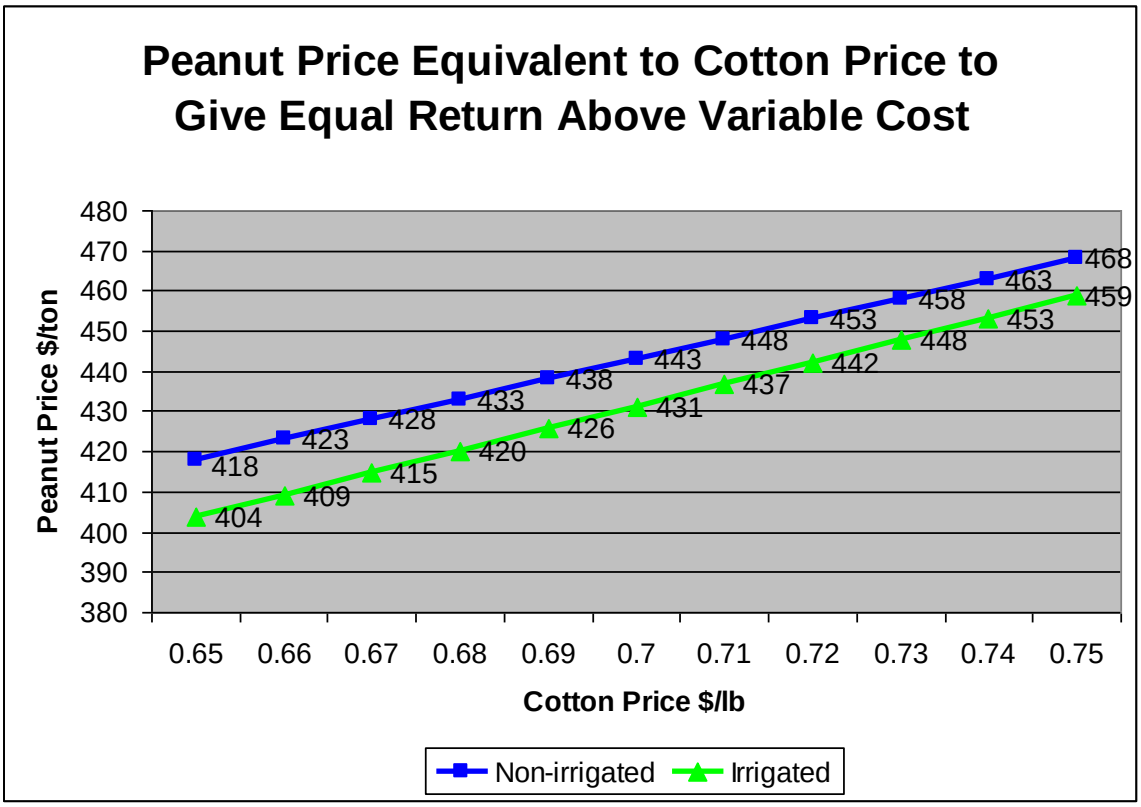
Fuel and Energy Costs – Energy prices dropped due to lower demand and increased inventory in 2009. Fuel and oil prices are expected to rise moderately in 2010 as demand slowly picks back up. The 2010 budgeted price is $2.50 per gallon verses $2.85 in the December 2008 budget which was revised to $2.25 in January 2009. The irrigated peanut budget charges an average of $9 per acre inch of water reflecting a 50/50 ratio of diesel and electric power sources.

Labor and Repairs – Operator labor rates remain at $11 per hour in the 2010 budget while machinery repairs are increased reflecting higher cost of equipment and parts.

Breakeven Yield and Price – Note the Sensitivity Analysis table on the second page of the budgets. The table shows the return above variable cost with varying yields and prices. At the budgeted yield, non-irrigated peanut requires $375 per ton to cover variable costs for conventional and strip tillage. Irrigated peanut requires $300 per ton bushel to cover variable costs for strip tillage and conventional. In order to cover all costs except for land, the breakeven price is $433 for strip tillage and $442 per ton for conventional in non-irrigated peanut and $492 for strip tillage and $501 per ton for conventional in irrigated peanut.

2010 Crop Comparisons

Cotton prices have risen relative to peanuts at the beginning of 2010. The chart below shows what peanut prices are needed to equal cotton returns at different cotton prices. At 70 cent cotton and estimated variable costs from the peanut and cotton budgets, peanuts would need $443 per ton for 2,800 dryland peanut production (versus 700 pound cotton) and $431 per ton for 4,000 pound irrigated production (versus 1,100 pound cotton).



Peanut Variable Cost: Irrigated $595 per acre, Non-Irrigated $525 per acre
Cotton Variable Cost: Irrigated $503 per acre, Non-Irrigated $395 per acre

The 2010 Peanut Enterprise Budgets for South Georgia can be found online at http://www.caes.uga.edu/?tiny=LICXB7 or by contacting your local county Cooperative Extension agent. The South Georgia Row Crop Comparison Tool has also been updated and is available online at: http://www.caes.uga.edu/?tiny=BG4S3E

This tool enables a grower to compare the costs and expected returns of the major row crops in Georgia in a side-by-side manner. The cost and return estimates in the tool are based upon the UGA Row Crop Enterprise Budgets. The budget estimates are intended as only a guideline as individual operations and local input prices vary across the state. Growers are encouraged to enter their own numbers into the budgets to determine their expected costs and returns. A sensitivity analysis is added to the Crop Comparison Tool in 2010 to allow a grower to see how variations in yield and prices will impact their net return over operating expenses. The table below gives an example of expected returns for peanuts at $425 per ton compared to what the market potential is indicating for cotton, corn and soybeans in early January. Given these expected prices and costs, cotton, corn and peanuts show the highest return above variable cost for 2010. The prices in Table 1 and 2 reflect expected average price compare favorably with cotton. Actual returns would change as price, yield and cost changes.

Table 1. Comparison of Per Acre Return Above Variable Cost for Non-Irrigated Crops.

	Expected Price	Expected Yield	Variable Cost*	Return Above VC
Peanut	$425	2800	$525	$70
Cotton	$0.70	700	$395	$95
Corn	$4.10	85	$275	$74
Sorghum	$3.30	65	$198	$17
Soybean	$8.50	30	$225	$30

2010 University of Georgia cost enterprise budgets.

Table 2. Comparison of Per Acre Return Above Variable Cost for Irrigated Crops.

	Expected Price	Expected Yield	Variable Cost*	Return Above VC
Peanut	$425	4000	$595	$255
Cotton	$0.70	1100	$503	$267
Corn	$4.10	185	$523	$171
Sorghum	$3.30	100	$257	$73
Soybean	$8.50	55	$294	$179

2010 University of Georgia cost enterprise budgets.

*Remember these are *returns above variable costs*, fixed costs including land cost and a management return must be paid out of the remaining income.

PEANUTS, NON-IRRIGATED
4-ROW COMBINE, 6-ROW EQUIPMENT
SOUTH GEORGIA, 2010

ESTIMATED COSTS AND RETURNS

Expected Yield per Acre **1.40** Ton YIELD: YOUR FARM _____

Variable Costs:	Unit	Number of Units	$/Unit	Cost/Acre	$/Ton	Your Farm
Seed	Lb.	130.00	$ 0.75	$ 97.50	$ 69.64	
Inoculant	Lb.	5.00	$ 1.40	$ 7.00	$ 5.00	
Lime/Gypsum*	Ton	0.50	$ 79.99	$ 40.00	$ 28.57	
Fertilizer						
Phosphate (P2O5)	Lb.	0.00	$ 0.25	$ -	$ -	
Potash (K2O)	Lb.	0.00	$ 0.50	$ -	$ -	
Boron	Lb.	0.50	$ 5.60	$ 2.80	$ 2.00	
Weed Control	Acre	1.00	$ 63.56	$ 63.56	$ 45.40	
Insect Control	Acre	1.00	$ 58.53	$ 58.53	$ 41.80	
Disease Control**	Acre	1.00	$ 49.30	$ 49.30	$ 35.22	
Machinery: Preharvest						
Fuel	Gallon	9.19	$ 2.50	$ 22.98	$ 16.42	
Repairs & Maintenance	Acre	1.00	$ 15.47	$ 15.47	$ 11.05	
Machinery: Harvest						
Fuel	Gallon	10.29	$ 2.50	$ 25.73	$ 18.38	
Repairs & Maintenance	Acre	1.00	$ 23.20	$ 23.20	$ 16.57	
Labor	Hrs	2.81	$ 11.00	$ 30.96	$ 22.12	
Crop Insurance	Dol.	1.00	$ 25.00	$ 25.00	$ 17.86	
Land Rental	Acre	1.00	$ -	$ -	$ -	
Interest on Operating capital	Percent	$ 231.02	7.25%	$ 16.75	$ 11.96	
Cleaning	Ton	0.47	$ 12.00	$ 5.59	$ 4.00	
Drying	Ton	0.93	$ 30.00	$ 28.01	$ 20.01	
GPC&GPPA State	Ton	1.40	$ 3.00	$ 4.20	$ 3.00	
NPB Checkoff	Dol.	0.01	$ 630.00	$ 6.30	$ 4.50	
Total Variable Costs				**$ 522.89**	**$ 373.50**	

Fixed Costs:						
Machinery: Depreciation, Taxes, Insurance, and Housing						
Preharvest	Acre	1.00	$ 44.79	$ 44.79	$ 32.00	
Harvest	Acre	1.00	$ 82.04	$ 82.04	$ 58.60	
General Overhead	% of VC	$ 522.89	5.00%	$ 26.14	$ 18.67	
Management	% of VC	$ 522.89	5.00%	$ 26.14	$ 18.67	
Owned Land Costs; Taxes, Cash Payment, Etc.	Acre	1.00	$ -	$ -	$ -	
Other _____						
Total Fixed Costs				**$ 179.13**	**$ 127.95**	

TOTAL COSTS AND PROFIT GOAL

Total Costs Excluding Land	**$ 702.02**	**$ 501.44**
**** YOUR PROFIT GOAL ****	$ _____/Bu.	
$$-PRICE NEEDED FOR PROFIT-$$	$ _____/Bu.	

*Lime application is prorated at 0.5 ton to equal 1.5 ton application every 3 years.

**If soilborne disease threatens to be severe, additional application of soilborne fungicide may be recommended, add $15-$20 per spray. If leafspot threatens to become severe, additional application of chlorothalonil may be recommended at 3/4 pint ($3-$5) with certain soilborne fungicides. A nematicide (where needed) = $50-75 per acre.

Sensitivity Analysis of PEANUTS, NON-IRRIGATED

NET RETURNS ABOVE VARIABLE COSTS PER ACRE Varying Prices and Yield (Ton)					
	-25%	-10%	Average	+10%	+25%
Lbs/Acre	2100	2520	2800	3080	3500
Tons/Acre	1.05	1.26	1.4	1.54	1.75
$375.00	$ (129.14)	$ (50.39)	$ 2.11	$ 54.61	$ 133.36
$400.00	$ (102.89)	$ (18.89)	$ 37.11	$ 93.11	$ 177.11
$425.00	$ (76.64)	$ 12.61	$ 72.11	$ 131.61	$ 220.86
$450.00	$ (50.39)	$ 44.11	$ 107.11	$ 170.11	$ 264.61
$475.00	$ (24.14)	$ 75.61	$ 142.11	$ 208.61	$ 308.36

ESTIMATED LABOR AND MACHINERY COSTS PER ACRE

PREHARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Heavy Disk27' with Tractor (180-199 hp)-MFWD 190	13.214	2.00	0.15	1.48	3.03	8.81
Plow 4 Bottom Switch6' with Tractor (180-199 hp)-MFWD 190	2.327	1.00	0.43	4.20	6.12	18.40
Disk & Incorporate32' with Tractor (180-199 hp)-MFWD 190	15.515	1.00	0.06	0.63	1.53	4.02
Field Cultivate32' with Tractor (180-199 hp)-MFWD 190	21.430	1.00	0.05	0.46	0.81	3.30
Plant & Pre Rigid6R-36 with Tractor (120-139 hp)-2WD 130	9.218	1.00	0.11	0.73	1.71	4.73
Spray (Broadcast)60' with Tractor (120-139 hp)-2WD 130	35.455	9.00	0.25	1.70	2.28	5.53
Total Preharvest Fuel, Repairs, Fixed Costs, & Labor			**1.054**	**9.19**	**$ 15.47**	**$ 44.79**

HARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Peanut Digger & Inverter 4R 36" with Tractor (180-199 hp)-MFWD 190	3.56	1.00	0.28	2.74	$ 3.89	$ 16.48
Pull-type Peanut Combine 4R 36" with Tractor (180-199 hp)-MFWD 190	2.18	1.00	0.46	4.48	$ 16.72	$ 56.05
Peanut Wagon 21' with Tractor (120-139 hp)-2WD 130	2.18	1.00	0.46	3.07	$ 2.59	$ 9.52
					$ -	
Total Harvest Fuel, Repairs, Fixed Costs, and Labor			**1.197**	**10.29**	**$ 23.20**	**$ 82.04**

Prepared By: Nathan B Smith and Amanda R Smith, UGA Extension Economists, Department of Agricultural & Applied Economics

Acknowledgements: The authors gratefully acknowledge the contributions of John Beasely, David Adams, Glen Harris, Eric Prostko, Bob Kemerait and Georgia County Extension Agents.

PEANUTS, STRIP-TILLAGE, NON-IRRIGATED
4-ROW COMBINE, 6-ROW EQUIPMENT
SOUTH GEORGIA, 2010

ESTIMATED COSTS AND RETURNS

Expected Yield per Acre **1.40** Ton YIELD: YOUR FARM _____

Variable Costs:	Unit	Number of Units	$/Unit	Cost/Acre	$/Ton	Your Farm
Seed	Lb.	130.00	$ 0.75	$ 97.50	$ 69.64	
Inoculant	Lb.	5.00	$ 1.40	$ 7.00	$ 5.00	
Cover Crop Seed	Bu.	1.50	$ 11.00	$ 16.50	$ 11.79	
Lime/Gypsum*	Ton	0.50	$ 79.99	$ 40.00	$ 28.57	
Fertilizer						
Phosphate (P2O5)	Lb.	0.00	$ 0.25	$ -	$ -	
Potash (K2O)	Lb.	0.00	$ 0.50	$ -	$ -	
Boron	Lb.	0.50	$ 5.60	$ 2.80	$ 2.00	
Weed Control	Acre	1.00	$ 77.21	$ 77.21	$ 55.15	
Insect Control	Acre	1.00	$ 58.53	$ 58.53	$ 41.80	
Disease Control**	Acre	1.00	$ 49.30	$ 49.30	$ 35.22	
Machinery: Preharvest						
Fuel	Gallon	4.97	$ 2.50	$ 12.43	$ 8.88	
Repairs & Maintenance	Acre	1.00	$ 9.32	$ 9.32	$ 6.66	
Machinery: Harvest						
Fuel	Gallon	10.29	$ 2.50	$ 25.73	$ 18.38	
Repairs & Maintenance	Acre	1.00	$ 23.20	$ 23.20	$ 16.57	
Labor	Hrs	2.32	$ 11.00	$ 25.47	$ 18.19	
Crop Insurance	Dol.	1.00	$ 25.00	$ 25.00	$ 17.86	
Land Rental	Acre	1.00	$ -	$ -	$ -	
Interest on Operating capital	Percent	$ 235.00	7.25%	$ 17.04	$ 12.17	
Cleaning	Ton	0.47	$ 12.00	$ 5.59	$ 4.00	
Drying	Ton	0.93	$ 30.00	$ 28.01	$ 20.01	
GPC&GPPA State	Ton	1.40	$ 3.00	$ 4.20	$ 3.00	
NPB Checkoff	Dol.	0.01	$ 630.00	$ 6.30	$ 4.50	
Total Variable Costs				**$ 531.14**	**$ 379.38**	

Fixed Costs:						
Machinery: Depreciation, Taxes, Insurance, and Housing						
Preharvest	Acre	1.00	$ 22.23	$ 22.23	$ 15.88	
Harvest	Acre	1.00	$ 82.04	$ 82.04	$ 58.60	
General Overhead	% of VC	$ 531.14	5.00%	$ 26.56	$ 18.97	
Management	% of VC	$ 531.14	5.00%	$ 26.56	$ 18.97	
Etc.	Acre	1.00	$ -	$ -	$ -	
Other _____						
Total Fixed Costs				**$ 157.39**	**$ 112.42**	

TOTAL COSTS AND PROFIT GOAL

Total Costs Excluding Land	**$ 688.53**	**$ 491.81**
**** YOUR PROFIT GOAL ****	$ _____/Bu.	
$$-PRICE NEEDED FOR PROFIT-$$	$ _____/Bu.	

*Lime application is prorated at 0.5 ton to equal 1.5 ton application every 3 years.

**If soilborne disease threatens to be severe, additional application of soilborne fungicide may be recommended, add $15-$20 per spray. If leafspot threatens to become severe, additional application of chlorothalonil may be recommended at 3/4 pint ($3-$5) with certain soilborne fungicides. A nematicide (where needed) = $50-75 per acre.

Sensitivity Analysis of PEANUTS, STRIP-TILLAGE, NON-IRRIGATED

NET RETURNS ABOVE VARIABLE COSTS PER ACRE Varying Prices and Yield (Ton)					
	-25%	-10%	Expected	+10%	+25%
Lbs/Acre	2100	2520	2800	3080	3500
Tons/Acre	1.05	1.26	1.4	1.54	1.75
$375.00	$ (137.39)	$ (58.64)	$ (6.14)	$ 46.36	$ 125.11
$400.00	$ (111.14)	$ (27.14)	$ 28.86	$ 84.86	$ 168.86
$425.00	$ (84.89)	$ 4.36	$ 63.86	$ 123.36	$ 212.61
$450.00	$ (58.64)	$ 35.86	$ 98.86	$ 161.86	$ 256.36
$475.00	$ (32.39)	$ 67.36	$ 133.86	$ 200.36	$ 300.11

ESTIMATED LABOR AND MACHINERY COSTS PER ACRE

PREHARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Grain Drill15' with Tractor (120-139 hp)-2WD 130	7.955	1.00	0.13	0.84	1.72	4.80
Spray (Broadcast)60' with Tractor (120-139 hp)-2WD 130	35.455	1.00	0.03	0.19	0.25	0.61
Subsoiler low-till6 shank with Tractor (180-199 hp)-MFWD 190	12.121	1.00	0.08	0.81	2.30	3.72
Plant & Pre Rigid6R-36 with Tractor (180-199 hp)-MFWD 190	9.218	1.00	0.11	1.06	2.26	6.35
Spray (Broadcast)60' with Tractor (120-139 hp)-2WD 130	35.455	11.00	0.31	2.08	2.79	6.75
Total Preharvest Fuel, Repairs, Fixed Costs, & Labor			**0.655**	**4.97**	**$ 9.32**	**$ 22.23**

HARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Peanut Digger & Inverter 4R 36" with Tractor (180-199 hp)-MFWD 190	3.56	1.00	0.28	2.74	$ 3.89	$ 16.48
Pull-type Peanut Combine 4R 36" with Tractor (180-199 hp)-MFWD 190	2.18	1.00	0.46	4.48	$ 16.72	$ 56.05
Peanut Wagon 21' with Tractor (120-139 hp)-2WD 130	2.18	1.00	0.46	3.07	$ 2.59	$ 9.52
Total Harvest Fuel, Repairs, Fixed Costs, and Labor			**1.197**	**10.29**	**$ 23.20**	**$ 82.04**

Prepared By: Amanda R Smith and Nathan B Smith, UGA Extension Economists, Department of Agricultural & Applied Economics

Acknowledgements: The authors gratefully acknowledge the contributions of John Beasely, David Adams, Glen Harris, Eric Prostko, Scott Tubbs, Bob Kemerait and Georgia County Extension Agents.

PEANUTS, IRRIGATED
4-ROW COMBINE, 6-ROW EQUIPMENT
SOUTH GEORGIA, 2010

ESTIMATED COSTS AND RETURNS

Expected Yield per Acre **2.00** Ton YIELD: YOUR FARM _____

Variable Costs:	Unit	Number of Units	$/Unit	Cost/Acre	$/Ton	Your Farm
Seed	Lb.	130.00	$ 0.75	$ 97.50	$ 48.75	
Inoculant	Lb.	5.00	$ 1.40	$ 7.00	$ 3.50	
Lime/Gypsum*	Ton	0.50	$ 79.99	$ 40.00	$ 20.00	
Fertilizer						
Phosphate (P2O5)	Lb.	0.00	$ 0.25	$ -	$ -	
Potash (K2O)	Lb.	0.00	$ 0.50	$ -	$ -	
Boron	Lb.	0.5	$ 5.60	$ 2.80	$ 1.40	
Weed Control	Acre	1.00	$ 38.44	$ 38.44	$ 19.22	
Insect Control	Acre	1.00	$ 58.53	$ 58.53	$ 29.26	
Disease Control**	Acre	1.00	$ 87.48	$ 87.48	$ 43.74	
Machinery: Preharvest						
Fuel	Gallon	9.19	$ 2.50	$ 22.98	$ 11.49	
Repairs & Maintenance	Acre	1.00	$ 15.47	$ 15.47	$ 7.74	
Machinery: Harvest						
Fuel	Gallon	10.29	$ 2.50	$ 25.73	$ 12.87	
Repairs & Maintenance	Acre	1.00	$ 23.20	$ 23.20	$ 11.60	
Irrigation***	Acre	5.00	$ 9.00	$ 45.00	$ 22.50	
Labor	Hrs	2.81	$ 11.00	$ 30.96	$ 15.48	
Crop Insurance	Dol.	1.00	$ 20.00	$ 20.00	$ 10.00	
Land Rental	Acre	1.00	$ -	$ -	$ -	
Interest on Operating capital	Percent	$ 257.55	7.25%	$ 18.67	$ 9.34	
Cleaning	Ton	0.67	$ 12.00	$ 7.99	$ 4.00	
Drying	Ton	1.33	$ 30.00	$ 40.02	$ 20.01	
GPC&GPPA State	Ton	2.00	$ 3.00	$ 6.00	$ 3.00	
NPB Checkoff	Dol.	0.01	$ 900.00	$ 9.00	$ 4.50	
Total Variable Costs				**$ 596.78**	**$ 298.39**	

Fixed Costs:						
Machinery: Depreciation, Taxes, Insurance, and Housing						
Preharvest	Acre	1.00	$ 44.79	$ 44.79	$ 22.40	
Harvest	Acre	1.00	$ 82.04	$ 82.04	$ 41.02	
Irrigation	Acre	1.00	$ 100.00	$ 100.00	$ 50.00	
General Overhead	% of VC	$ 596.78	5.00%	$ 29.84	$ 14.92	
Management	% of VC	$ 596.78	5.00%	$ 29.84	$ 14.92	
Etc.	Acre	1.00	$ -	$ -	$ -	
Other _____						
Total Fixed Costs				**$ 286.52**	**$ 143.26**	

TOTAL COSTS AND PROFIT GOAL

Total Costs Excluding Land	**$ 883.30**	**$ 441.65**
**** YOUR PROFIT GOAL ****	$ _____/Bu.	
$$-PRICE NEEDED FOR PROFIT-$$	$ _____/Bu.	

*Lime application is prorated at 0.5 ton to equal 1.5 ton application every 3 years.

**If soilborne disease threatens to be severe, additional application of soilborne fungicide may be recommended, add $15-$20 per spray. If leafspot threatens to become severe, additional application of chlorothalonil may be recommended at 3/4 pint ($3-$5) with certain soilborne fungicides. A nematicide (where needed) = $50-75 per acre.

***Average of diesel and electic irrigation application costs. Electric is estimated to be $6/application and diesel is estimated to be $12/application at $2.50/gallon diesel.

Sensitivity Analysis of PEANUTS, IRRIGATED

NET RETURNS ABOVE VARIABLE COSTS PER ACRE Varying Prices and Yield (Ton)					
	-25%	-10%	Expected	+10%	+25%
Lbs/Acre	3000	3600	4000	4400	5000
Tons/Acre	1.5	1.8	2	2.2	2.5
$375.00	$ (34.28)	$ 78.22	$ 153.22	$ 228.22	$ 340.72
$400.00	$ 3.22	$ 123.22	$ 203.22	$ 283.22	$ 403.22
$425.00	$ 40.72	$ 168.22	$ 253.22	$ 338.22	$ 465.72
$450.00	$ 78.22	$ 213.22	$ 303.22	$ 393.22	$ 528.22
$475.00	$ 115.72	$ 258.22	$ 353.22	$ 448.22	$ 590.72

ESTIMATED LABOR AND MACHINERY COSTS PER ACRE

PREHARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Heavy Disk27' with Tractor (180-199 hp)-MFWD 190	13.214	2.00	0.15	1.48	3.03	8.81
Plow 4 Bottom Switch6' with Tractor (180-199 hp)-MFWD 190	2.327	1.00	0.43	4.20	6.12	18.40
Disk & Incorporate32' with Tractor (180-199 hp)-MFWD 190	15.515	1.00	0.06	0.63	1.53	4.02
Field Cultivate32' with Tractor (180-199 hp)-MFWD 190	21.430	1.00	0.05	0.46	0.81	3.30
Plant & Pre Rigid6R-36 with Tractor (120-139 hp)-2WD 130	9.218	1.00	0.11	0.73	1.71	4.73
Spray (Broadcast)60' with Tractor (120-139 hp)-2WD 130	35.455	9.00	0.25	1.70	2.28	5.53
Total Preharvest Fuel, Repairs, Fixed Costs, & Labor			**1.054**	**9.19**	**$ 15.47**	**$ 44.79**

HARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Peanut Digger & Inverter 4R 36" with Tractor (180-199 hp)-MFWD 190	3.56	1.00	0.28	2.74	$ 3.89	$ 16.48
Pull-type Peanut Combine 4R 36" with Tractor (180-199 hp)-MFWD 190	2.18	1.00	0.46	4.48	$ 16.72	$ 56.05
Peanut Wagon 21' with Tractor (120-139 hp)-2WD 130	2.18	1.00	0.46	3.07	$ 2.59	$ 9.52
					$ -	
Total Harvest Fuel, Repairs, Fixed Costs, and Labor			**1.197**	**10.29**	**$ 23.20**	**$ 82.04**

Prepared By: Nathan B Smith and Amanda R Smith, UGA Extension Economists, Department of Agricultural & Applied Economics

Acknowledgements: The authors gratefully acknowledge the contributions of John Beasely, David Adams, Glen Harris, Eric Prostko, Bob Kemerait and Georgia County Extension Agents.

PEANUTS, STRIP-TILLAGE, IRRIGATED
4-ROW COMBINE, 6-ROW EQUIPMENT
SOUTH GEORGIA, 2010

ESTIMATED COSTS AND RETURNS

Expected Yield per Acre **2.00** Ton YIELD: YOUR FARM _____

Variable Costs:	Unit	Number of Units	$/Unit	Cost/Acre	$/Ton	Your Farm
Seed	Lb.	130.00	$ 0.75	$ 97.50	$ 48.75	
Inoculant	Lb.	5.00	$ 1.40	$ 7.00	$ 3.50	
Cover Crop Seed	Bu.	1.50	$ 11.00	$ 16.50	$ 8.25	
Lime/Gypsum*	Ton	0.50	$ 79.99	$ 40.00	$ 20.00	
Fertilizer						
Phosphate (P2O5)	Lb.	0.00	$ 0.25	$ -	$ -	
Potash (K2O)	Lb.	0.00	$ 0.50	$ -	$ -	
Boron	Lb.	0.50	$ 5.60	$ 2.80	$ 1.40	
Weed Control	Acre	1.00	$ 57.79	$ 57.79	$ 28.90	
Insect Control	Acre	1.00	$ 58.53	$ 58.53	$ 29.26	
Disease Control**	Acre	1.00	$ 87.48	$ 87.48	$ 43.74	
Machinery: Preharvest						
Fuel	Gallon	4.97	$ 2.50	$ 12.43	$ 6.22	
Repairs & Maintenance	Acre	1.00	$ 9.32	$ 9.32	$ 4.66	
Machinery: Harvest						
Fuel	Gallon	10.29	$ 2.50	$ 25.73	$ 12.87	
Repairs & Maintenance	Acre	1.00	$ 23.20	$ 23.20	$ 11.60	
Irrigation***	Acre	4.00	$ 9.00	$ 36.00	$ 18.00	
Labor	Hrs	2.32	$ 11.00	$ 25.47	$ 12.74	
Crop Insurance	Dol.	1.00	$ 20.00	$ 20.00	$ 10.00	
Land Rental	Acre	1.00	$ -	$ -	$ -	
Interest on Operating capital	Percent	$ 259.88	7.25%	$ 18.84	$ 9.42	
Cleaning	Ton	0.67	$ 12.00	$ 7.99	$ 4.00	
Drying	Ton	1.33	$ 30.00	$ 40.02	$ 20.01	
GPC&GPPA State	Ton	2.00	$ 3.00	$ 6.00	$ 3.00	
NPB Checkoff	Dol.	0.01	$ 900.00	$ 9.00	$ 4.50	
Total Variable Costs				**$ 601.61**	**$ 300.80**	
Fixed Costs:						
Machinery: Depreciation, Taxes, Insurance, and Housing						
Preharvest	Acre	1.00	$ 22.23	$ 22.23	$ 11.12	
Harvest	Acre	1.00	$ 82.04	$ 82.04	$ 41.02	
Irrigation	Acre	1.00	$ 100.00	$ 100.00	$ 50.00	
General Overhead	% of VC	$ 601.61	5.00%	$ 30.08	$ 15.04	
Management	% of VC	$ 601.61	5.00%	$ 30.08	$ 15.04	
Etc.	Acre	1.00	$ -	$ -	$ -	
Other _____						
Total Fixed Costs				**$ 264.44**	**$ 132.22**	

TOTAL COSTS AND PROFIT GOAL

Total Costs Excluding Land	**$ 866.04**	**$ 433.02**
**** YOUR PROFIT GOAL ****	$ _____/Bu.	
$$-PRICE NEEDED FOR PROFIT-$$	$ _____/Bu.	

*Lime application is prorated at 0.5 ton to equal 1.5 ton application every 3 years.

**If soilborne disease threatens to be severe, additional application of soilborne fungicide may be recommended, add $15-$20 per spray. If leafspot threatens to become severe, additional application of chlorothalonil may be recommended at 3/4 pint ($3-$5) with certain soilborne fungicides. A nematicide (where needed) = $50-75 per acre.

***Average of diesel and electic irrigation application costs. Electric is estimated to be $6/application and diesel is estimated to be $12/application at $2.50/gallon diesel.

Sensitivity Analysis of PEANUTS, STRIP-TILLAGE, IRRIGATED

NET RETURNS ABOVE VARIABLE COSTS PER ACRE Varying Prices and Yield (Ton)					
	-25%	-10%	Expected	+10%	+25%
Lbs/Acre	3000	3600	4000	4400	5000
Tons/Acre	1.5	1.8	2	2.2	2.5
$375.00	$ (39.11)	$ 73.39	$ 148.39	$ 223.39	$ 335.89
$400.00	$ (1.61)	$ 118.39	$ 198.39	$ 278.39	$ 398.39
$425.00	$ 35.89	$ 163.39	$ 248.39	$ 333.39	$ 460.89
$450.00	$ 73.39	$ 208.39	$ 298.39	$ 388.39	$ 523.39
$475.00	$ 110.89	$ 253.39	$ 348.39	$ 443.39	$ 585.89

ESTIMATED LABOR AND MACHINERY COSTS PER ACRE

PREHARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Grain Drill15' with Tractor (120-139 hp)-2WD 130	7.955	1.00	0.13	0.84	1.72	4.80
Spray (Broadcast)60' with Tractor (120-139 hp)-2WD 130	35.455	1.00	0.03	0.19	0.25	0.61
Subsoiler low-till6 shank with Tractor (180-199 hp)-MFWD 190	12.121	1.00	0.08	0.81	2.30	3.72
Plant & Pre Rigid6R-36 with Tractor (180-199 hp)-MFWD 190	9.218	1.00	0.11	1.06	2.26	6.35
Spray (Broadcast)60' with Tractor (120-139 hp)-2WD 130	35.455	11.00	0.31	2.08	2.79	6.75
Total Preharvest Fuel, Repairs, Fixed Costs, & Labor			**0.655**	**4.97**	**$ 9.32**	**$ 22.23**

HARVEST OPERATIONS						
Operation	Acres/Hour	Number Times Over	Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs ($/Ac)	Fixed Costs ($/Ac)
Peanut Digger & Inverter 4R 36" with Tractor (180-199 hp)-MFWD 190	3.56	1.00	0.28	2.74	$ 3.89	$ 16.48
Pull-type Peanut Combine 4R 36" with Tractor (180-199 hp)-MFWD 190	2.18	1.00	0.46	4.48	$ 16.72	$ 56.05
Peanut Wagon 21' with Tractor (120-139 hp)-2WD 130	2.18	1.00	0.46	3.07	$ 2.59	$ 9.52
					$ -	
Total Harvest Fuel, Repairs, Fixed Costs, and Labor			**1.197**	**10.29**	**$ 23.20**	**$ 82.04**

Prepared By: Amanda R Smith and Nathan B Smith, UGA Extension Economists, Department of Agricultural & Applied Economics

Acknowledgements: The authors gratefully acknowledge the contributions of John Beasely, David Adams, Glen Harris, Eric Prostko, Scott Tubbs, Bob Kemerait and Georgia County Extension Agents.

UNIVERSITY OF GEORGIA PEANUT BREEDING PROGRAM

Bill Branch

"GEORGIA GREEN" is a high-yielding, tomato spotted wilt virus (TSWV)-resistant runner-type peanut variety that was released in 1995 by the Georgia Agricultural Experiment Stations. It was developed at the University of Georgia, Coastal Plain Experiment Station in Tifton, Georgia. Georgia Green is highly productive, and has very good stability across many different environments. After more than a decade of research tests, Georgia Green still maintains a stable high level of resistance to TSWV. It also has a high level of Rhizoctonia limb rot resistance which most other varieties do not have.

Georgia Green has had a significantly positive impact by remaining highly productive over several years and a wide-range of environments (irrigated and dryland production, single or twin rows, conventional as well as reduced tillage.) In spite of the recent stresses and increased TSWV disease pressure, growers still produce top yields with Georgia Green. During 2001, Georgia produced the second highest average state yield of 3330 lbs/a with TSWV, and 2003 was yet another excellent year for the farmers-favorite Georgia Green peanut variety which set a new record high average state yield of 3450 lbs/a beating the previous record set back in 1984 with Florunner at a time without tomato spotted wilt virus.

Georgia Green has many other good attributes and desirable traits in addition to producing excellent yields, grades, and dollar value returns per acre for the peanut growers. It has regular runner seed size which saves growers in seed costs and which shellers prefer for pod and seed size distribution and shellout compared to larger runner varieties. It has a medium maturity which is about 2-3 weeks earlier than the later maturing runner varieties.

For the consumer, Georgia Green offers very good flavor and nutritional qualities similar to the all-time best U. S. standard Florunner variety. In a recent large-scale multiple state and year study, Georgia Green was found to be comparable or better in roasted peanut flavor and taste in comparison to Florunner. Overall, the Georgia Green peanut variety continues to benefit the whole peanut industry (growers, shellers, manufacturers, and consumers).

"GEORGIA-02C" is a high-oleic runner-type variety that was released in 2002 by the Georgia Agricultural Experiment Stations. It was also developed at the University of Georgia, Coastal Plain Experiment Station at Tifton, GA. Georgia-02C has a wider maturity range than Georgia Green with seed and pod size slightly larger. It also has the high oleic and low linoleic fatty acid oil chemistry with spreading runner growth habit. Georgia-02C has resulted in higher TSMK grades and dollar value returns per acre than all of the other high-oleic varieties. Georgia-02C has excellent TSWV resistance as well as CBR resistance.

"GEORGIA-03L" is a large-podded runner-type peanut variety that was released in 2003 by the Georgia Agricultural Experiment Stations. It was developed at the

University of Georgia, Coastal Plain Experiment Station in Tifton. Georgia-03L has similar maturity as Georgia Green with pods and seed significantly larger. Georgia-03L also has a high level of resistance to tomato spotted wilt virus (TSWV) and moderate resistance to both early and late leafspot as well as soilborne diseases: white mold or stem rot and CBR. It has a high percentage of large smooth bright pods with an intermediate runner growth habit and pink seedcoat color. Georgia-03L is highly productive, and was found to be higher in yield than Georgia Green and C-99R. Georgia-03L combines disease resistance with large pods, medium maturity, and excellent yields. It has very good stability and a wide range of adaptability throughout the major peanut production areas.

"GEORGIA VALENCIA" is the newest valencia-type peanut variety that was released in 2000 by the Georgia Agricultural Experiment Stations. **"GEORGIA RED"** is a similar valencia-type variety that was jointly released by the Georgia Agricultural Experiment Stations and USDA-ARS in 1986. Both Georgia Valencia and Georgia Red are excellent choices for the fresh-market boiling trade in the Southeast because of their high yield performance, large fruit size, and compact bunch growth habit. In Georgia Peanut Variety Tests, the eight-year (2001-2008) average performance shows Georgia Valencia and Georgia Red to have higher yields, grades, and dollar values compared to Valencia McRan, New Mexico Valencia C, New Mexico Valencia A, H & W Val 101, and H & W Val 102. Both Georgia Valencia and Georgia Red also have better disease tolerance with similar maturity as these other valencia varieties.

"GEORGIA-04S" is the newest high-oleic small-seeded peanut variety that was released in 2004 by the Georgia Agricultural Experiment Station. Georgia-04S is intended for the same confectionary or candy market as used by spanish-types. However, Georgia-04S would also be excellent for the roasted or peanut butter trade as well. It has pods and seed size similar to other spanish market type varieties. Georgia-04S has shown a significantly higher yield, TSMK grade, and dollar value per acre compared to all other leading spanish varieties during the past nine-year (2000-2008) in Georgia. Georgia-04S also has significantly better tomato spotted wilt virus (TSWV) resistance than these other spanish varieties.

“GEORGIA-06G” and “GEORGIA GREENER” are two new high-yielding, TSWV-resistant, runner-type peanut varieties that were released in 2006 by the Georgia Agricultural Experiment Stations. Both were developed at the University of Georgia, Coastal Plain Experiment Station in Tifton, GA. Georgia-06G and Georgia Greener have a high level of resistance to spotted wilt disease caused by tomato spotted wilt virus (TSWV). In multilocation tests conducted in Georgia during the past several years, Georgia-06G and Georgia Greener were found to be among the lowest in TSWV incidence and total disease incidence, highest in pod yield, TSMK grade, and dollar value return per acre compared to all of the other runner-types tested each and every year. Georgia-06G is a large-seeded runner-type peanut variety; whereas, Georgia Greener is more of a regular seed size runner-type variety. Each has an immediate or decumbent runner growth habit and medium maturity similar to Georgia Green.

“GEORGIA-07W” is a new high-yielding, TSWV-resistant, white mold-resistant, runner-type peanut variety that was released in 2007. It was developed at the University of Georgia, Coastal Plain Experiment Station in Tifton, GA. Georgia-07W has a high level of resistance to both diseases, tomato spotted wilt virus (TSWV) and white mold or stem rot. In multilocation tests conducted in Georgia during the past several years, Georgia-07W was found to be among the lowest in TSWV incidence and total disease incidence, highest in yield, grade, and dollar value return per acre. Georgia-07W is a large-seeded runner-type variety with a runner growth habit and medium maturity. It also has very good stability and a wide-range of adaptability.

“GEORGIA-08V” is a new high-yielding, high-oleic, TSWV-resistant, large-seeded, virginia-type peanut variety that was released by the Georgia Agricultural Experiment Station in 2008. It was developed at the University of Georgia, Coastal Plain Experiment Station, Tifton, GA. Georgia-08V has the high-oleic (O) and low linoleic (L) fatty acid ratio for improved oil quality. During the past five-years (2004-08) averaged over multilocations tests in Georgia, Georgia-08V had significantly less TSWV disease incidence, higher yield and percent ELK, larger seed size, and greater dollar value return per acre compared to Gregory, Perry, and NC-V 11. Georgia-08V has also showed significantly higher yield, ELK percentage, and dollar value than **Georgia Hi-O/L**, and was also found to have the largest seed size of all of the virginia-type varieties tested, including **Georgia-05E**.

'GEORGIA-09B' is a new high-yielding, high-oleic, Tomato spotted wilt virus (TSWV)-resistant, medium-seeded, runner-type peanut variety that was released in 2009. It was developed at the University of Georgia, Coastal Plain Experiment Station, Tifton, GA. Georgia-09B originated from the first backcross made with ‘Georgia Green’, as the recurrent parent. During three years (2006-08) averaged over 27 multilocation tests in Georgia, Georgia-09B had significantly less TSWV disease incidence, higher yield and percent TSMK grade, larger seed size, and greater dollar value return per acre compared to Georgia Green. Georgia-09B

has also showed significantly higher TSMK grade percentage than ‘Florida-07’and higher dollar value than ‘York’, ‘AT-3085RO’, and ‘McCloud’, and was found to have a medium runner seed size as compared to the larger high-oleic, runner-type varieties, Florida-07, AT-3085RO, and McCloud. Georgia-09B combines the excellent roasted flavor of Georgia Green with the high-oleic trait for longer shelf-life and improved oil quality of peanut and peanut products.

Table 1. Three-Year Average Dollar Value Return per Acre of 15 Runner-Type Peanut Varieties across Multilocations in Georgia, 2007-09.

Runner	Gross Dollar Values ($/a)			3-Yr
Variety	2007	2008	2009	Mean
Georgia-07W	780	868	836	828
Georgia-06G	777	853	808	813
*Georgia-02C	768	822	781	790
Georgia Greener	760	823	761	781
*Georgia-09B	749	806	781	779
*Florida-07	746	800	791	779
Tifguard	720	764	715	733
AP-4	706	754	731	730
*York	714	720	754	729
Georgia-03L	695	770	709	725
*AT-3085RO	666	749	727	714
C-99R	669	733	731	711
*McCloud	646	750	718	705
AP-3	637	709	653	666
Georgia Green	633	685	649	656

* High-Oleic Varieties

Table 2. Three-Year Average Yield (lb/a) of Runner-Type Peanut Varieties under Irrigation and Nonirrigation at Multilocations in Georgia, 2007-09.

Runner	Tifton		Plains		Midville	
Variety	Irrig.	Nonirrig	Irrig.	Nonirrig	Irrig.	Nonirrig
Georgia-07W	5689	4374	4851	4515	5139	3873
Georgia-06G	5416	4198	5140	4322	5344	3778
Georgia-02C	4817	4509	5192	4146	4752	3867
Georgia Greener	5198	3970	5212	4554	4903	3557
Georgia-09B	5360	3420	5067	4298	5370	3750
Florida-07	5585	4212	5183	4622	5493	4045
Tifguard	5368	4052	4460	4417	4784	3372
AP-4	4964	3905	4540	4268	4802	3486
York	4868	4306	4638	4052	4706	3555
Georgia-03L	4671	4006	4870	4030	4855	3680
AT-3085RO	5304	3482	4985	4416	5090	3572
C-99R	4829	3780	4683	3845	4906	3980
McCloud	5254	3984	4130	4244	4807	3480
AP-3	4939	3979	4268	3896	4390	3231
Georgia Green	4495	3007	4415	3460	4451	3323

Table 3. Eight-Year Average Yield, Grade, Seed Size and Dollar Value of Seven Valencia-Type Peanut Varieties in Georgia, 2001-08.

Valencia Variety	Yield (lb/a)	TSMK (%)	Seed (no./lb)	Value ($/a)
Georgia Valencia	2491 a	58 b	822 d	405 a
Georgia Red	1987 b	63 a	1001 c	356 b
N.M. Val. C.	1576 c	56 c	1235 ab	251 c
H & W Val. 101	1574 c	55 cd	1203 b	248 c
Val. McRan	1578 c	54 cd	1223 ab	246 c
N.M. Val. A.	1558 c	54 d	1274 a	240 c
H & W Val. 102	1482 c	54 cd	1221 ab	224 c

Means within the same column followed by the same letter do not differ significantly at P≤0.05.

Table 4. Nine-Year Average Yield, Grade, Seed Size and Dollar Value of Five Spanish-Type Peanut Varieties in Georgia, 2000-08.

Spanish Variety	Yield (lb/a)	TSMK (%)	Seed (no./lb)	Value ($/a)
*Georgia-04S	3933 a	72 a	1154 a	802 a
Tamspan 90	2820 b	66 b	1159 a	549 b
*OLin	2169 c	65 bc	1204 a	408 c
Pronto	1922 cd	62 d	1202 a	350 c
Spanco	1846 d	64 cd	1158 a	349 c

Means within the same column followed by the same letter do not differ significantly at P≤0.05.

*** High-Oleic**

Table 5. Nine-Year (53 Tests) Average Field Performance of Three Runner-Type Peanut Varieties at Multilocations in Georgia, 2000-08.

Runner Variety	Disease (%)	Yield (lb/a)	TSMK (%)	Seed (no./lb)	Value ($/a)
Georgia-03L	22 c	4280 a	72 b	693 b	896 a
Georgia Green	30 b	3851 b	73 a	847 a	834 b
C-99R	36 a	3836 b	73 a	693 b	808 b

Means within the same column followed by the same letter do not differ significantly at P≤0.05.

Table 6. Six-Year (55 Tests) Average Disease Incidence, Yield, Grade, Seed Size, and Dollar Value of Four Runner-Type Peanut Varieties at Multilocations in Georgia, 2003-08.

Runner Variety	Disease (%)	Yield (lb/a)	TSMK (%)	Seed (no./lb)	Value ($/a)
Georgia-06G	24 c	4408 a	75 a	663 c	802 a
Georgia Greener	25 c	4273 a	75 a	724 b	780 a
Georgia Green	36 b	3660 b	73 b	829 a	659 b
C-99R	42 a	3654 b	73 b	681 c	649 b

Means within the same column followed by the same letter do not differ significantly at P≤0.05.

Table 7. Two-Year (20 Tests) Average Disease Incidence, Pod Yield, TSMK Grade, Seed Size, and Dollar Values of Georgia-09B vs. Five Other High-Oleic Runner-Type Varieties at Multilocations in Georgia, 2007-08.

Runner Variety	TSMK (%)	TD (%)	Yield (lb/a)	TSMK (%)	Seed (no./lb)	Value ($/a)
Georgia-02C	10 c	25 d	4273 ab	76 a	743 b	795 a
Georgia-09B	10 c	30 c	4283 ab	74 b	723 b	777 a
Florida-07	15 b	34 b	4451 a	72 cde	605 e	773 a
York	15 b	27 c	4110 bc	71 de	796 a	717 b
AT-3085RO	16 b	33 b	4093 bc	70 e	672 c	707 b
McCloud	19 a	41 a	3945 c	72 c	633 d	698 b

Means within the same column followed by the same letter do not differ significantly at P≤0.05.

Table 8. Five-Year (48 Tests) Average Disease Incidence, Pod Yield, TSMK Grade, ELK Grade, Seed Count, and Dollar Value of Georgia-08V, Georgia-05E, and Georgia HI-O/L vs. Three Other Virginia-Type Peanut Varieties in Georgia, 2004-08.

Virginia Variety	Disease (%)	Yield (lb/a)	TSMK (%)	ELK (%)	Seed (no./lb)	Value ($/a)
*Georgia-05E	30 e	4147 a	76 a	50 a	615 a	811 a
*Georgia-08V	34 d	4153 a	71 c	50 a	496 c	739 b
*Georgia Hi-O/L	36 d	3457 b	72 b	43 b	579 b	629 c
Gregory	50 c	3422 b	64 e	37 c	565 b	558 d
Perry	59 a	3174 c	67 d	35 c	580 b	549 d
NC-V 11	54 b	3345 b	64 e	35 c	568 b	536 d

Means within the same column followed by the same letter do not differ significantly at P≤0.05.

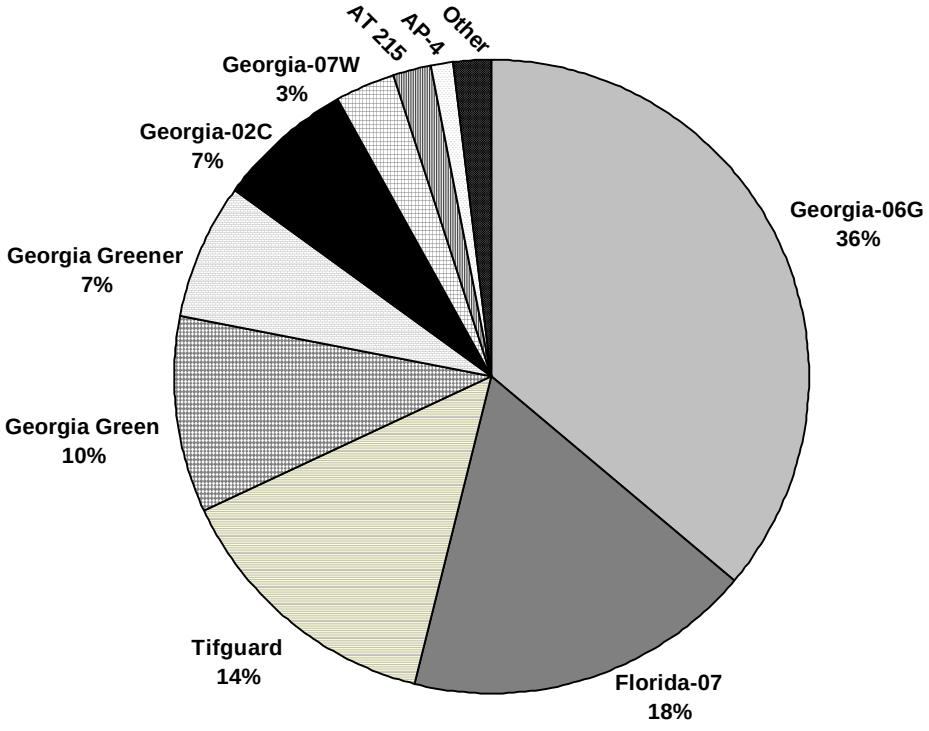
*** High-Oleic**

CULTIVAR OPTIONS FOR 2010

John P. Beasley, Jr.

Based on feedback from seed suppliers there will be seed of 9 peanut cultivars available for producers in 2010. The cultivars available this year are: Georgia-06G, Florida-07, Tifguard, Georgia Green, Georgia-07W, Georgia Greener, Georgia-02C, AP-4, and AT 215. There will be minimal amounts of AP-4 from Birdsong Peanuts and AT 215 from Golden Peanut so the majority of seed supply will be among the first seven cultivars listed above.

According to figures from the Georgia Crop Improvement Association, Alabama Crop Improvement Association, and Florida Foundation Seed, the largest percentage of acreage planted in 2009 for seed production for 2010 was Georgia-06G with about 36%. That was followed by Florida-07 and Tifguard with 18 and 14%, respectively. This indicates we could expect about 70% of the planted acreage in the southeast U.S. in 2010 to be planted among those three cultivars. Seed supply of Georgia Green has dropped to about 10%.



There was continuing increase of the seed supply of Georgia Greener and Georgia-07W. We continue to learn more about these two cultivars and how they fit into a production system. There will be an increase of seed production in 2010 of those two cultivars for the 2011 season. Georgia-02C is holding steady in its level of demand as it is a popular cultivar, especially in east Georgia. The major drawback of Georgia-02C is its late maturity.

What cultivar do I select?

What should producers look for in a cultivar when trying to decide which one or ones to plant on their farm? Obviously, the first characteristics a producer should look for in a cultivar are yield and grade. Fortunately, most of the new cultivars that have been released over the past three years have a higher yield potential than Georgia Green. In the UGA Statewide Variety Trials and in small plot and on-farm large plot trials we have seen Georgia-06G, Florida-07, Tifguard, Georgia Greener, Georgia-07W, and AP-4 consistently out yield Georgia Green. The grades of these cultivars, with the exception of Florida-07, have been equal to or better than Georgia Green.

Disease resistance is another important trait to look for in a cultivar. The reason Georgia Green was such a success when it was released in the mid 1990's was that it had a better level of resistance to spotted wilt disease, caused by tomato spotted wilt virus (TSWV) than the other cultivars that were being planted at that time. The peanut breeding programs in the southeast U.S. have released numerous cultivars the past 10 years with much better resistance to TSWV. Resistance to leaf spots, white mold, CBR, and peanut root- knot nematode now exist in one or more cultivars. If a producer has a field with a history of CBR, then Georgia-02C is the best option. Tifguard has a very high level of resistance to peanut root-knot nematode and should be the cultivar planted in fields with a history or large population of this pest.

Maturity range will also dictate if a producer wants to select a certain cultivar. Currently there is one early maturing cultivar, AT 215, but the seed supply on it will be very limited. It works well in a late planting situation like we experienced in 2009. Georgia Green, Georgia Greener, Tifguard, and AP-4 all have what we call the "normal" or medium maturity range. In other words, under normal growing conditions in which there are no factors delaying or speeding up maturation, these cultivars are ready for harvest in 135-140 days after planting. Georgia-06G, Florida-07, and Georgia-07W all mature about 7-10 days later than Georgia Green. The one late maturing cultivar we currently produce is Georgia-02C. It typically takes 2-3 weeks later to mature than Georgia Green. It is recommended to not plant Georgia-02C after May 15.

Cultivar Maturity Ranges relative to Georgia Green (135-140 days after planting under normal growing conditions)

10-14 days early	Same as Georgia Green	7-10 days later	2-3 weeks later
AT 215	Georgia Greener	Georgia-06G	Georgia-02C
	Tifguard	Florida-07	
	AP-4	Georgia-07W	

Seed availability is another issue with selecting a cultivar. When a new cultivar is released there is usually a very limited supply of seed. It typically takes 2-3 years to build the seed supply of a new cultivar release before there is an adequate supply to meet producers' demands. For example, the University of Georgia released a new runner-type peanut cultivar in November 2009. The cultivar is named Georgia-09B and is a medium seed size, high oleic cultivar. However, there was only 26 acres of this new release planted in 2009 so it will be at least a couple of more years before there is adequate seed available for commercial production. There are impending new releases from USDA in Tifton and in Dawson as well.

Demand for a cultivar is another factor. We saw this is the early 1990's when Georgia Browne was released. At the time, Georgia Browne had the best disease resistance package of any cultivar being planted, which at that time was Florunner. However, the shelling industry did not want the cultivar in their system so there was no seed increase. Currently, there are no cultivars that are not accepted by the shelling industry or manufacturers, with the exception of Georgia-02C, which is accepted by all processors except M&M/Mars.

One other factor that might have a bearing on cultivar selection is seed size. Several of the new cultivar releases have considerably larger seed size than Georgia Green. These cultivars include Georgia-06G, Florida-07, Tifguard, Georgia-07W, and AP-4. There seed size results in it taking 30 or more pounds per acre to plant when sown at the same seed per foot of row rate as Georgia Green. For example, when planting Georgia Green at 6 seed per foot of row it typically requires 105-110 pounds per acre. At the same 6 seed per foot of row rate, Georgia-06G, Tifguard, and Florida-07 will end up planting 140+ pounds per acre. At approximately $0.75 per pound for seed it costs about $20-25 more per acre to plant large seeded runner cultivars than Georgia Green. Georgia Greener and Georgia-02C have what we refer to as "medium" size seed, similar to what the Florunner cultivar had and planting those at 6 seed per foot of row will result in planting about 120-125 pounds per acre, or about 10-15 pounds per acre more than Georgia Green.

NON-IRRIGATED PEANUT PRODUCTION

John P. Beasley, Jr.

Over the past 30 years non-irrigated peanut acreage in Georgia has ranged from 45-55% of the planted acreage. For the majority of those years the primary cultivars that were planted were Florunner during the 1980's and early 1990's and Georgia Green from 1996 till last year. Florunner had a medium size seed and Georgia Green is classified as a small-seeded runner cultivar.

Several of the new peanut cultivars, especially Georgia-06G, Florida-07, and Tifguard, have much larger seed size than Georgia Green and Florunner. Recent research by USDA scientists indicated Georgia Green has a lower water requirement than other peanut cultivars. This seems logical since Georgia Green has a smaller pod and seed size and canopy than other runner-type peanut cultivars. Research in the 1970's that determined water response curve and irrigation requirement for peanut was conducted on Florunner. That was the basis of our UGA peanut irrigation recommendation. The results of the 1970's research indicated that a peanut plant needs approximately 23 inches of water from planting until harvest. Approximately 18 of that 23 inches (78%) of water is needed during weeks 10-17 (8 weeks, or 40%) of the 20-week growing season.

Rarely do we receive 23 inches of rainfall during the growing season. The closest we came to receiving that much rainfall during the growing season was in 2003. Therefore, in most every year we are in a rainfall deficit for peanut production. The key to making above average yields in a non-irrigated situation is receiving timely rainfall during pegging, pod fill, and pod maturation.

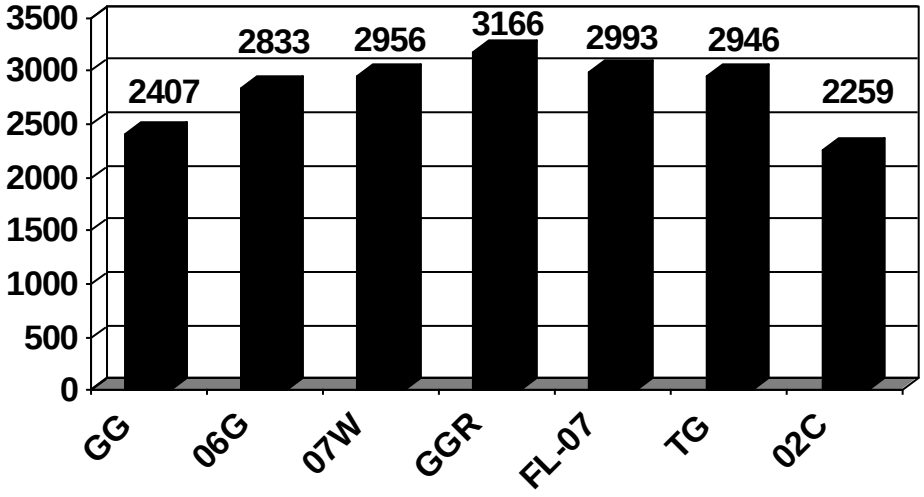
The number one question to answer is "which cultivar do I plant in a dry land situation"? Since Georgia Green has a lower water requirement than other cultivars then it makes sense that it would be a good choice for non-irrigated fields. Other medium seed-size cultivars such as Georgia Greener and Georgia-02C are also good options. Another trait of Georgia-02C that makes it a good dry land peanut is its late maturity. The longer maturity range provides more opportunities to overcome short dry spells.

In a growing season in which we receive normal to slightly below normal rainfall we feel that the larger-seeded, higher-yielding cultivars such as Georgia-06G, Florida-07, Tifguard, and Georgia-07W will all perform better than Georgia Green. However, in a year in which we receive well below normal rainfall, like 1980, 1990, or 2000, Georgia Green or Georgia Greener would be the better options. The problem is we never know at planting if we are going to have a year with well below rainfall. The charts on the following two pages show the yield of cultivars planted in four non-irrigated cultivar trials in 2009. These trials were

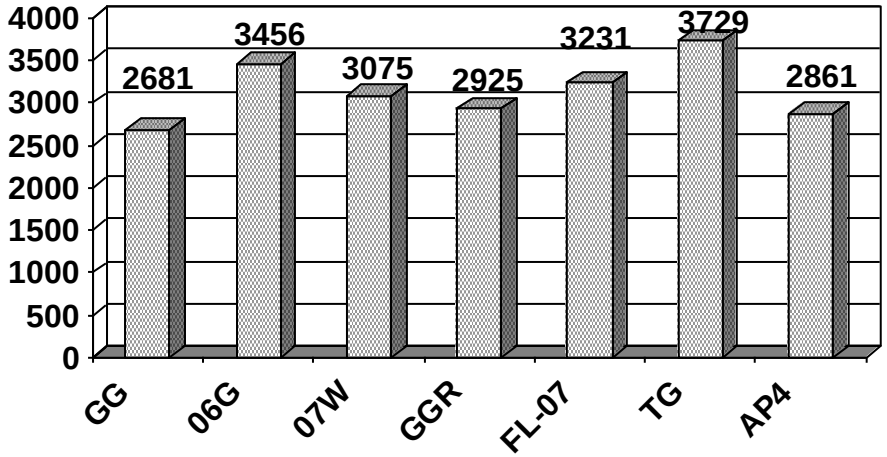
large plots (4 or more rows at least 1,000 feet long) replicated four times. The large-seeded runner cultivars out-performed Georgia Green at all four locations.

2009 On-Farm Non-Irrigated Cultivar Trials

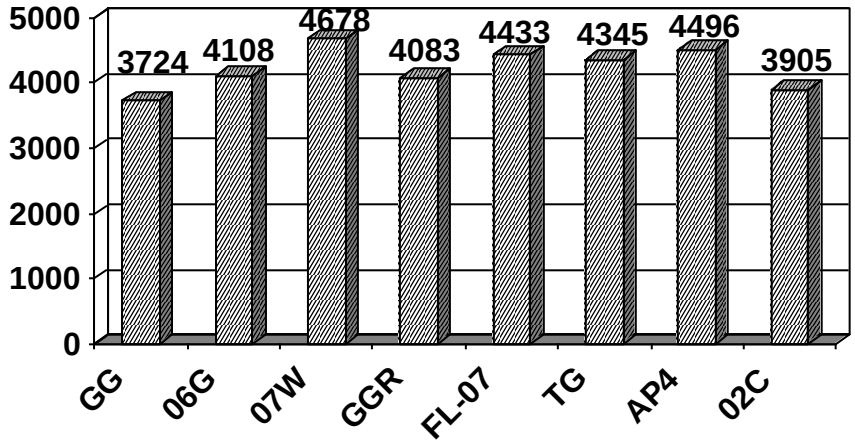
Irwin County



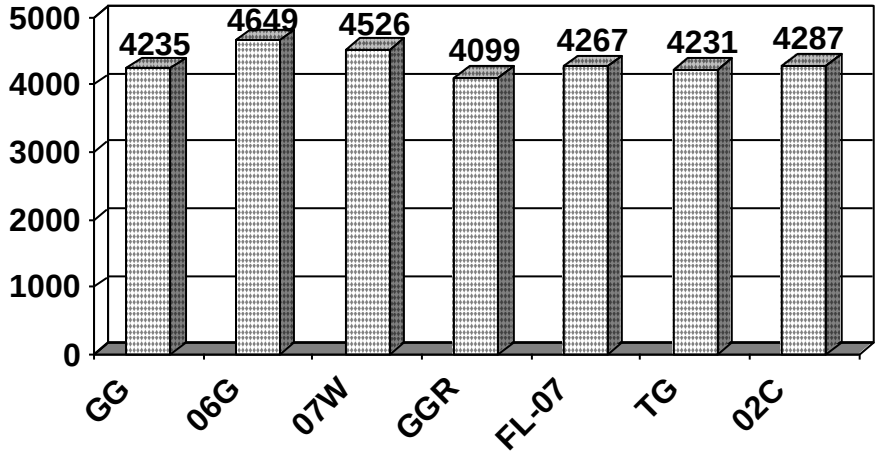
Thomas County



Jeff Davis County



Jefferson County



TILLAGE AND ROW PATTERN UPDATE

R. Scott Tubbs and John P. Beasley, Jr.

Tillage

There are advantages and disadvantages to using conventional tillage in peanuts, and the same can be said for strip-till in peanuts. Some benefits that can be gained from turning the soil include physical weed control of emerged seedlings, warming the seedbed for quicker crop germination, burial of surface residues containing pathogens and other pests, and so on. However, there are negative impacts like soil erosion, new weed seed brought to the soil surface, and rapid drying of the soil. With strip-till, cover crop residues remain on the surface, which serve as a mulch to shade weeds and slow the evaporation of water from the soil. In addition, conventional tillage can be costly in comparison to strip-till because of increased energy and time demands to pull implements through the field. In an extremely wet planting season like we had in 2009, the extra time to prepare or re-work fields that washed out could be very costly when already beyond the optimum planting window, whereas strip-till fields would be ready for planting more rapidly and save precious days in late planting situations. If the same yields and grades can be achieved with fewer inputs, then the producer and sustainability of the environment will both benefit from reduced tillage systems.

There is not a universal recommendation regarding which tillage system works best, and what works in one field or one year may not work in a different field or in a different year. That is why it is important to take more than simply yield alone into consideration when determining which tillage practice to adopt. In years with adequate rainfall, there may be no difference in yields between conventional and strip-till. However, in dry years, strip-till peanuts will often yield more than conventionally grown peanuts, especially in dryland production. This is primarily with respect to the slower evaporation of soil moisture thanks to the presence of the cover crop. There is not always more available soil moisture in strip-till than in conventional tillage, though. Cover crops, especially when there is abundant biomass, will use available soil water when actively growing and may absorb moisture in the residue after termination, which may deplete soil moisture prior to planting. Timing the termination of cover crops with planting of peanuts is important and may vary from grower to grower depending on how much residue can be managed without interference of the planting operation.

Diseases should also be factored into management decisions. Tomato spotted wilt virus (TSWV) and leaf spot incidence are both increased in conventional tillage management, while limb rot is increased in strip-till management. If planting a peanut variety that is more susceptible to one of these diseases, the type of tillage system utilized may need to be altered to lessen the risk of a severe disease occurrence. The impact of TSWV has been low on peanuts the last few years. Yet, since there is presently no in-season control for TSWV, growers should take every precaution to minimize the possibility of TSWV incidence.

A comparison of tillage, cultivars, and row patterns has been evaluated on the UGA Tifton campus to study the effects of long term conventional and reduced tillage on crops. Data comparing the tillage effects on pod yield and TSWV incidence in peanut are summarized in Fig. 1 and Tables 1-2 below for the 2005-2009 growing seasons.

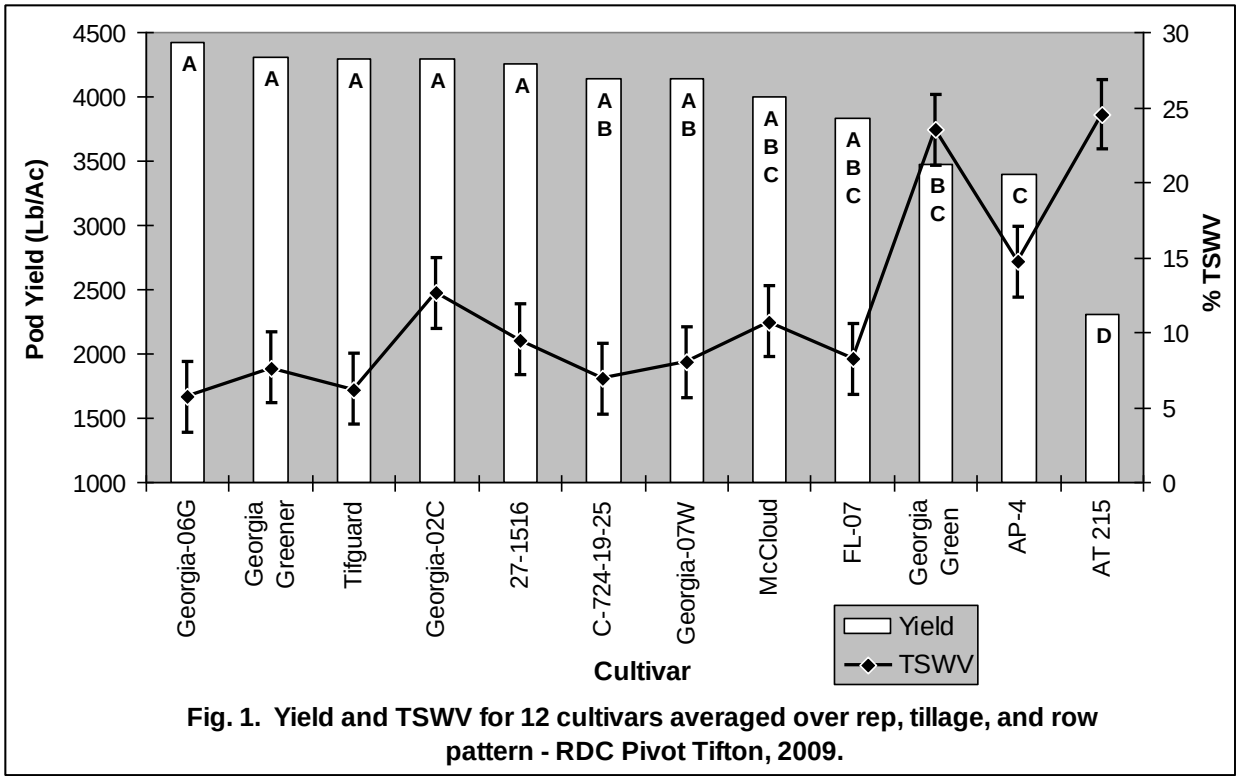


Fig. 1. Yield and TSWV for 12 cultivars averaged over rep, tillage, and row pattern - RDC Pivot Tifton, 2009.

- Differences among yields are indicated by alphabetical notation, where a different letter indicates a statistical difference (LSD = 674).
- Differences among TSWV incidence are indicated by error bars (least significant differences), where bars that do not overlap on a horizontal plane indicate a statistical difference (LSD = 4.7).

Table 1. Yield comparison of tillage methods, 2005-2009 – RDC Pivot, Tifton, GA.

Tillage Method	2005	2006	2007	2008	2009
	---------- Yield (lb/ac) ----------				
Conventional	4695 a	4494 b	5765 a	5556	4235 a
Strip-Till	4507 a	5355 a	4943 b	5266	3579 b
LSD	218	295	162		162

Table 2. Incidence of tomato spotted wilt in peanut for two tillage methods, 2005-2009 – RDC Pivot, Tifton, GA.

Tillage Method	2005	2007	2008	2009
	---------- % TSWV incidence ----------			
Conventional	9.1 a	6.6 a	10.0 a	11.7 a
Strip-Till	9.7 a	5.7 a	9.7 a	11.3 a
LSD	2.2	1.2	2.9	3.4

In 2008, there was an interaction between tillage and variety for yield. Four of the ten varieties ('AP-4', 'Florida-07', 'Tifguard', and 'Georgia-07W') had a significant difference in yield between tillage systems, with conventional tillage having higher yields than strip-till, while the remaining six varieties had no statistical difference in yield. Thus, 2009 marks the third consecutive year where conventional tillage yielded higher than strip-till in all cases where significance occurred (Table 1). However, in 2006 there were higher yields in strip-till and in 2005, there was no difference between tillage systems for yield. No differences in TSWV were observed between tillage systems in any year (Table 2).

Because of very low levels of TSWV throughout the peanut belt from 2007-2009 coupled with the inclusion of new highly TSWV resistant cultivars, these combined factors may be influencing the yield emphasis for conventional tillage. In the past, when more TSWV susceptible varieties dominated Georgia's peanut acreage, strip-till had a more dramatic impact on reducing TSWV. If a heavy outbreak of TSWV were to hit, it is anticipated that TSWV incidence would increase more drastically in conventional tillage plots while only having a minor effect in strip-tillage, thus causing a yield shift in favor of strip-till management.

Row Pattern

Similar to tillage, there is more to take into account than just yield when deciding on row pattern. A study in Plains in 2009 which compared row patterns and seeding rates among seven varieties had higher yields (4591 lb/ac – twin; 4307 lb/ac – single) and lower TSWV (1.4% – twin; 2.0% – single) in twin rows than in single rows (for more information on that experiment, see the article "Update on Seeding Rates for Peanut" within this publication). The most recent data on row pattern from Tifton Campus has consistently shown no differences in yield between single and twin row patterns (Table 3). However, twin rows resulted in less TSWV in three out of four years (Table 4). Even though those differences were not enough to cause a yield reduction in this study, it could be a significant factor with cultivars that are more susceptible to TSWV, or in years when disease pressure is more severe. Twin row patterns have also demonstrated the ability to reduce white mold since there is greater spacing between individual plants, slowing the spread of the disease. There are 3 seed per foot per twin row at planting compared to 6 seed per foot in a single row (same plant population regardless of row pattern, but plants have more space between adjacent plants in twin rows).

Table 3. Yield comparison of row patterns, 2005-2009 – RDC Pivot, Tifton, GA.

Row Pattern	2005	2006	2007	2008	2009
	---------- Yield (lb/ac) ----------				
Single	4679 a	4939 a	5284 a	5402 a	3935 a
Twin	4524 a	4911 a	5423 a	5419 a	3879 a
LSD	218	295	162	110	246

Table 4. Incidence of tomato spotted wilt in peanut for two row patterns, 2005-2009 – RDC Pivot, Tifton, GA.

Row Pattern	2005	2007	2008	2009
	---------- % TSWV incidence ----------			
Single	10.8 b	6.7 a	11.7 b	13.5 b
Twin	8.0 a	5.6 a	8.0 a	9.5 a
LSD	2.2	1.2	1.4	1.1

Therefore, because of the potential to reduce pest problems, which can lead to yield increases, twin row patterns are recommended by the University of Georgia for peanut production.

UPDATE ON INOCULATION

R. Scott Tubbs and Glen H. Harris

Peanuts require many essential nutrients to reach their full reproductive growth potential, and thus highest yield and grade. Of the required nutrients, Nitrogen (N) is one of the most important, and needed in rather large quantities compared to most other nutrients. However, since peanuts are a legume, N fertilization is rarely needed due to a symbiotic relationship between the plant and *Rhizobia* bacteria. The *Rhizobia* "infect" the root of the peanut plant and form nodules where N-fixation occurs. The air around us is actually over 78% N, but that N is not in a form than can be utilized by the plant. *Rhizobia* have the ability to convert atmospheric N into a form usable by the plant by breaking the strong triple bond of the N_2 molecule. However, nodule formation and N-fixation are only possible when *Rhizobia* are actively living where peanuts are growing. If peanuts are planted in a location where *Rhizobia* is not present, then inoculation of the peanut seed is necessary to put the bacteria in close proximity to the germinating peanut seedling.

The current UGA recommendations are that peanuts should be inoculated at planting if entering a "new" ground field (a field that has not previously been planted to peanuts), or if it has been five years or more since peanuts were planted in the field. If less than five years, then there are often adequate levels of native and surviving strains of the bacterium from when peanut was last growing in that field. However, it should be noted that there are numerous factors that can influence the survivability of bacterium since they are living organisms. Hot, dry weather as well as extremely cold, especially freezing temperatures can certainly influence the population of *Rhizobia* and its ability to reach a peanut root. Thus, the addition of inoculants can be beneficial in shorter rotations as well since it is placed in direct contact with the peanut seed and will therefore be readily available for nodule formation immediately upon germination. Since inoculants can sometimes cost less than 1% of a total peanut budget, it can be a worthwhile investment to ensure the peanut plant has every possible advantage to reach maximum production.

At the same time, it should also be noted that application of an inoculant is not a guarantee of higher yields, grades, or profits. There are instances where non-inoculated peanuts yield just as high as inoculated peanuts, even on new ground. Peanut plants can appear severely N deficient, with foliage of a lemony-yellow hue and yield just as well as peanuts that look dark lime-green in color. Numerous conditions can influence agronomic growth characteristics and the final end product. Take into consideration the genetic variations in foliage color before assuming an inoculant failure, though. There are distinct differences in the color of the peanut canopy depending on what variety being grown. Some varieties (such as 'Georgia-06G' and 'Tifguard') have a very dark green appearance, while other varieties (such as 'AP-3' and 'AP-4') look like a much lighter shade of green. [An experiment in Tifton, GA in 2009 compared SPAD chlorophyll values of varieties Georgia-06G (43.2) and AP-3 (37.4),

which were significantly different from each other (LSD = 3.1). These values are an indication of chlorophyll content and how light (lower values) or dark green (higher values) the foliage appears.] When grown in close proximity to each other, a lighter green variety may appear yellow in comparison to a darker variety and be falsely accused of being an inoculant failure, when it may actually just be a genetic difference, like in the example above. Be sure to keep records of where different varieties are planted, especially in adjacent fields or with a seed change in the same field.

It is important to keep a close watch on nodulation and nodule activity throughout the growing season. Formation of a strong set of nodules does not guarantee that sufficient N levels are being produced for the plant. Nodules need to be monitored over the course of the season for their activity, especially in very hot and dry conditions or consistently wet or water-logged conditions or areas of a field. To test for nodule activity, several peanut plants should be loosened from the soil using a trowel or pitchfork, and gently removed. Account for nodule numbers and size and keep notes regarding a decrease in number of nodules over the season. Nodules should be cut open using a sharp knife and the interior color should be noted. Pink to dark red centers (especially if a liquid is present) mean nodules are actively fixing N. Green to brown centers (especially if dry) mean these nodules are no longer supplying N to the plant. A white center means the nodule is not yet actively fixing N, but should be soon as it is in the process of forming.

There are cases when addition of N fertilizer can be beneficial to meet the needs of the peanut plant and carry it to the end of the season. But this decision should not be made in haste since there are some ramifications associated with the in-season application of N to peanuts. First, peanut plants will uptake the most readily available form of N, so the application of N (or planting into a field that has large quantities of residual N from the previous crop, for that matter) will cause the peanut plant to use that N first, at the expense of forming nodules for continued N production. This will also lead to viable nodules ceasing activity, meaning the plant will no longer benefit from being its own N source, and will now have to rely on external N inputs for the remainder of its N requirement. If this occurs early in the season, it may not be cost effective to have to spoon-feed N to meet the high N needs during pegging and pod-fill. The application of too much N at any one application will also encourage excessive vegetative growth at the expense of reproductive growth, which will usually result in decreased yields.

Several experiments have been conducted in new ground fields (previous crop was 25+ years continuous corn) in Tifton, GA over the last two years. These studies highlight some of the information discussed above. In Fig. 1, two commercially available liquid inoculant products including Optimize Lift* (EMD CropBioscience, Brookfield, WI) and Vault Liquid* (Becker Underwood, Ames, IA) were applied to Georgia-06G and AP-3 peanut varieties. In 2008, both inoculant products yielded more than untreated plots that received no inoculant. In 2009, there was no statistical yield increase by inclusion of an inoculant at planting.

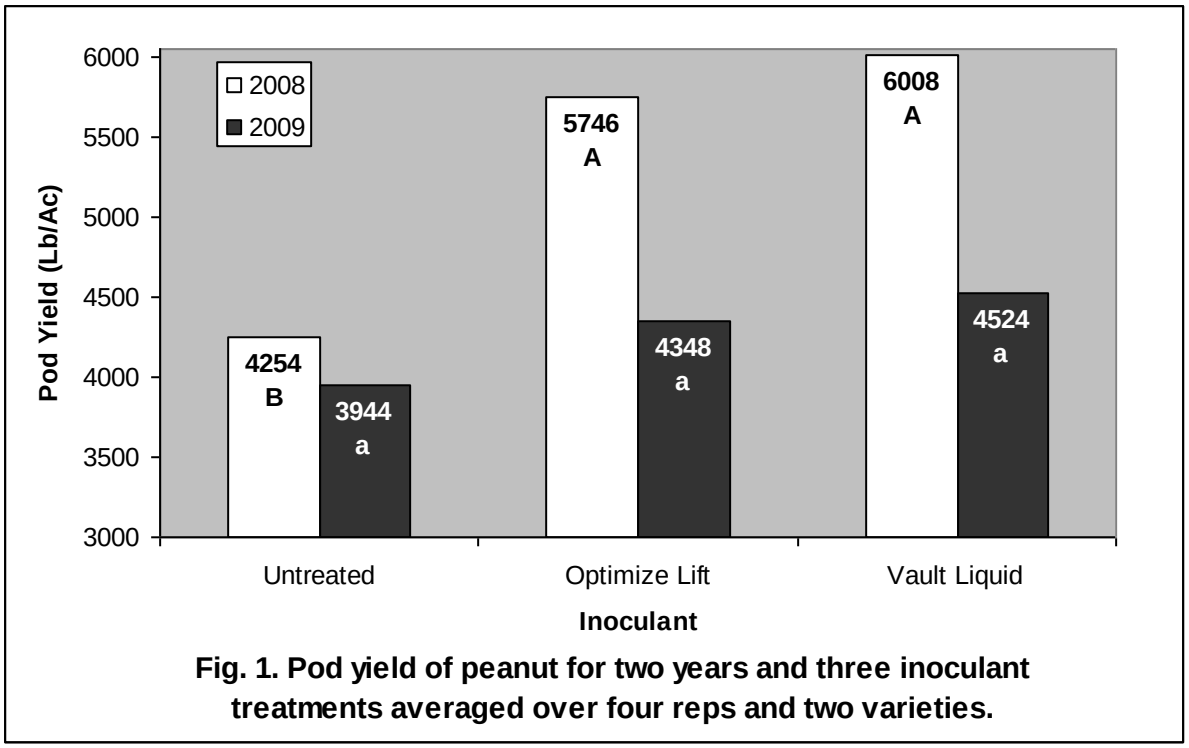


Fig. 1. Pod yield of peanut for two years and three inoculant treatments averaged over four reps and two varieties.

- Differences among yields are indicated by alphabetical notation, where a different letter indicates a statistical difference; uppercase = 2008 (LSD = 610); lowercase = 2009 (LSD = 795).

* Mention of trade names or commercial products in this publication is solely for providing specific information and does not imply recommendation or endorsement by the University of Georgia.

Another experiment was conducted to evaluate the interactive effects of adding starter fertilizer to peanuts at planting along with the application of various inoculants. This trial included Optimize Lift and Vault Liquid again, and also included Vault SP* (Becker Underwood, Ames, IA) which is a dry sterile peat carrier formulation that is sprinkled and mixed with the peanut seed and placed in the hopper box, instead of sprayed onto the seed in furrow. The liquid products had higher yields than the untreated plots in both years (Fig. 2). However, there were mixed results with the sterile peat formulation. This dry inoculant did not yield better than the untreated check in 2008 and was statistically less than the liquid products. However, in 2009 Vault SP yielded just as well as the liquid products, and much higher than the non-inoculated peanuts.

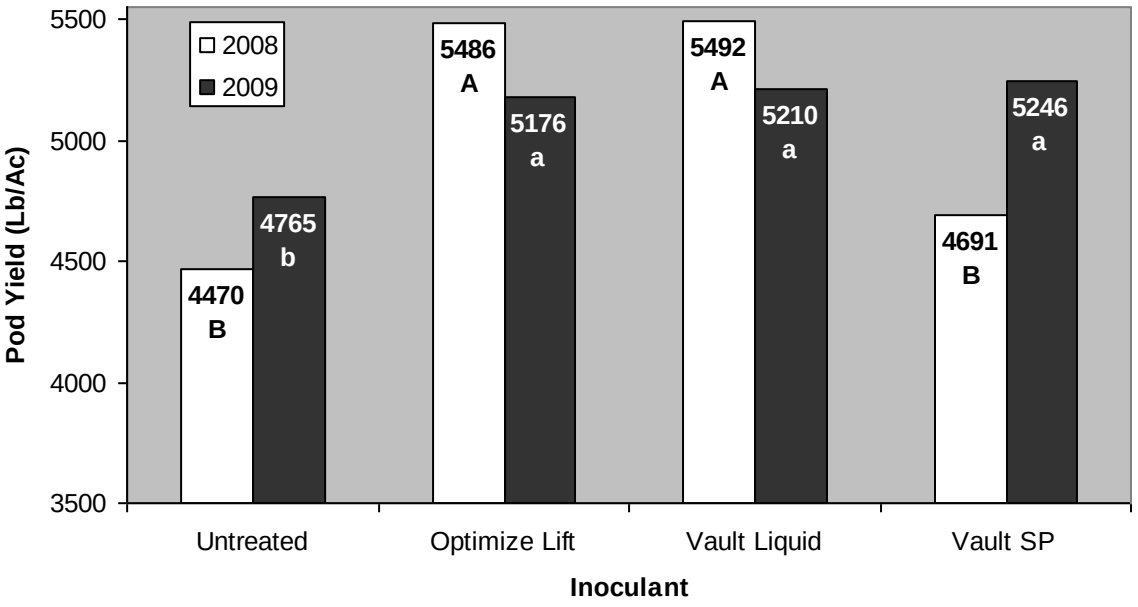


Fig. 2. Pod yield of peanut for two years and four inoculant treatments averaged over four reps and four fertilization regimes.

- Differences among yields are indicated by alphabetical notation, where a different letter indicates a statistical difference; uppercase = 2008 (LSD = 263); lowercase = 2009 (LSD = 319).

* Mention of trade names or commercial products in this publication is solely for providing specific information and does not imply recommendation or endorsement by the University of Georgia.

In addition, the inclusion of starter fertilizer impacted the nodulation and vegetative growth of peanuts, regardless of inoculant application. Samples were taken in late July, at a critical time when the plants were shifting from vegetative to reproductive growth (pegging and early pod fill). The addition of 60 lb N/ac at planting significantly reduced nodules on the plant, while increasing the amount of biomass (Fig. 3). This can be a double negative for the plant because there is less N-fixing source trying to supply N to more material, thus diluting the amount of N available to move into the pods.

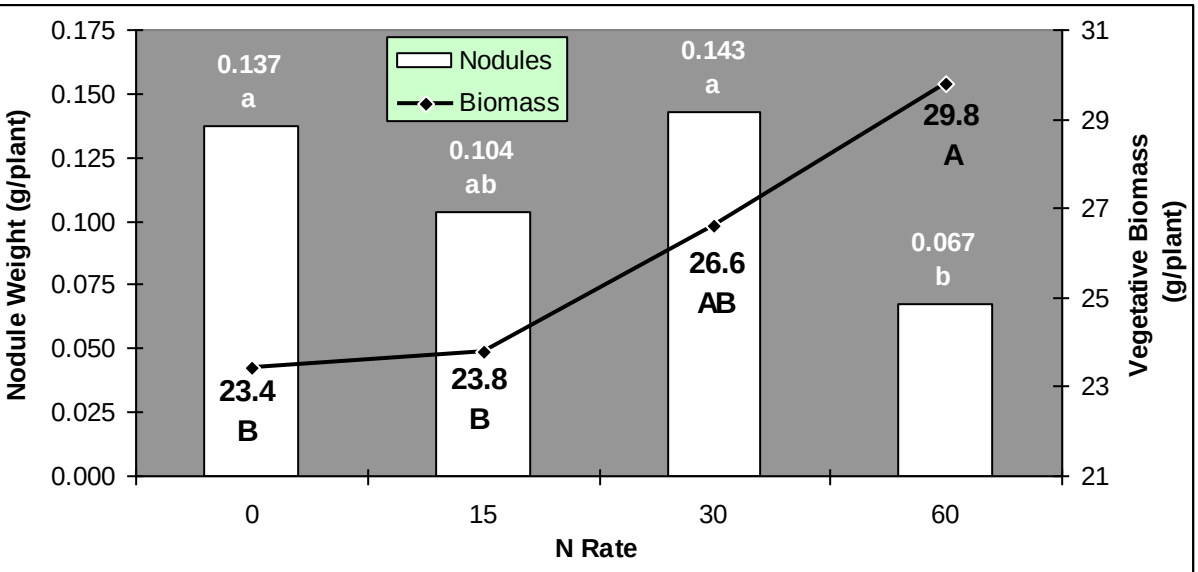


Fig. 3. Nodule weight and vegetative biomass of peanuts, Inoculant x Starter Fertilizer Trial, 2008 (p < 0.10).

- Differences among nodule weights are indicated by lowercase alphabetical notation, where a different letter indicates a statistical difference (LSD = 0.055).
- Differences among vegetative biomass weights are indicated by uppercase alphabetical notation, where a different letter indicates a statistical difference (LSD = 4.5).

The consistent results of liquid inoculant products in these studies lead to a stronger recommendation of these products over a dry hopper box formulation. However, some planters are not equipped to spray a liquid inoculant in-furrow, and in those cases, the addition of a sterile peat or other dry carrier formulation would still be a better alternative than not applying an inoculant at all. In all cases, addition of an inoculant resulted in higher net returns than not applying an inoculant in these studies. Statistical analyses has not been conducted on all economic data, however due to experimental error and variances within a field, it is often difficult to observe statistical differences small enough to account for the yield increase needed to offset the relatively low cost of inoculants. Thus, inoculants are often considered a worthwhile investment, even if statistical differences are not observed.

It is highly important to read all label instructions for care and application of inoculants prior to use. Since these products contain living organisms, they must be handled in a manner that will not kill the bacteria and thus reduce the product's efficacy.

UPDATE ON SEEDING RATES FOR PEANUT

R. Scott Tubbs, John P. Beasley, and Albert K. Culbreath.

There are many factors that can be manipulated in peanut production that can save a grower on input costs. However, there are inherent risks that are assumed depending on which and how many variables are changed. With the increasing availability of multiple peanut varieties that have very high levels of resistance to tomato spotted wilt (TSW), one area of potential savings could be in seed costs through the reduction in seeding rate and total seed planted per acre. This savings becomes increasingly important when factoring in seed size of different varieties. Larger seeded varieties cost more per acre than an equivalent seeding rate of a smaller seeded variety since seed is sold by weight and each individual seed of a larger variety weighs more than its smaller seeded counterpart.

Since seed constitutes a significant input cost, it is important to only plant the amount of seed necessary for getting a good stand of plants. Planting excessive seed is a waste of resources for several reasons. Plants will compete with each other for water, light, and physical space, so planting more seed than optimal will not always result in an increased stand since stronger plants will out-compete weaker ones causing them to eventually die. There is also an increased risk of spreading certain diseases (i.e. white mold) by increasing plant stand, which will cost even more money down the road for in-season control measures such as fungicide applications. Plus, data has shown that yield potential reaches a plateau and is not improved with a greater plant stand beyond a certain point (UGA recommendations are for a final stand of four plants per foot of row).

At the Southwest Georgia Research and Education Center in Plains, GA, a trial was conducted in 2008 and 2009 to evaluate seven peanut varieties using three different seeding rates (5.3 seed per foot [SPF], 6.0 SPF, and 7.0 SPF) on both single and twin row patterns. In both years, pod yields were higher for twin rows (2008 = 5504 lb/ac; 2009 = 4591 lb/ac) over single rows (2008 = 5020 lb/ac; 2009 = 4307 lb/ac), regardless of seeding rate or variety. An interaction occurred between seeding rate and variety for yield in both years (Figs. 1 and 2). The only variety displaying a statistical yield difference between seeding rates in 2008 was ‘Florida-07’, in which the 7.0 SPF rate yielded more than the 5.3 SPF rate (Fig. 1). For 2009, there were several varieties that had yield differences dependant on seeding rate (Fig. 2). These included ‘Georgia Green’, which had higher yields at 7.0 SPF than at 6.0 SPF and ‘Georgia-06G’ which had higher yields at both the 5.3 SPF and 7.0 SPF rates than at 6.0 SPF. The only variety that had lower yields at 5.3 SPF than at higher seeding rates was ‘Tifguard’.

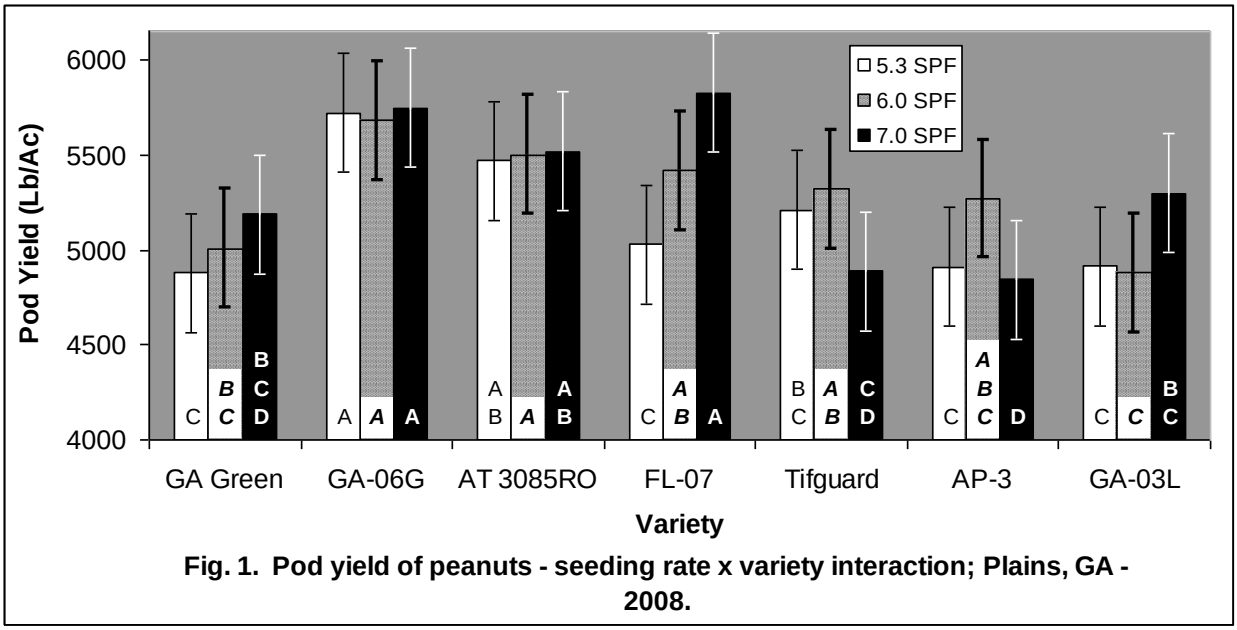


Fig. 1. Pod yield of peanuts - seeding rate x variety interaction; Plains, GA - 2008.

- Differences among varieties within a given seeding rate are indicated by alphabetical notation, where a different letter indicates a statistical difference.
- Differences among seeding rates within a given variety are indicated by error bars (least significant differences), where bars that do not overlap indicate a statistical difference.

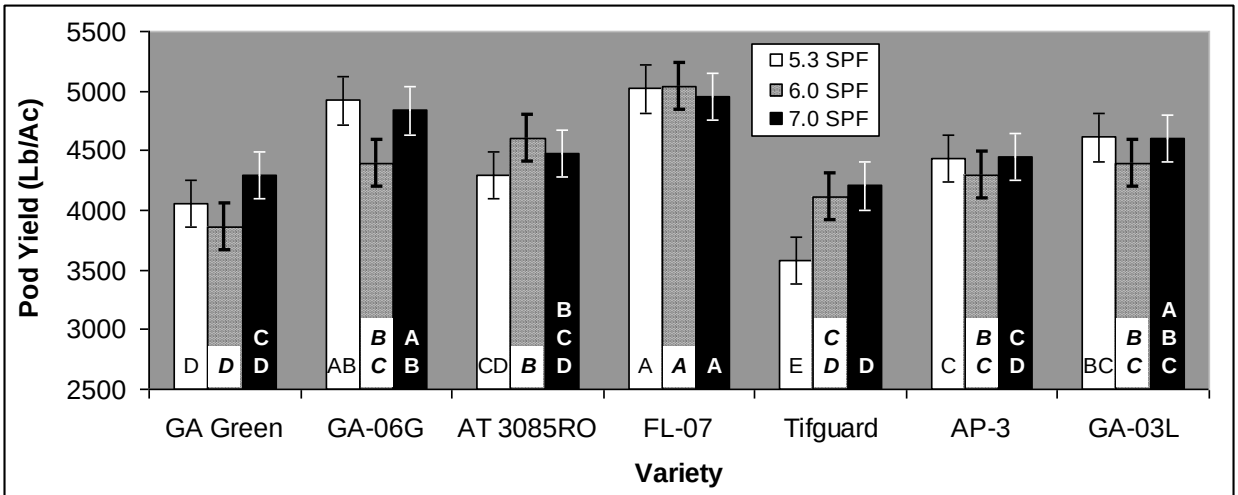


Fig. 2. Pod yield of peanuts - seeding rate x variety interaction, Plains, GA - 2009 ($p < 0.10$).

- Differences among varieties within a given seeding rate are indicated by alphabetical notation, where a different letter indicates a statistical difference.
- Differences among seeding rates within a given variety are indicated by error bars (least significant differences), where bars that do not overlap indicate a statistical difference.

There were also differences in plant stand among cultivars and seeding rates (Figs. 3-6). In both years, there appears to be a trend of lower final plant stands among larger seeded varieties than with smaller seeded varieties, since only large seeded runners drop below UGA's optimal plant stand value of four plants per foot of row with any

regularity (Figs. 3-5). Data on older varieties has shown that plants are more at risk for a TSW outbreak under the four plants per foot threshold. However, the new varieties like Georgia-06G, Florida-07, and Tifguard have such strong resistance to TSW, that even at lower plant stands, there is less incidence of TSW than older varieties such as Georgia Green (Figs. 7 and 8).

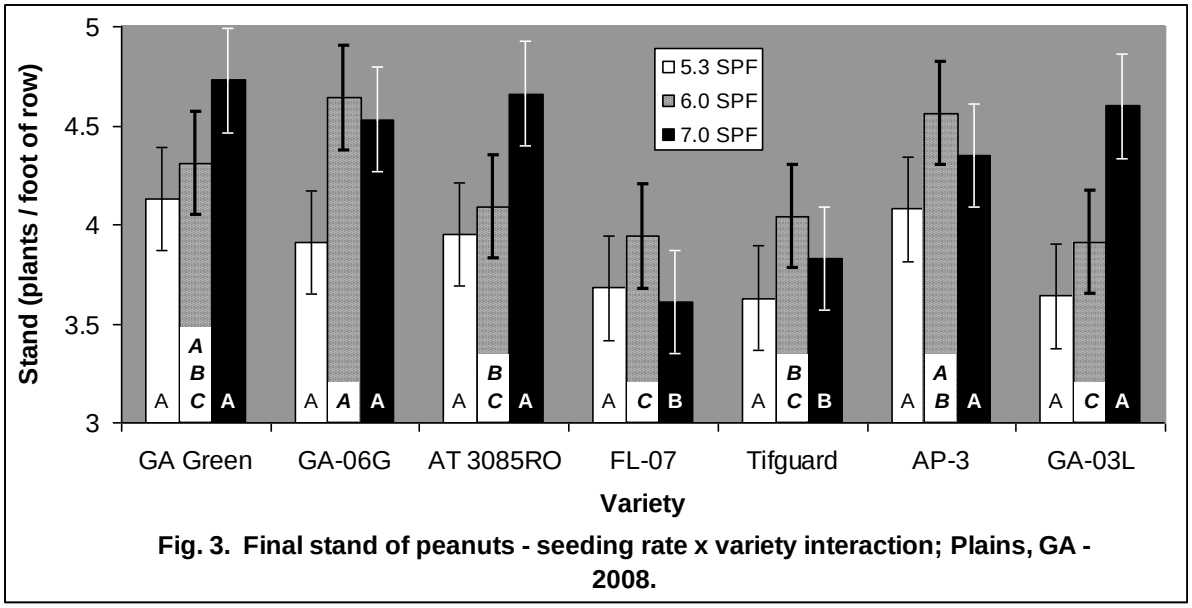


Fig. 3. Final stand of peanuts - seeding rate x variety interaction; Plains, GA - 2008.

- Differences among varieties within a given seeding rate are indicated by alphabetical notation, where a different letter indicates a statistical difference.
- Differences among seeding rates within a given variety are indicated by error bars (least significant differences), where bars that do not overlap indicate a statistical difference.

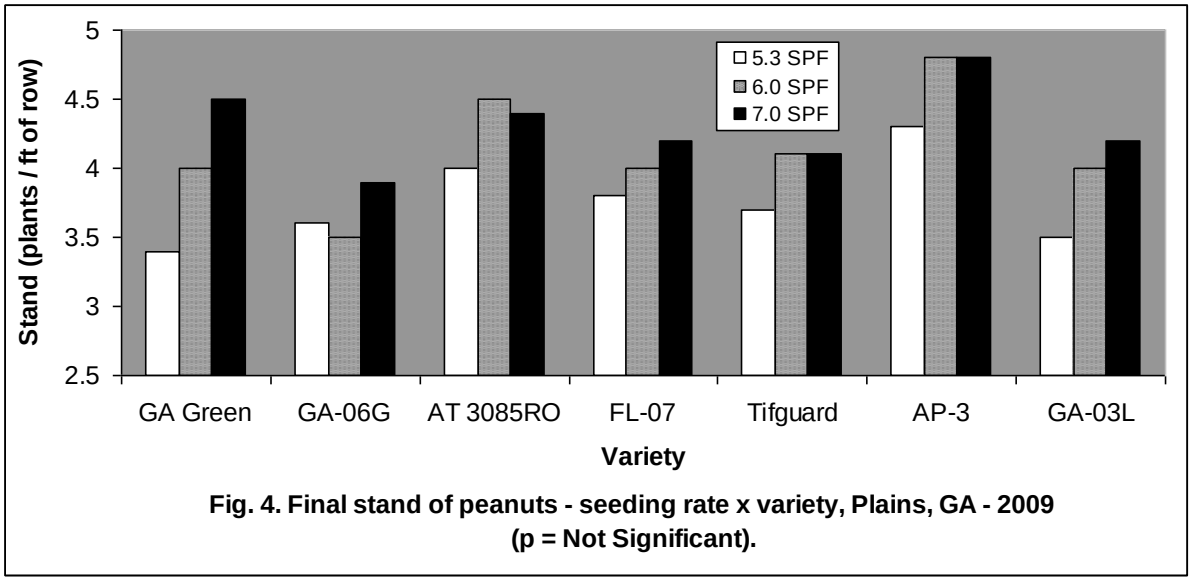


Fig. 4. Final stand of peanuts - seeding rate x variety, Plains, GA - 2009 (p = Not Significant).

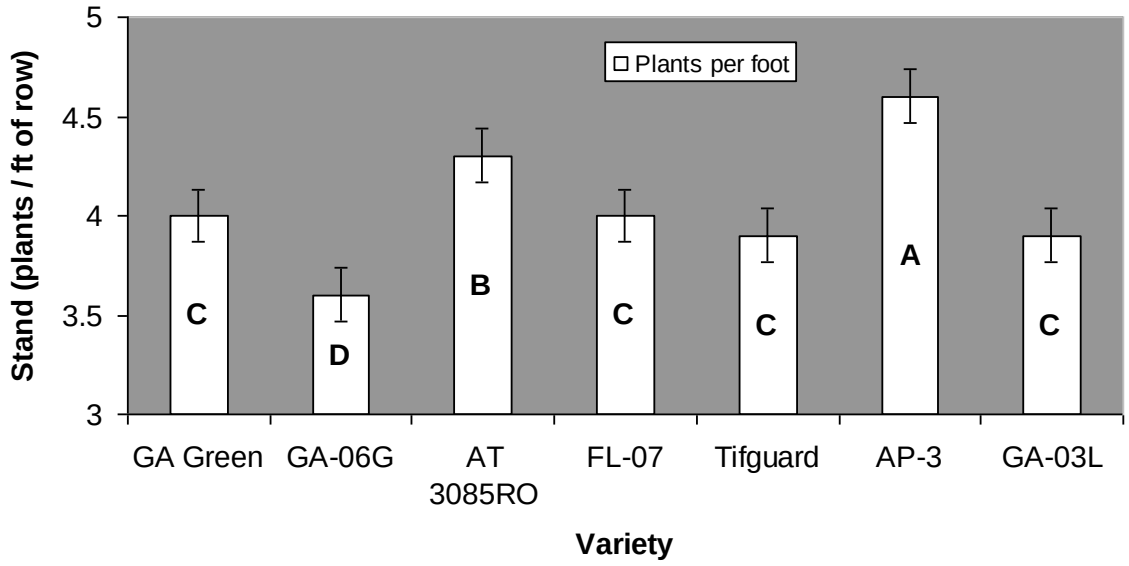


Fig. 5. Final stand of peanuts - averaged over four reps, two row patterns, and three seeding rates; Plains, GA - 2009.

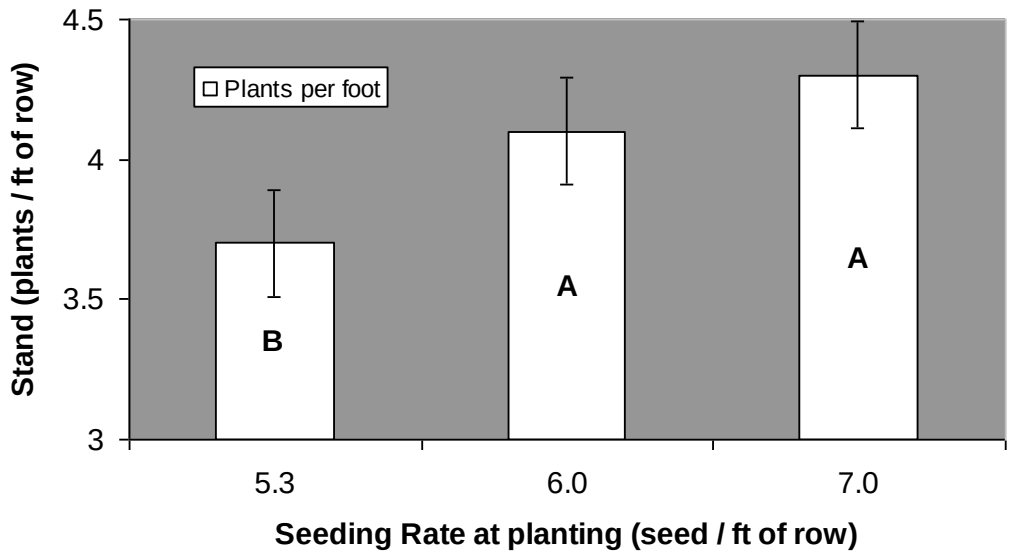


Fig. 6. Final stand of peanuts - averaged over four reps, two row patterns, and seven varieties; Plains, GA - 2009.

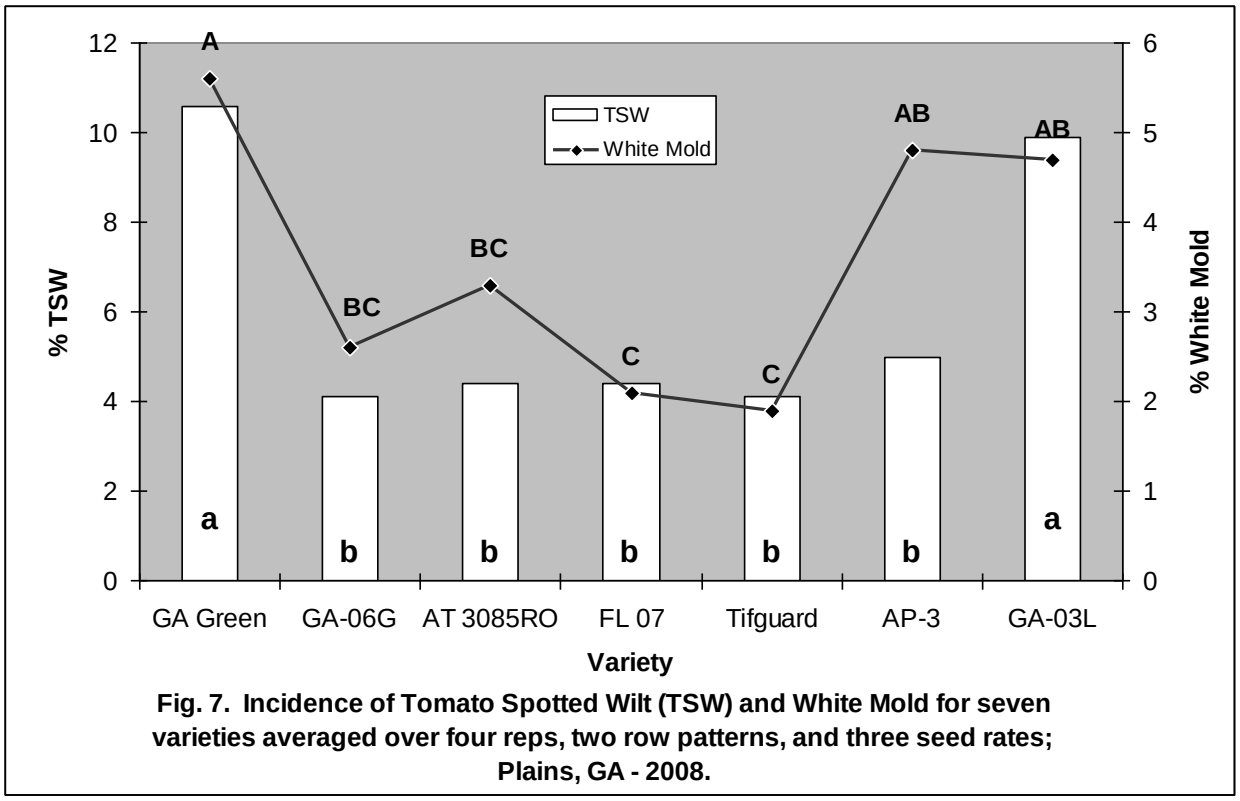


Fig. 7. Incidence of Tomato Spotted Wilt (TSW) and White Mold for seven varieties averaged over four reps, two row patterns, and three seed rates; Plains, GA - 2008.

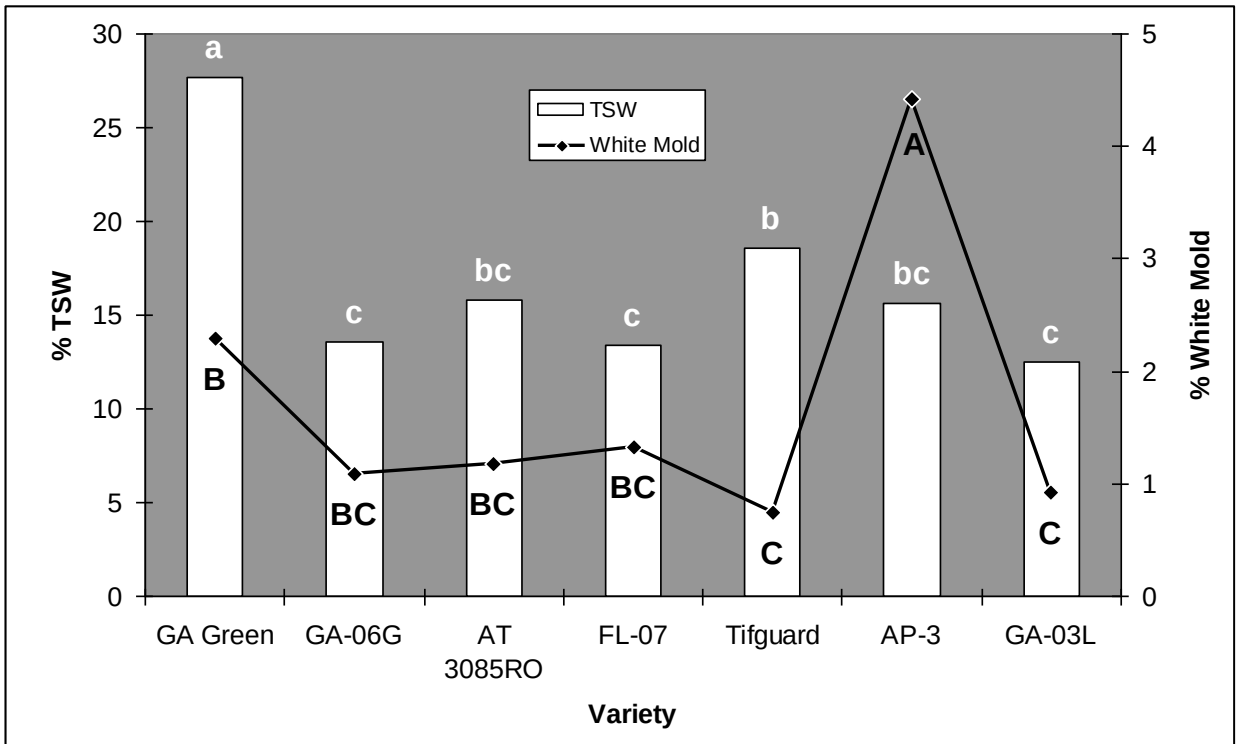


Fig. 8. Incidence of Tomato Spotted Wilt (TSW) and White Mold for seven varieties averaged over four reps, two row patterns, and three seed rates; Plains, GA - 2009.

In many cases, lower plant stands were not an indication of lower yields as the plants were able to compensate by producing more pods per individual plant. This can be seen in 2008 with Georgia-06G and 'AT 3085RO' at 5.3 SPF and with Florida-07 at 7.0 SPF (Figs. 1 and 3). This also happens with Georgia Green, AP-3, and Georgia-03L at 5.3 SPF in 2009 (Figs. 2 and 4). Yet, there were some obvious trends where plant stand and yield seemed to be well correlated. Georgia Green, Tifguard, and AP-3 exhibit similar correlations between plant stand and yield in 2008 (Figs. 1 and 2), while Georgia-06G, AT 3085RO, and Tifguard show these patterns in 2009 (Figs. 3 and 4). Although, in 2009 the final stand was lower overall for the 5.3 SPF seeding rate than the higher seeding rates regardless of variety (Fig. 6), but the only variety that had a significant drop in yield at the low seeding rate was Tifguard (Fig. 2).

In this study and in other studies in Attapulgus, Midville, and Tifton, GA that took place in 2008 and 2009, it was very common to see moderately suppressed final plant stands when dropping seeding rate to around 5 seed per foot of row at planting. But, in nearly all cases the final plant stand remained between 3.5 and 4.0 plants per foot, with numerous occasions of 4.0 plants per foot or slightly more. In addition, this minor reduction in plant stand did not cause a drop in yield in the vast majority of locations and treatments. Since large-seeded runner varieties like Georgia-06G, Florida-07, and Tifguard weigh about 20-25% more than Georgia Green, it can cost $20-$30 more per acre to plant these varieties than Georgia Green at an equivalent seeding rate (Figs. 9 and 10). A reduction in seeding rate down to about 5 seed per foot of row at planting would cost about the same as planting Georgia Green at 6 seed per foot of row (Figs. 9 and 10). Although Florida-07 and Tifguard showed reduced yields at the 5.3 SPF seeding rate in one of the two years of the trials at Plains, neither variety had reduced yields at the 5.2 SPF rate compared to higher seeding rates in two years of data at Attapulgus, nor in one year of data at Midville.

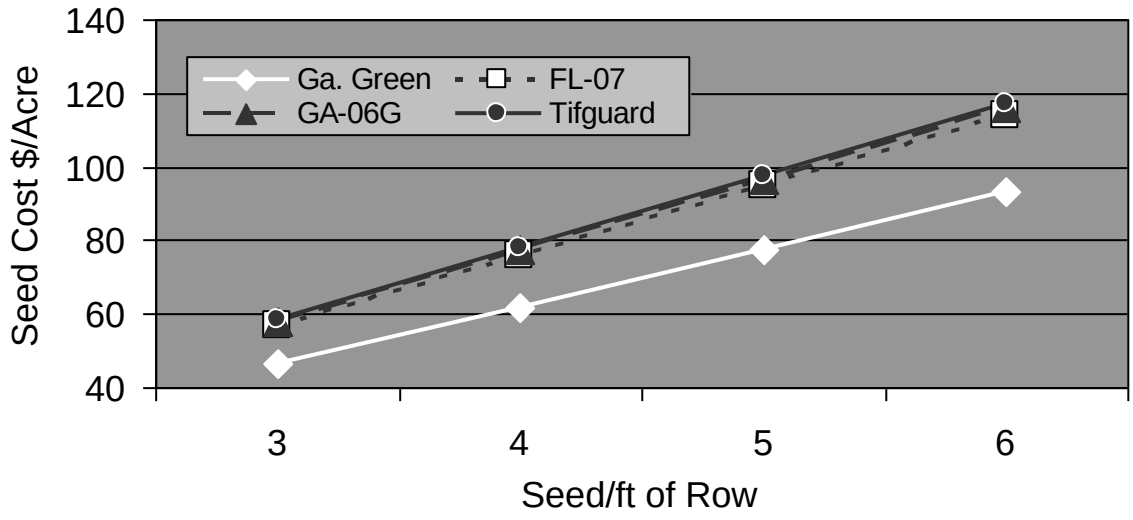


Fig. 9. Seed cost at various seeding rates for four peanut varieties, 2008.

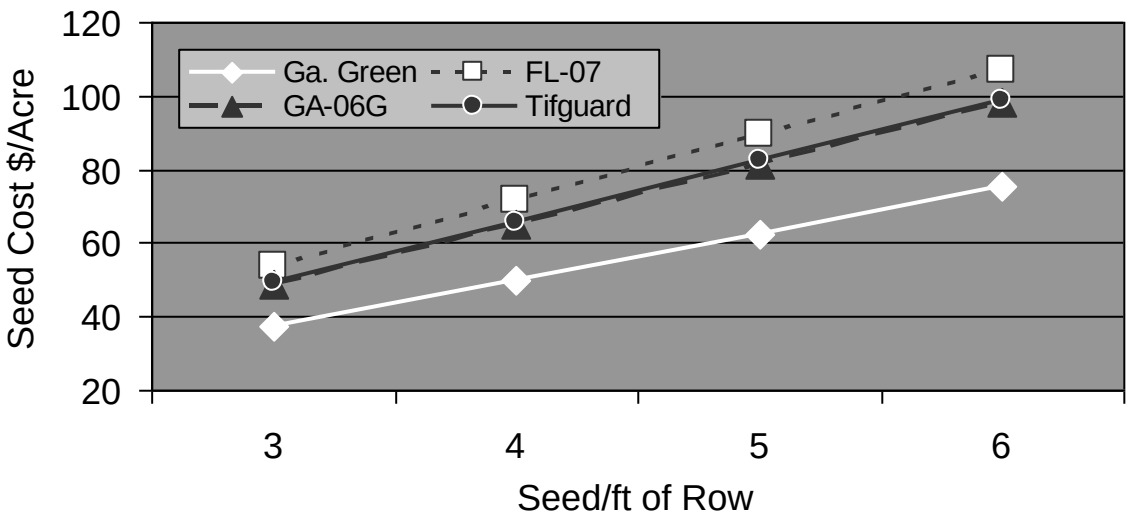


Fig. 10. Seed cost at various seeding rates for four peanut varieties, 2009

Summary

Differences in plant stands among the various seeding rates have been observed in these experiments and other trials. Higher seeding rates usually result in higher plant stands. However, final plant stands often remain near the recommended four plants per foot at seeding rates of 5.2 SPF or higher in most instances, with the exception of several specific varieties at Plains. Seeding rate also had no effect on yield for any location, except for one interaction effect with Florida-07 in 2008 and Tifguard in 2009 in which yields were reduced at 5.3 SPF compared to higher seeding rates. Therefore, in heavier soils with higher clay content, growers should be sure planting conditions are ideal and high quality seed are used when considering a reduced seeding rate for the larger-seeded runners such as Florida-07 and Tifguard. But in lighter soils with more sand and silt, all varieties have performed just as well at 5.2 SPF as at higher seeding rates (most of the supporting data for this claim is in twin row pattern).

Reduced plant stands are at a greater risk of severe TSW infection than higher plant stands when stands drop below four plants per foot of row. This should be considered when planting varieties that are more susceptible to TSW such as Georgia Green. Severity of TSW has been low in the southeast the last few years, but a more severe outbreak could potentially be devastating to susceptible varieties if they have a less than optimal stand resulting from planting a lower seeding rate. Since Georgia Green is a smaller seeded variety, planting a reduced seeding rate will not be a large savings in seed costs, which is not worth the risk. However, larger seeded varieties like Florida-07, Georgia-06G, and Tifguard which have strong resistance to TSW could result in a significant savings in seed cost without a major increased risk to TSW incidence by reducing seeding rate from 6 SPF to 5 SPF (there was no difference in

TSW regardless of seeding rate in the trials represented). The key result is achieving as close to four plants per foot of row at final stand, which should be possible when planting high quality seed with good germination at an appropriate seeding rate.

Therefore, it is recommended that Georgia Green should still be planted at 6 SPF, but newer varieties with excellent resistance to TSW may be planted at 5 SPF to keep total seed cost competitive with Georgia Green on a per acre basis. Although these results show very few instances of loss in yield potential when dropping seeding rate below 5 SPF, the potential for a reduced stand does exist which could lead to an increased risk of losses to TSW in circumstances with more severe disease pressure. Thus, it is not recommended to reduce seeding rate below 5 SPF at this time, regardless of variety planted.

CALCIUM REQUIREMENTS FOR LARGE-SEEDED RUNNER PEANUTS

Glen Harris and John Beasley

Situation – Georgia peanut growers will shift from growing a small-seeded runner variety of peanut (i.e. Georgia Green) to "large-seeded runner" varieties (i.e. Georgia-06G, Florida-07 and Tifguard) on the majority of their acreage in 2010. It is a known fact that the larger the size of the peanut seed, the higher the calcium requirement, in order to avoid "pops", pod rot and internal damage such as black heart. In addition, it is a known fact that germination of a peanut saved for seed is dependent on calcium nutrition and calcium concentration in the seed.

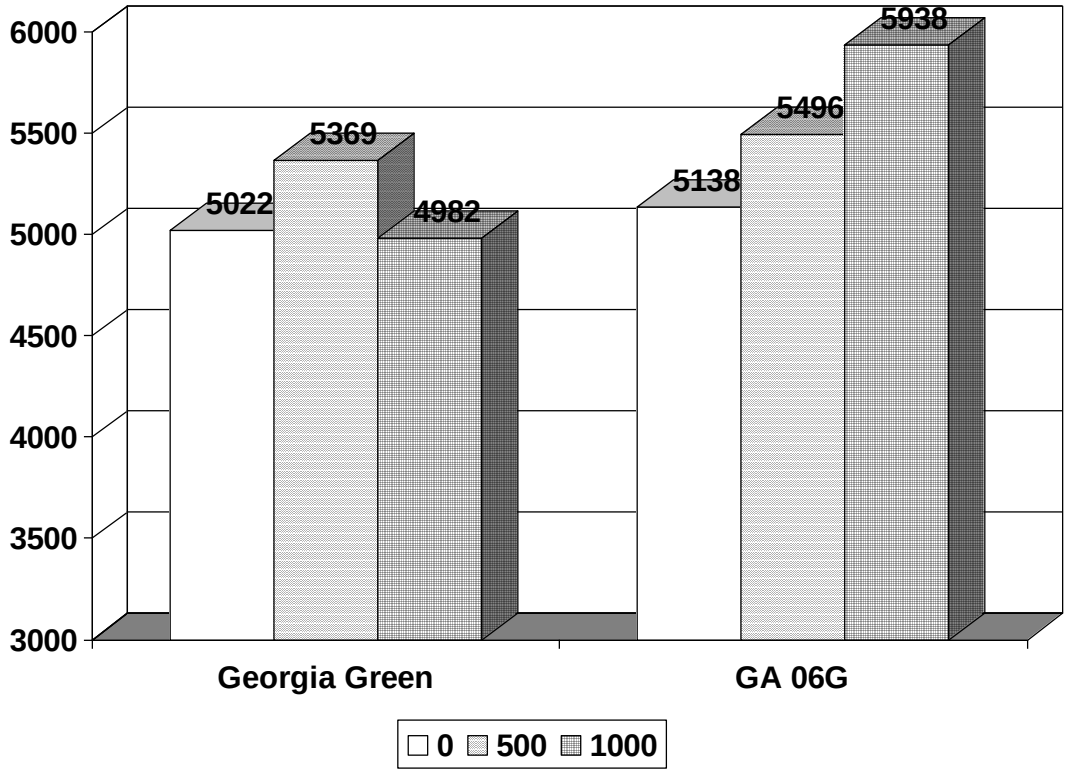
Questions – This situation has raised the following questions:

1) Is the requirement of 500 lb Ca/a and a 3:1 Ca;K ratio in the pegging zone soil sample adequate for these new large seeded runner varieties ? (Remember, most of the data used to generate this recommendation was done on FloRunner and worked for Georgia Green, which are both smaller-seeded runners.)
2) If calcium is required according to results of a pegging zone soil sample, is the 1000 lb/a gypsum recommendation adequate? Or should the 2000 lb/a rate as recommended for Virginia peanuts be used? Or something in between like 1500 lb/a?
3) Is the "lime method" of providing calcium to the pegging zone, i.e. applying lime to the pegging zone (not deep turned) just prior to planting when you need Also need a pH adjustment, adequate for these new large-seeded runners?
4) What are the calcium requirements for large-seeded runners saved for seed?
5) If the pegging zone calcium soil sample is over 1000 lb/a is gypsum or lime still required ?
6) What is the most effective and economical source of gypsum or lime for providing calcium to the pegging zone for large-seeded runner peanuts?

On farm trials and small plot research studies have been conducted the last few years designed to answer the questions above. In 2009, a number of small-plot studies were conducted at sites with varying levels of pegging zone calcium. The peanuts from these studies are still being processed for grade, germination and % calcium in the seed at this time.

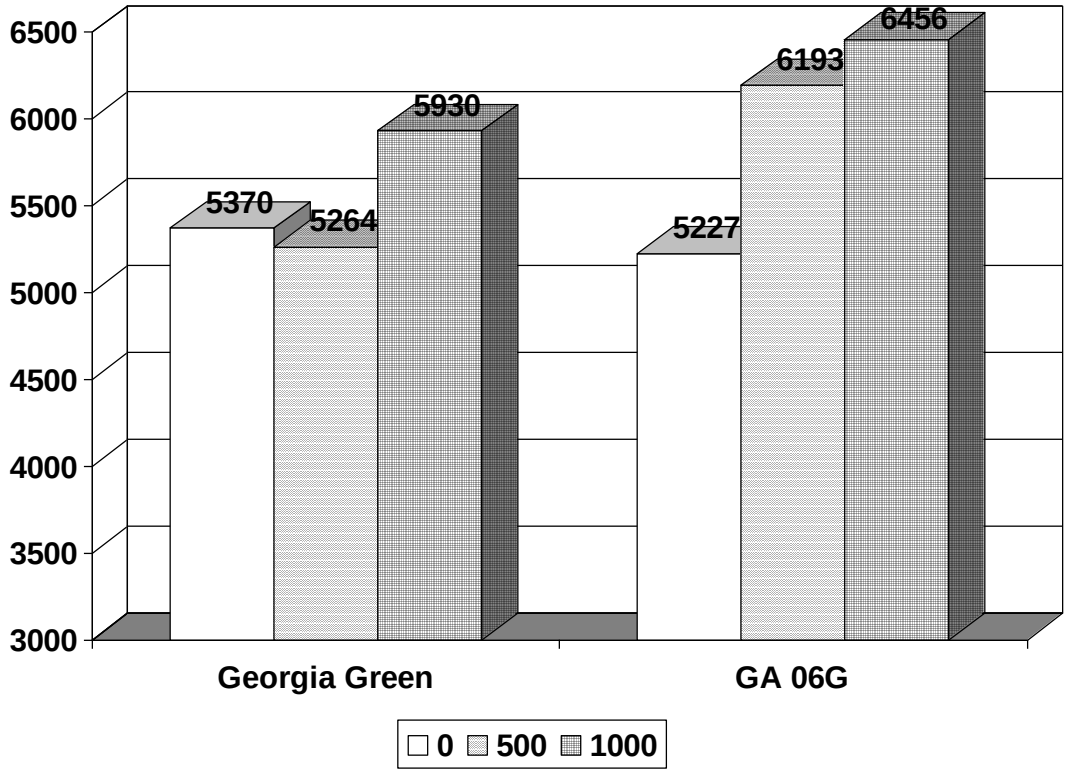
2008 and 2009 Yield Data from Rate Studies – The following graphs show results from calcium (gypsum) rate trials and are listed in order from the lowest pegging zone calcium site to the highest. Comments about each study can be found below each graph.

Peanut Ca Trial w/Julie Howe (Auburn University) - 2008
ABAC – Pegging Zone Ca 350



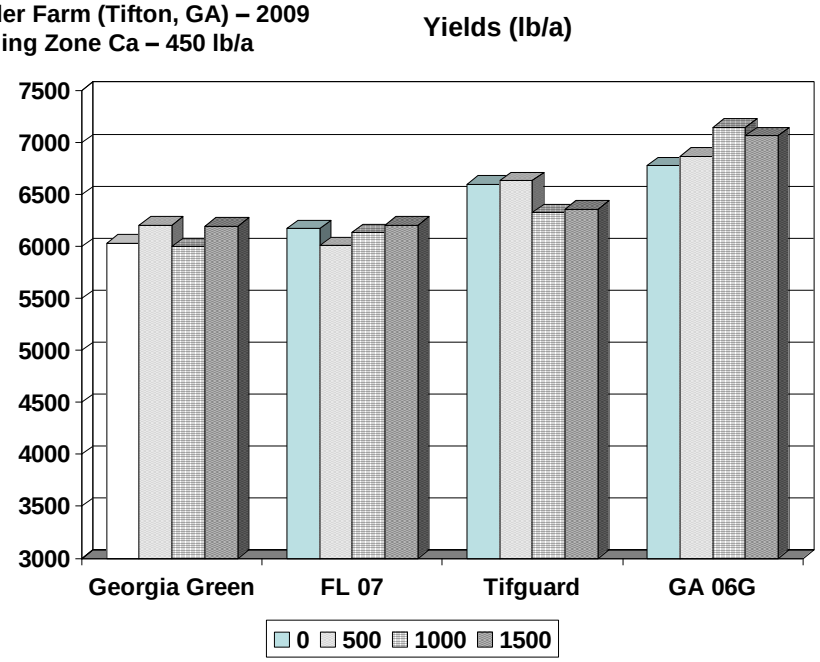
Notice that the pegging zone calcium level in this trial was 385, so well below the recommended 500 lb/a. Calcium levels this low are considered rare, i.e. if you lime to proper target pH they should be 500 or above. So this situation should be considered a worst case scenario. In addition, a 1500 lb/a gypsum treatment was not included and would have been interesting to see if the yield levels of GA 06G continued to increase, leveled off or declined. This was on a Tifton soil, dryland.

Peanut Ca Trial w/Julie Howe (Auburn University) - 2009
ABAC –Pegging Zone Ca - 350



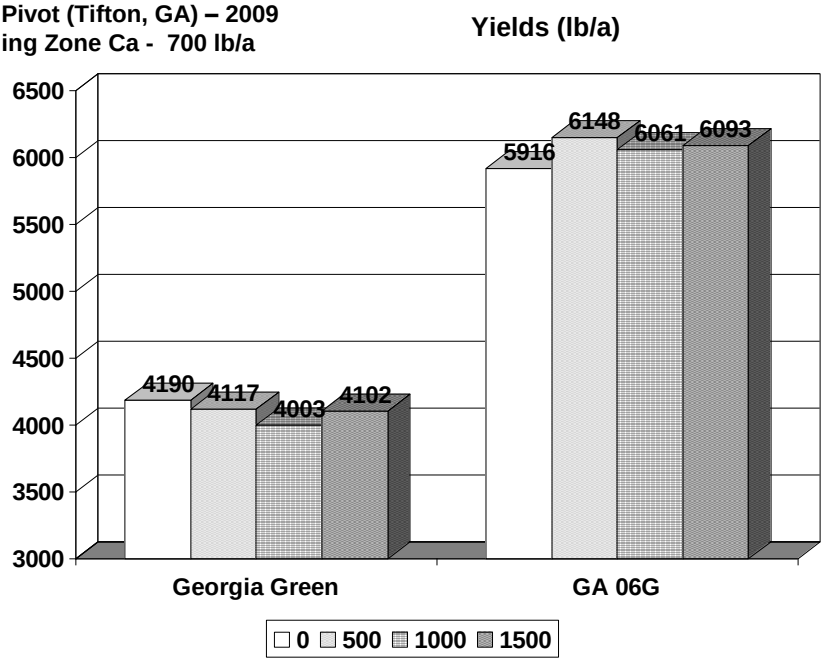
This is a repeat of the study above and notice that even the Georgia green responded up to the 1000 lb gypsum acre rate. Again, it would have been interesting to see the yield response of these varieties to 1500 lb/a of gypsum.

Calcium (Gypsum) Rate
Ponder Farm (Tifton, GA) – 2009
Pegging Zone Ca – 450 lb/a

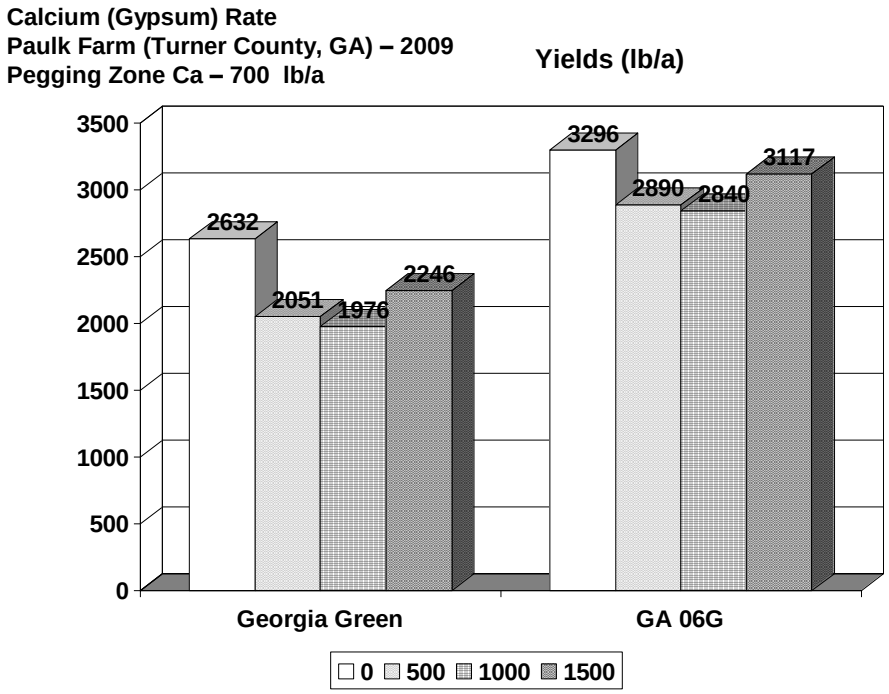


This is the only study where there was adequate space to include FL 07 and Tifguard in addition to GA 06G. Note that Georgia Green, FL07 and Tifguard did not seem to respond to increasing gypsum rates. However, GA06 G did seem to respond. This is on a Norfolk soil type, irrigated.

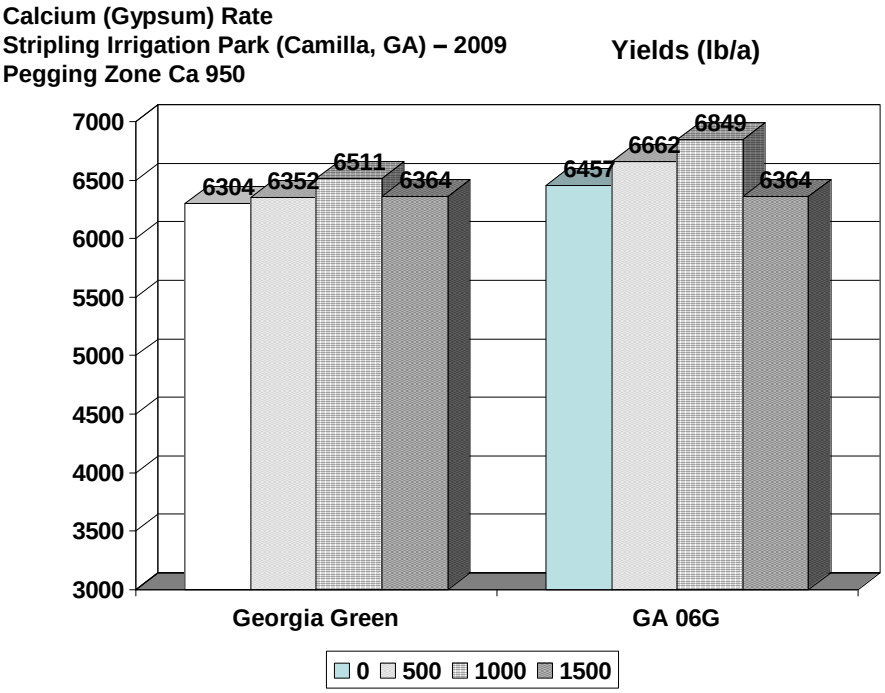
Calcium (Gypsum) Rate
RDC Pivot (Tifton, GA) – 2009
Pegging Zone Ca - 700 lb/a



Based on this data, the requirement of 500 lb/a pegging zone calcium appears to be adequate, i.e. it may not be required to raise it to 700 lb/a as previously thought. This is a Tifton soil, irrigated.



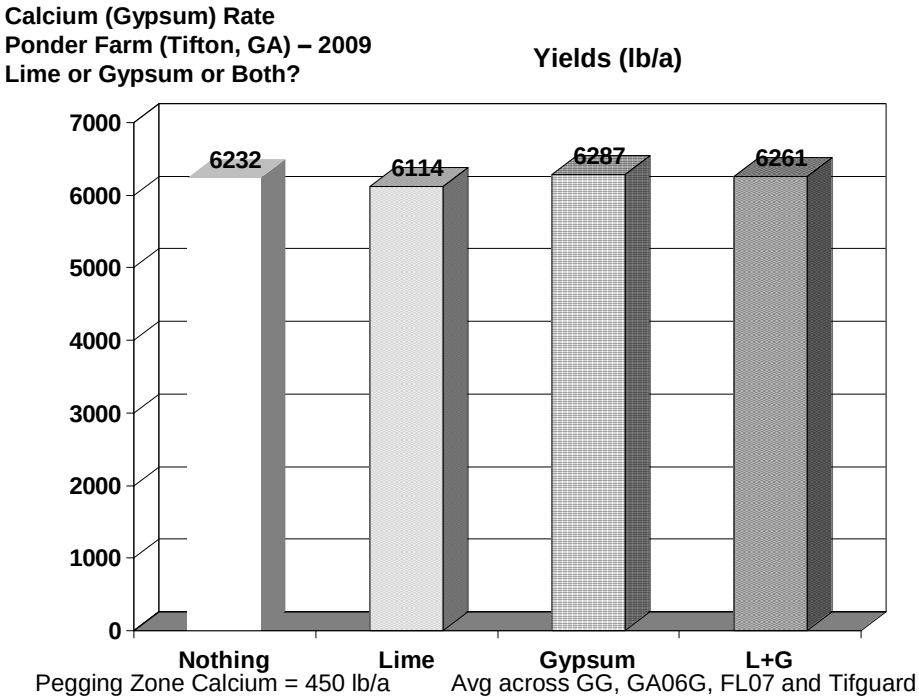
This another site with 700 lb/a pegging zone calcium like the one above, also on a Tifton soil, but this is a dryland site. Notice the yield level is about half as much as the irrigated site above.



This site had the highest pegging zone calcium level at 950 so no response was expected. However, it appears that both Georgia Green and GA 06 G had a yield response up to the 1000 lb/a gypsum rate. This may be explained due to the soil type on this site being a Lucy deep sand. In addition, notice that he 1500 lb/a gypsum rate did not result in increase yield and in fact decreased yield slightly. One possible explanation for this decrease in yield at the highest rate of gypsum may be a slight potassium and or magnesium deficiency caused by the increase in calcium from the gypsum. This will need to be verified by taking plant tissue samples in the future.

Peanut seed from all of the rate studies above is being analyzed for grade, germination and % calcium in the seed.

Lime vs. Gypsum – The study below was conducted to look at the affect of lime applied at planting vs. gypsum applied at bloomtime. Another treatment included both lime applied at planting followed by gypsum at bloomtiome. An untreated check was also included.



Note that this study was conducted on the Ponder farm site which is a Norfolk soil, irrigated with a 450 lb/a pegging zone calcium level. There were no significant yield differences when averaged across the four peanut varieties, indicating that both pH and pegging zone calcium levels were already adequate.

Peanut seed from every plot of this study is also being analyzed for grade, germination and % calcium in the seed.

Calcium source studies – Results from calcium source studies conducted in 2009 are still being analyzed. Two locations, the RDC pivot and the Paulk Farm, one irrigated and one dryland both with pegging zone calcium levels of around 700 were used. Gypsum sources such as USG 500, PCS "wetbulk" and Agrical (FGD or "smokestack" gypsums were compared, as well as lime at planting.

In addition, a study at the Stripliig Irrigation Park site was also conducted to look at liquid calcium thiosulfite applied at 30 gal/a. This material was applied to simulate being applied through the pivot in 2 or 3 applications during bloom (2 applications of 15 gal/a or 3 applications of 10 gal/a each). This data is also currently being analyzed.

2010 PEANUT DISEASE UPDATE

Bob Kemerait, Tim Brenneman, and Albert Culbreath

Effective management of diseases that affect the peanut crop is not only essential to peanut production in Georgia; it can also be quite costly. Therefore, it is imperative that growers carefully plan an effective strategy to manage diseases that includes the use of crop rotation, selection of more-resistant varieties, selection of cost-effective fungicide programs, and other factors that are a part of an overall integrated pest management program. The best management program is not necessarily the least expensive but rather is the program that gives the best return on investment to the grower. This section is written to provide growers with a detailed overview of many aspects for disease management in 2010.

Highlights from 2009

1. Losses to tomato spotted wilt were estimated to be approximately 0.5%; the lowest estimated loss since 1990.
2. White mold was particularly severe in 2009. Very warm soil temperatures early in the season led to initial development of the disease that was fueled later in the season by abundant rainfall.
    a. The most commonly asked questions about disease control in 2009 were with regards to management of white mold.
    b. Underground white mold, without apparent above-ground symptoms, was devastating in some fields last season.
3. Leaf spot, especially late leaf spot, became problematic in a number of fields late in the 2009 season. Abundant rainfall coupled with subsequent delays in fungicide applications were the primary causes for this situation.
4. "Prescription" fungicide programs with 4, 5, or 7 fungicide applications continued to be effective when used in fields with appropriate risk (based upon Peanut Rx). In 2010, Peanut Rx prescription fungicide programs are likely to be supported by Syngenta Crop Protection, Nichino-America, Arysta LifeScience, BASF, and Bayer CropScience.
5. Applying fungicides at night to manage soilborne diseases continues to prove an effective tool for management of diseases such as white mold and Rhizoctonia limb rot.

Fungicide Notes for 2010 from lessons in 2009

1. Generic tebuconazole products (tebuconazole is the active ingredient in Folicur) were among the most popular fungicides used in 2009. The popularity of tebuconazole last season was certainly enhanced by the lower cost of an application versus the cost of other products. **In 2010, growers should note the following about tebuconazole:**
    a. The cost of tebuconazole fungicides will keep them popular with growers.

   b. Tebuconazole remains an effective fungicide for management of soilborne diseases and, when tank-mixed with another fungicide, for control of leaf spot diseases.
   c. Overuse of tebuconazole without regards to fungicide resistance management will likely lead to a continued decline in the efficacy of this important fungicide.
   d. Tebuconazole is often an effective tool but is not the best fungicide available for the management of any of our important diseases. In selecting an appropriate fungicide, growers should weigh the cost of tebuconazole against the value of enhanced disease control with other fungicides.
2. Proline (prothioconazole) applied in-furrow was an effective management tool for Cylindrocladium black rot (CBR) in a commercial field in Effingham County. Though Proline did not eliminate the disease, it did significantly reduce the severity in treated plots and did lead to increased yields.
3. Use of Proline should be a key component of programs designed to manage CBR. Use of Provost is an effective compliment to early use of Proline.
4. Elast (dodine) was first used by commercially by peanut growers for management of leaf spot diseases in 2009. Additional research confirms that Elast is an effective, protectant fungicide for use against leaf spot. However, Elast may not be quite as effective as other leaf spot fungicides if used season-long. It is now recommended that Elast should be used earlier in the season and replaced by fungicides with some systemic activity in the mid- and late- season applications.
5. Eminent 125SC (tetraconazole) is a new fungicide that is labeled for use in management of leaf spot diseases. Research plots in 2009 confirmed that Eminent is an effective fungicide for management of leaf spot diseases. Eminent 125SC will be sold as a co-pack with Echo (chlorothalonil) for leaf spot management in 2010.

Management of peanut root-knot nematodes in 2010

1. Peanut root-knot nematodes are frequently under-managed in Georgia, either because the symptoms are not recognized or because growers are reluctant to take the steps needed to ensure adequate control.
2. Rotation with a crop such as cotton (not a host for peanut root-knot nematode) is a very effective management tool.
3. Growers who plant the new peanut variety ‘Tifguard’ can expect excellent control of nematodes.
4. Fumigation with Telone II, perhaps followed by a pegging-time application of Temik15G, is our most aggressive treatment to manage peanut root-knot nematodes.
5. Temik 15G, applied both at planting and at-pegging stages, is a critical tool in many areas.
6. Recent research on the biological nematicide “NemOut” suggests that this product is also efficacious in the management of peanut root-knot nematodes. It

can be applied both in the furrow at planting time and at pegging time. One recommended use of NemOut would be to use 0.3 lb/A at planting followed by Temik 15G, 10 lb/A, at pegging time.

Management of Peanut Diseases

Although a few growers may have experienced severe outbreaks of tomato spotted wilt in their fields in 2009, this troublesome disease was of minimal impact in peanut fields across the Southeastern US. It is estimated that that the incidence of tomato spotted wilt on peanut last season in the Georgia-Florida-Alabama region was about 0.5%, the lowest severity since loss estimates were initiated in 1990. Despite low levels of spotted wilt in 2006, 2007, 2008, and 2009, growers should not become complacent in management of this viral disease. Without taking proper management precautions, growers could experience heavy losses to spotted wilt in 2010. Peanut Rx, the peanut disease risk index developed through collaborative efforts at the University of Georgia, the University of Florida, and Auburn University, has been updated for 2010 and offers growers strategies to minimize risk to not only spotted wilt, but leaf spot, Rhizoctonia limb rot, and white mold as well. The complete 2010 Peanut Rx is presented elsewhere in this Peanut Update.

White mold was the most important disease of peanuts in Georgia in 2008 and again in 2009. In 2009, white mold began to develop in June and caused great concern for many growers and considerable losses in some fields. Many of the questions from peanut growers to the Cooperative Extension offices in July and throughout August dealt with management options for this disease. The key to the outbreaks of white mold in 2008 and in 2009 were very warm temperatures in June which fueled the disease. Warm soil temperatures are an important factor in the development of white mold. Rainfall and irrigation certainly increase the potential risk and severity of this disease; however white mold can cause much damage even in a drier year when warm soils are common. In drier year, white mold is likely to cause most of its damage to the pods and pegs lying below that ground as it may be too dry in the above-ground canopy.

Although many growers expressed concern about white mold and potential damage to their fields last season, it seemed that most fungicide programs that included an appropriate soilborne component did relatively well. Where white mold was especially severe, use of fungicides such as Provost (tebuconazole + prothioconazole) and flutolanil products (Artisan and Convoy) seemed to provide exceptional control. In managing white mold, note the use of the word “managing” and not “controlling” white mold, growers should not expect 100% effectiveness from any program. It is estimated that 70% control is all that can be expected in the best of situations and 50% control may be all that can be achieved when environmental conditions and factors such as poor crop rotation increase the risk to the disease in a field.

It is extremely difficult to protect a peanut crop from isolated “hits” of white mold in any field. Depending upon the crop rotation in the field, the variety of peanut planted, and the environmental conditions (e.g. weather) during the growing season, a field may

have many isolated hits of white mold or fewer hits. An effective fungicide program (to include use of an appropriate fungicide applied at the proper timing with an appropriate spray volume) should minimize the spread of white mold in a field. A grower should be concerned if he notes "runs" of white mold across the field that are several feet in length, or longer, despite use of a soilborne fungicide.

Peanut growers will have the opportunity to use some new and/or updated tools again in 2010 to further their battle against diseases and nematodes.

1. "Day versus Night spraying": Research began in 2007 and was continued in 2008 and 2009 (both in small plots and in large, on-farm studies) to assess the benefits and potential consequences of spraying fungicides at night for control of soilborne diseases. Because the peanut leaves "fold up" when it is dark, thus opening the interior of the canopy, it is thought that fungicides applied at such time would have better chance of reaching the crown of the plant. For management of soilborne diseases like white mold and Rhizoctonia limb rot, the crown of the plant is targeted for optimum control. Also, it is thought that by spraying fungicides directly into the crown of the plant, the fungicide residues are protected to some degree from sunlight, thus reducing photodegradation and extending the period of efficacy. Below is a summary of findings from the University of Georgia with regards to spraying at night.
    a. Although results were not as dramatic in 2008 as they were in 2007, results were similar in both seasons. Control of white mold can be significantly improved by spraying the peanuts at night, there is no significant reduction in leaf spot control, and yields can be significantly improved with night sprays.
    b. Improvement of white mold control is more evident in non-irrigated plots than in irrigated plots when fungicides are applied in darkness, though there is likely to be benefit in both situations.
    c. Spraying in the early morning hours before dawn tends to offer slightly better results than in spraying in early evening. It is believed that the dew in the early morning further aids in the relocation of the fungicide.
    d. It is believed that applying fungicides at night will either maintain yields and control of white mold and leaf spot diseases or improve disease control and yields as compared to daytime applications. There is believed to be little risk to the grower by applying fungicides at night, other than loss of a sound sleep!
    e. Note: Only fungicides applied for control of soilborne diseases should be considered for application at night. Fungicides applied only for control of leaf spot diseases and rust should continue to be applied during the day.
    f. **Final note: growers must ensure that any fungicide or combination of fungicides applied at night has systemic activity against leaf spot diseases.** Without systemic activity (e.g. a mix of Convoy and chlorothalonil which does not have systemic activity) applying a fungicide at night could lead to a reduced level of leaf spot control. In the previous

example, a more appropriate combination would be Convoy a fungicide such as Stratego, Headline, Topsin M + chlorothalonil, Tilt/Bravo, etc.

2. The 2010 "PEANUT Rx" Disease Risk Index is now available and has been thoroughly reviewed and revised as needed by researchers, breeders, and Extension specialists from the University of Georgia, the University of Florida, and Auburn University. The only change deemed necessary was an update of the risk points and varieties that were included in the Index. All other points/categories remained unchanged from 2009. Specific changes include:
    a. Risk index points for Georgia-06G for both leaf spot and white mold were increased from "20" to "25" points based upon continued research. (Read: further research has demonstrated that Georgia-06G is not quite as resistant to leaf spot and white mold as previously thought.
    b. Risk points for Georgia Greener (white mold) were reduced from "25" to "20".
    c. A footnote noting resistance to CBR now includes Georgia-02C and Georgia Greener; Tifguard is no longer considered to be resistant except perhaps where peanut root-knot nematodes and CBR occur together.
3. "Prescription Fungicide Programs", i.e. specific disease management programs with an increase or decrease in fungicide applications based upon the 2010 "PEANUT Rx", continues to gain support from the agrichemical industry. In 2010, Syngenta Crop Protection (Abound, Bravo WeatherStik, Tilt/Bravo), Nichino (Artisan, Convoy), Arysta LifeScience (Evito), BASF (Headline) and Bayer CropScience (Provost) will support prescription programs (4, 5, and 7 applications) for fields determined to be at low, moderate, or high risk according to PEANUT Rx. Prescription programs using fungicides not from Syngenta or Nichino can also be used successfully by growers; however they would not be endorsed or supported by any company.
4. PROLINE 480SC (prothioconazole) from Bayer CropScience has received a label for use as an in-furrow fungicide on peanut. PROLINE (5.7 fl oz/A) is a promising component of a complete fungicide program to reduce the impact of Cylindrocladium black rot (CBR) in a field. With the availability of PROLINE, a good integrated pest management program for growers who wish to manage CBR is to
    a. practice good crop rotation,
    b. consider planting a variety with some resistance to CBR such as Georgia-02C and Georgia Greener,
    c. use PROLINE, 5.7 fl oz/A in-furrow, at planting, followed by
    d. 4-block program of PROVOST or at least use of a fungicide program that offers suppression of CBR (e.g. Folicur, Abound, or Headline).
5. Although they were released in 2007, "newer" fungicides PROVOST (triazole fungicide mixture) and Evito 480SC (strobilurin fungicide) will continue to become more familiar to peanut growers this season as they join Abound, Folicur, Headline, Artisan, and a number of generic tebuconazole products for management of leaf spot and soilborne diseases. Arysta Life Science, maker of EVITO, has also labeled EVITO-T for the 2009 growing season. EVITO-T is a premix of fluoxastrobin (EVITO) and tebuconazole. Research data and rate

information on this product is limited at this time, but should become more available as the season progresses.

6. ELAST 400F (dodine) has long been important to pecan growers but has only recently received a label for use in peanut production. In preliminary field trials, ELAST (15 fl oz/A as a stand-alone product and 12.8 fl oz/A tank-mixed with products such as Folicur 3.6F) appears to be an effective fungicide for the control of leaf spot. Like chlorothalonil, ELAST is a protectant fungicide and must be applied before disease occurs. ELAST is in a chemical class different from other peanut fungicides and thus could also be a useful tool in fungicide resistance management.
7. QUASH (metconazole) is a new fungicide for peanut labeled by Valent. Although QUASH is an effective fungicide for management of leaf spot diseases, it is unlikely that much will be used on peanuts in Georgia.

CROP ROTATION

Key point for 2010: Although soybeans may be a popular crop for growers again in 2010, rotating soybeans with peanuts could help to increase severity of Cylindrocladium black rot (CBR), peanut root-knot nematodes (*Meloidogyne arenaria*) and will be of little-or-no benefit in the management of white mold and Rhizoctonia limb rot.

The practice of good crop rotation has always been at the foundation of optimum disease management in peanut, affecting not only nematodes and soilborne diseases, e.g. white mold, Rhizoctonia limb rot, and Cylindrocladium black rot, but leaf spot diseases as well. For this reason, Extension specialists at the University of Georgia stress the importance of avoiding planting peanuts in the same field more often than once every three years and rotating with a grass crop, e.g. bahiagrass or corn, if at all possible.

Since the recent change in the Peanut Farm Program, peanut farming in Georgia has expanded into “non-traditional” production areas in the southeastern portion of the state. Growers in this area frequently ask “Can I grow peanuts on my land in back-to-back seasons as I have not grown them here before?” The simple answer is, of course, you can plant peanuts on your land whenever you want to. However, even growers who are planting peanuts on “new peanut ground” should be discouraged from back-to-back peanuts if possible. Reasons for this include:

1. Many peanut growers around the state would love to have access to “new peanut ground” as populations of pathogens attacking the crop should be initially low. Therefore, it does not make much sense to lose this competitive edge in pursuit of the short-term goal of growing two or three crops of peanuts in succession.

2. Many new peanut growers are producing peanuts on land that has been cropped to cotton in recent years. Although cotton is not affected by the peanut root-knot nematode, early or late leaf spot, or Cylindrocladium black rot (CBR), and is only

slightly affected by white mold, it is susceptible to diseases caused by *Rhizoctonia solani*. It is likely that despite previous cropping in a field, there will be significant populations of *R. solani* and perhaps smaller populations of *Sclerotium rolfsii* (white mold) in the field when peanuts are first planted. (This was observed in a test plot in Lanier County in 2004.) Without effective crop rotation, these populations may increase quickly.

3. In 2005, we observed an outbreak of CBR in a field in southeast Georgia planted for two consecutive years to peanut, but had not been planted to peanut at any other time. Earlier crops of soybean had introduced this disease to the field and back-to-back years of peanut had intensified the problem.

One of the greatest benefits of crop rotation is that it increases the effectiveness of all disease management programs. Effective crop rotation takes some of the "pressure off" of a fungicide program to minimize the impact of disease. Any fungicide program will be more effective where good crop rotation is practiced. In some situations, fields that are well rotated will require fewer, or at least less expensive, fungicide applications by the grower.

Recommendations from the University of Georgia for crop rotation and peanut production include the following:

1. Avoid planting peanut in the same field more than once out of every three years. Longer rotations, for example once every four years, are even better.

2. The best crops to rotate with peanut are grass crops, such as corn, sorghum, and bahiagrass. These crops will help to reduce the severity of diseases caused by Rhizoctonia solani, as well as CBR, white mold, and leaf spot diseases. Although corn and sorghum are alternate hosts for the peanut root-knot nematode, they are less affected than peanut is. Therefore, planting corn and sorghum should help to reduce populations of peanut root-knot nematode, though perhaps not as fast as when a non-host such as cotton is planted. Bahiagrass is susceptible to the lesion nematode, which can reduce the pod brightness important for the green peanut market.

3. Cotton is a very good rotation crop with peanut and should help to reduce the severity of white mold, leaf spot diseases, and CBR on future crops. Cotton is not a host for the peanut root-knot nematode, so this will be a beneficial effect as well. Cotton is a host for *Rhizoctonia solani*, so diseases caused by this pathogen will remain a concern in peanut-cotton rotations, especially in conservation tillage where crop debris remains on the surface.

4. Soybeans, other leguminous crops, and many vegetable crops are not preferred for rotation with peanut. Although such rotations are likely to reduce the severity of leaf spot diseases, they may not reduce the severity of white mold,

Rhizoctonia limb rot, the peanut root-knot nematode, or, in the case of soybean, CBR.

DISEASE MANAGEMENT IN 2010

Tomato Spotted Wilt. Although tomato spotted wilt was not severe in 2006, 2007, 2008 and 2009 in most fields, growers must remain vigilant in the management of spotted wilt and should use the PEANUT Rx as a guide for minimizing risk. Growers may also want to plant at least a portion of their acreage to the newer varieties that have resistance to spotted wilt that is greater than that of Georgia Green.

Every year growers are reminded that the goal of PEANUT Rx is to minimize their risk point total for a specific production field. PEANUT Rx does not dictate when a grower *must* plant peanuts, for example in the middle of May. The purpose of the index is to allow growers to determine how to minimize their point totals given their own needs. For example, if a grower needs to plant in late April, he or she can still achieve a satisfactory point total by making adjustments to other parts of the index, such as selection of a more resistant variety.

Fungal Diseases. Good crop rotation remains the cornerstone of a good disease management program. We recommend that a grower plant peanuts in a field only once every three years, and once every four years is even better. Grass crops, such as bahiagrass and corn, are the best rotation crops with peanuts because they do not share the same diseases or pathogens. (Note: Bahiagrass is a host for the lesion nematode, which does affect peanuts, especially green peanut growers.)

Early and Late Leaf Spot Diseases. Both early and late leaf spot are commonly observed across Georgia's peanut production region.

Management Points for Leaf Spot

1. Practice good crop rotation.
2. Destroy any volunteer peanuts that may grow in a field and bury/remove old peanut hay that can serve as a source of spores for leaf spot diseases.
3. Do not delay the start of a leaf spot fungicide program.
    a. When using chlorothalonil (e.g. Bravo Ultrex, Bravo WeatherStik, Echo, Equus, or other generics), Tilt/Bravo, Echo-PropiMax, Stratego, Elast 400F, Eminent 125SC + Echo, or Headline (**at 6 fl oz/A**), and you have adequate crop rotation, your first leaf spot spray will typically be applied somewhere between 30 and 35 days after planting (unless weather has been dry and unfavorable for development of foliar diseases.
    b. In fields where risk to leaf spot has been calculated as low-to-moderate, we have maintained good control of leaf spot when using a single application of Tilt/Bravo (2.5 pt/A) 40 days after planting
    c. Growers who use the AU-pnut forecasting system, automated at www.AWIS.com, can more effectively time their first application based upon environmental conditions.

d. If you are planting peanuts after peanuts, you will likely need to begin your leaf spot program earlier than 30 days after planting because of the increased risk of disease.
e. If you are using Headline (**at 9 fl oz/A**) for your first leaf spot spray, it is appropriate to combine your first two fungicide applications for leaf spot control (for example at 30 and 44 days after planting) into a single application of 9 oz of Headline at 38-40 days after planting.

4. Traditionally, fungicides are applied on a 14-day calendar schedule beginning after the first application. This 14-day interval may be modified for reasons such as those below:
    a. The interval should be **shorter** than every 14-days if conditions:
        i. Rainfall has been abundant and conditions are favorable for leaf spot.
        ii. You are using the AU-PNUT leaf spot advisory and it calls for an early application.
        iii. Peanuts follow peanuts in a field and leaf spot is expected to be severe.
        iv. Rainfall came on quickly after your last leaf spot spray and you are concerned that some of the fungicide may have been washed off the plants in the field too quickly.
        v. You are planting a variety that has poor resistance to leaf spot diseases.
        vi. Peanut rust appears in your field prior to the end of the season.
    b. It may be possible to extend the spray interval **beyond** 14-days if:
        i. Conditions have been dry and unfavorable for leaf spot, especially if you use the AU-PNUT advisory for spray guidance.
        ii. You are using a variety with increased resistance to leaf spot, such as York, Georgia-07W, or Georgia-03L. For example, if pressure from soilborne diseases is not severe, the spray interval for such varieties could be every 21 days and it is possible to treat the most resistant varieties only three times during the season. (Additional information can be obtained from your local Extension Agent).
        iii. **You use Peanut Rx and determine that the predicted risk of fungal disease in a field is low to moderate** and rainfall has not been excessive since your last spray (additional information can be obtained from your local Extension Agent).
        iv. Since many fungicide applications are used to manage leaf spot diseases and soilborne diseases, one must consider the effect that an extended spray schedule would have on both types of disease (foliar and soilborne) BEFORE shifting from a 14-day schedule.

5. The "**funky leaf spot**", whose cause is still unknown, typically affects peanut plants very early in the season and can look very much like early leaf spot. It may also cause considerable defoliation of early season foliage. Because

this disease typically disappears by the middle of the season, it has not been found to be of real concern. Funky leaf spot has been found to be most severe on peanut varieties such as Georgia-02C and Georgia-03L, but is not thought to cause yield loss for either.

6. Current fungicides DO NOT control **funky leaf spot**; so do not be unduly alarmed by the appearance of leaf spots on your peanuts early in the season. Stay on a good fungicide program and have confidence that this program will control the more important early and late leaf spot diseases.
7. Finding some leaf spot in a field at the end of the season is usually not a problem. As long the diseases are controlled throughout the season, limited defoliation (up to about 30-40%) is not likely to affect your yield. The appearance of leaf spot at the end of the season typically does not mean that your program was ineffective or a failure.
8. Some growers in Florida are mixing chlorothalonil with Topsin-M or Topsin 4.5F or copper fungicides such as Kocide for their final leaf spot sprays to increase peg strength prior to harvest. What do we recommend in Georgia?
    a. Combinations of chlorothalonil and Topsin-M currently provide excellent control of leaf spot.
    b. Combinations of chlorothalonil and copper are also effective in the control of leaf spot.
    c. Data collected at Clemson University demonstrates that peg strength is not increased with use of Topsin-M, Topsin 4.5F, or copper (e.g. Kocide).
9. Failures in leaf spot management in a peanut field are often linked to:
    a. Unacceptable delays in starting your program.
    b. Improper calibration of equipment (not enough material was applied).
    c. Unacceptable delays between applications, such as when weather conditions keep the grower out of the field.
    d. Rain events immediately after a fungicide application have washed the fungicide away too quickly.
10. Use of Chlorothalonil.
    a. **Chlorothalonil** is the active ingredient in Bravo products, Echo products, and a number of generics. It is quite effective in the management of leaf spot diseases. Key points:
        i. All chlorothalonil products for peanut appear to be effective. Differences between one brand and another are related to the “stickers” and other substances that are added to the active ingredient to increase effectiveness.
        ii. There is no difference in efficacy between a flowable and dry-flowable formulation of chlorothalonil.
        iii. Two likely benefits from chlorothalonil products when compared to other products for leaf spot control are:
            1. Price.
            2. Use for fungicide resistance management.
        iv. The typical rate for a 720-F formulation is 1.5 pt/A; for a 90-DF formulation is 1.4 lb/A.

v. Chlorothalonil products are not systemic and must be applied to the leaf surface prior to infection by the fungus.
vi. Generally, chlorothalonil products have been on the foliage long enough prior to a rain event IF they have had time to dry completely.
vii. If you feel that your chlorothalonil application may not have had enough time to dry before rain, consider timing your next fungicide application a little earlier to compensate for any reduction in efficacy.
viii. When conditions have been very favorable for leaf spot (a lot of rain), it is generally true that research plots treated with chlorothalonil will have more leaf spot at the end of the season than plots treated with a systemic fungicide for leaf spot control. This increase in leaf spot rarely results in a reduction in yield.
ix. Tank mixing Topsin M with chlorothalonil provides a good option for growers who are looking for a "rescue treatment" when leaf spot is developing too quickly in their field.

11. Use of Elast 400F:
    a. Elast (dodine) is in a fungicide class different than others used in peanut production. Thus when used in a peanut program it can help to reduce the chances of fungicide resistance that occur with overuse of certain "at risk" fungicides.
    b. Elast is a "protectant" fungicide like chlorothalonil and must be applied before infection by leaf spot pathogens has occurred. If infection has already occurred, application of Elast will be of minimal benefit for disease control.
    c. Elast is used at either 15.0 fl oz/A alone or at 12.8 fl oz/A when tank-mixed with a product like tebuconazole (7.2 fl oz/A) for additional leaf spot control.
    d. Use of Elast is most appropriate where chlorothalonil would be used.
    e. Elast is MOST effectively used earlier in the season. Full-season use of Elast has been found in some trials to lead to reduced management of leaf spot diseases when compared to other fungicides applied for leaf spot control.
12. Tilt/Bravo, Echo-PropiMax, Eminent and Stratego:
    a. Propiconazole + chlorothalonil is marketed as two products, Tilt/Bravo and Echo-PropiMax.
        i. The rate of this combination is 2.0 fl oz of propiconazole and 1.0 pt of chlorothalonil/A.
        ii. Tilt/Bravo is now marketed as a pre-mix which when applied at 1.5 pt/A, offers the same level of product as described above.
        iii. Tilt and PropiMax are systemic, which means that they can be absorbed into the leaf tissue offering some limited curative activity for recent infections.

iv. Fungicide resistance management: improper use of Tilt/Bravo or EchoPropiMax with Folicur or Stratego may increase the risk of resistance to the sterol-inhibitor class of fungicides.

b. Propiconazole + trifloxystrobin is marketed as Stratego.
   i. Stratego is also a systemic fungicide with limited curative activity.
   ii. For leaf spot control, Stratego is applied at a rate of 7.0 fl oz/A.
   iii. Fungicide resistance management: improper use of Stratego with Folicur, Tilt/Bravo, Echo-PropiMax, Abound or Headline will increase the risk of resistance to the sterol-inhibitor and strobilurin classes of fungicides.

c. Eminent 125SC (tetraconazole) + Echo is a new co-pack from Sipcam and should offer leaf spot control similar as other products mentioned in this section.

d. Where do we see the best fit for these products?
   i. Even though these fungicides have a systemic component, they should be applied BEFORE infection occurs in order to obtain maximum benefit.
   ii. When conditions for leaf spot are favorable, use of Tilt/Bravo, Echo-PropiMax, Eminent 125SC + Echo or Stratego often provides for better leaf spot control than with chlorothalonil alone.
   iii. If growers plan to use one of these fungicides, they are often used early in the season to help insure a good start to leaf spot management.
   iv. If conditions have been favorable for leaf spot (abundant rainfall), a grower has been delayed in spraying for leaf spot, or leaf spot is beginning to appear in the field, use of Tilt/Bravo, Echo-PropiMax, or Stratego may provide benefits beyond chlorothalonil.

13. Topsin-M (thiophanate methyl) is a fungicide in the benzimidazole class.
    a. Topsin-M can be a very effective part of a leaf spot management program.
    b. Growers who use a 4-block tebuconazole program can increase the control of leaf spot by tank-mixing 5.0 fl oz/A Topsin-M with 7.2 fl oz of tebuconazole in alternating applications (either 1 & 3 or 2 & 4).
    c. Growers who use a 4-block Artisan program (13-16 fl oz/A on each of four applications, may also want to consider using Topsin as described above.
    d. Growers who are looking for an effective fungicide treatment, should leaf spot become a problem in a field, can make an application of Topsin-M (5.0-10.0 fl oz/A) tank-mixed with 1.5 pt/A chlorothalonil. This can be followed up with a second application of the same tank-mix or with an application of Tilt/Bravo.
    e. Growers should make no more than two tank-mix applications of Topsin-M pert season in order to avoid fungicide resistance problems.

14. Pyraclostrobin is sold as Headline.
    a. Headline has been the most effective fungicide labeled on peanut for management of leaf spot.
    b. **NOTE:** Because Headline is our current standard for control of leaf spot diseases, some growers forget that Headline at rates of 12-15 fl oz/A is also an effective white mold/Rhizoctonia limb rot material as well. Growers who incorporate a higher rate of Headline into their fungicide program can expect excellent leaf spot control and effective soilborne disease control as well.
    c. Headline has the best curative activity of any fungicide for control of leaf spot.
    d. Fungicide resistance management: improper use of Headline with Abound, Evito, or Stratego will increase the risk of resistance to the strobilurin class of fungicides. In most cases, Headline should not be used in a fungicide program that contains Abound, Evito, or Stratego.
    e. For leaf spot control, Headline is typically used as follows:
        i. Two applications at 6.0 fl oz/A at approximately 30 and 44 days after planting. We generally do not spend much time with this pattern, as the one below is a much better option for the grower.
        ii. Combine two traditional leaf spot fungicide applications into a single application at 9.0 fl oz/A approximately 38-40 days after planting.
        iii. Note: Because of its power to control leaf spot, some growers have used Headline as a “salvage” treatment late in the season when leaf spot appears out-of-control in a field. Remember:
            1. It would have been better to use the Headline earlier to try and avoid the problem entirely.
            2. Headline may slow the epidemic of disease, but it will not cure the problem. You will still have leaf spot; perhaps not as much as you would have had if you had not treated with Headline.
            3. Using a selective fungicide, such as Headline, when disease is present and severe will increase the risk for the development of fungicide resistance.

13. Abound, Evito, Provost, and tebuconazole products are typically considered to be for control of soilborne diseases; however they must also control leaf spot diseases as well. Provost, Abound, and Evito provide effective leaf spot protection alone. Problems associated with tebuconazole and leaf spot are usually related to fungicide resistance issues or are traced back to rain or irrigation soon after application. To maximize leaf spot and white mold/limb rot control with Folicur/tebuconazole, it is best that the crop dry for 24 hours before irrigation. Where rainfall is abundant and/or resistance is likely, most growers will add a half-rate of chlorothalonil or Topsin to 7.2 fl oz/A of tebuconazole for added leaf spot protection.

SOILBORNE DISEASES

White Mold and Rhizoctonia Limb Rot Diseases: White mold and Rhizoctonia limb rot are likely to occur in nearly every peanut field in Georgia. Losses caused by these diseases can be severe and they are much more difficult to control than leaf spot diseases. Prior to 1994 when Folicur was first labeled, growers did not have any truly effective fungicides to control theses diseases. Since 1994, growers now have six different fungicides from three different classes that can effectively control both white mold and Rhizoctonia limb rot. Still, white mold and limb rot remain troublesome to growers. Two of the reasons for difficulty in control are 1) it can be tough to tell when you need to begin spraying, and 2) it is not easy to get the fungicide to its target where it can affect the pathogen.

Management points for white mold and Rhizoctonia limb rot.

1. Practice good crop rotation.
    a. Corn, grass crops, and bahiagrass are good rotation partners reducing effect of white mold and Rhizoctonia limb rot.
    b. Cotton will reduce the risk of white mold but will have less benefit on Rhizoctonia limb rot.
2. Choose resistant varieties when available.
    a. Some new varieties, such as C99-R, AP3, Georgia-02C, Georgia-07W and York, have increased resistance to white mold over Georgia Green.
    b. Georgia Green appears to have better resistance to Rhizoctonia limb rot than many other varieties.
3. Apply fungicides for control of soilborne diseases at night when leaves are folded to allow greater penetration to the crown of the plant. Soilborne diseases are most effectively controlled when the fungicide reaches the crown and lower limbs of the plant.
    a. Fungicides applied in late evening for management of soilborne diseases are at least as effective, and often more effective, then the same fungicides applied during the day.
    b. Fungicides applied for management of soilborne diseases appear to be most effective when applied early in the morning after dew set, but before daylight. The moisture from the dew seems to further help in the re-distribution of the fungicide on the crown and limbs of the crop.
    c. Because fungicides applied for control of soilborne diseases must also protect against leaf spot diseases as well, it is important that the grower use a fungicide, or tank-mix an additional fungicide, that has systemic movement in the leaf.
    d. All “leaf spot only” fungicide applications should be applied during the day to achieve maximum coverage of the leaves.
4. Use appropriate fungicides.
    a. NOTE: No fungicide program will give the grower complete control of soilborne diseases in a field. We estimate that, at best, a good

soilborne fungicide program will give 60-70% control under ideal conditions.

b. Initiating fungicide applications is often imprecise and is based upon experience.
c. The timing of fungicides for controlling white mold and limb rot must be early enough to protect the crop when the disease first appears. However, growers should avoid applying soilborne fungicides too early so that they will be available when needed later in the season.
d. Initial appearance of soilborne diseases is related to the soil temperature, the growth of the crop, and rainfall/irrigation.
e. In Georgia, we generally start spraying for soilborne diseases approximately 60 days after planting. At this time in the season, the growth of the crop and the environmental conditions are suitable for disease to occur. Because white mold and Rhizoctonia limb rot can occur earlier than this, the grower should watch his fields carefully to determine when the diseases appear.
f. Example: In 2003, rainfall was abundant and we predicted that severe white mold would occur early in the season. However, white mold did not appear until later in the season and was much of a late-season problem. The most probable reason for this was temperature. Although the moisture was suitable for white mold (and limb rot), the cooler-than-normal summer temperatures delayed the onset of white mold. In 2006, white mold was severe across much of the production region of Georgia despite dry conditions. Again, the warm soil temperatures resulted in outbreaks of white mold, though the drought reduced the severity of Rhizoctonia limb rot.
g. Fungicides are applied to the foliage, but must reach the crown and limbs of the plant in order to be effective against soilborne diseases.
    i. The fungicides can be moved by rainfall and irrigation. If rainfall or irrigation occurs too quickly after application, the fungicide may not provide enough protection for leaf spot.
    ii. If the rainfall or irrigation is delayed, absorption of the fungicide into the foliage may reduce the amount available to fight soilborne disease.
    iii. In a dryland situation, lack of rainfall, and thus movement down the plant, will reduce the effectiveness of a soilborne fungicide. Still, the fungicide was probably not wasted; some of the product likely reached the desired target with the spray mix.
    iv. If fungicides are applied during the night after the leaves have folded, more fungicide will reach the crown of the plant where it is needed to control soilborne disease.
h. Management with tebuconazole.
    i. Tebuconazole is marketed as Folicur, Tebuzol, Orius, Tri$um, Integral, Muscle, Tebustar, etc.
    ii. Tebuconazole is effective against white mold and Rhizoctonia limb rot.

iii. Tebuconazole remains effective against early and late leaf spot; however the fungicide is not as effective as it once was due to development of resistance by the fungal pathogens.
iv. It is recommended that tebuconazole remain on the leaf surface for 24 hours after application to insure enough is absorbed for leaf spot control.
v. If tebuconazole is washed from the leaves too quickly, leaf spot control may suffer, though the grower may get maximum control of white mold and limb rot.
vi. In extremely wet weather, or when the threat from leaf spot diseases is elevated or where resistance has developed, growers should choose to mix 0.75-1.0 pt of chlorothalonil or 5 fl oz Topsin with 7.2 fl oz of tebuconazole to insure leaf spot control. At one time the addition of chlorothalonil was thought to impede the movement of Folicur from the foliage; however this has not found to be a problem. Note: Topsin is added to two alternating applications of tebuconazole in a 4-block program.
vii. Tank-mixing tebuconazole with the product Prevam has, in some trials, helped to reduce the severity of leaf spot over Folicur applied alone.
viii. Tebuconazole is applied at a rate of 7.2 fl oz/A, beginning approximately 60 days after planting.
ix. In the most traditional program, tebuconazole is applied in a four-block program, on a 14-day interval.
x. Fewer than four applications of tebuconazole may be sufficient in some low disease situations; however this will be an off-label program.
xi. Improper use of tebuconazole with Stratego, Tilt/Bravo, or Echo-PropiMax could increase the risk of fungal resistance to the sterol-inhibitor fungicides.

i. Management with Provost (tebuconazole + prothioconazole)
i. Provost is available to peanut growers in 2010 from Bayer CropScience.
ii. Based upon results from the University of Georgia, Provost appears to have better systemic activity than other soilborne fungicides. This means that Provost can be more easily translocated within the plant from where it was applied to other regions for greater protection.
iii. Bayer CropScience recommends that Provost be used in a 4-block program like Folicur.
iv. The standard rate for Provost is 8.0 fl oz/A; however the rate can be effectively increased to as much as 10.7 fl oz/A when pressure from white mold or limb rot is severe.
v. Because Provost is a combination of two fungicides within the same chemical class (triazoles/DMI fungicides), it is EXTREMELY important that growers practice good fungicide

resistance management principals with this product in order to maintain its efficacy over an extended period of time.

vi. From University data, Provost has provided excellent control of leaf spot diseases and control of white mold, Rhizoctonia limb rot, and CBR that is at least as good as that of Folicur.

vii. To avoid causing injury to the foliage, growers should carefully read the Provost label before tank-mixing this product with other fungicides.

j. Management with azoxystrobin.
    i. Azoxystrobin is marketed as **Abound** and is typically applied at 60 and 90 days after planting at 18.5 fl oz/A.
    ii. A lower rate (12.0 fl oz/A) is allowed by label in dryland situations or in reduced-risk “Prescription Programs”; however it must be used with caution, as it will not have the “power” of the full rate. We typically do not recommend this rate unless each Abound application is alternated with applications of tebuconazole at 7.2 fl oz/A OR a grower is carefully using a prescription program in a reduced risk field.
    iii. Abound is effective against leaf spot diseases, white mold, and is excellent for management of Rhizoctonia limb rot.
    iv. For maximum efficacy against white mold and limb rot, the field should receive irrigation or rainfall within 72 hours after application.
    v. Fungicide resistance management: To avoid problems with fungicide resistance, Abound should not be used in the same program with Evito, Absolute, Stratego or Headline.
k. Management with fluoxastrobin.
    i. Fluoxastrobin is marketed as **Evito** 480SC.
    ii. Evito is in the same chemical class (strobilurins) as are Headline, Abound, Stratego, and Absolute and should not be used in the same fungicide programs as these products.
    iii. Recommended use for Evito is two applications of product (5.7 fl oz/A) timed approximately 60 and 90 days after planting.
    iv. Evito is an effective component of a peanut disease management program; however it may not be quite as effective against leaf spot and soilborne diseases as are other fungicides.
    v. Evito is NOT “generic Abound”.
l. Management with flutolanil.
    i. Flutolanil is an excellent fungicide for the management of white mold and is also effective against Rhizoctonia limb rot. It is not effective against leaf spot diseases.
    ii. Flutolanil is marketed as **Moncut**, **Artisan** and **Convoy**.
        1. Moncut 70 DF must be mixed with another fungicide for the control of leaf spot. Moncut 70 DF is typically applied at 1.07 lb/A, in the middle of the rate range.

2. Convoy, like Moncut, only contains flutolanil and must be mixed with the full-rate of another fungicide for control of leaf spot. Convoy is typically applied at 26 fl oz/A twice (60 and 90 days) or at 13 fl oz/A in a four-block program.
3. Artisan is a combination of flutolanil and propiconazole. Therefore, it will control leaf spot, white mold, and limb rot. Artisan can be applied at a rate or 26 or 32 fl oz/A.
4. Moncut and Artisan are typically applied at 60 and 90 days after planting, though Artisan and Moncut can also be applied in a 4-block program.
5. When using Artisan in a 4-block program, it is applied at rates between 13 and 16 fl oz/A and tank-mixed with an additional leaf spot material, e.g. 1.0 pt chlorothalonil/A or perhaps an alternation of chlorothalonil with Topsin at 5 fl oz/A.
6. When using Moncut 70DF fungicide in a 4-block program, it is typically applied as 0.5 lb/A tank mixed with a FULL rate of some leaf spot material.
7. As a final note, the flutolanil products Artisan and Moncut performed **exceptionally well** in 2003, 2006, and 2007 in field trials where white mold was severe. It is expected that Convoy would offer similar levels of control of white mold as well.

m. Management with pyraclostrobin.
   i. Pyraclostrobin is sold as **Headline** (as discussed in the leaf spot section).
   ii. Headline is effective in a soilborne disease management program against white mold and limb rot when applied at the 12-15 fl oz/A rate.
   iii. Headline is not used as a “stand-alone” soilborne fungicide, but rather is used in combination with tebuconazole, or perhaps Artisan or Moncut.
   iv. Headline is not used with Evito, Absolute, Stratego or Abound for fungicide resistance management concerns.
   v. Use of Headline at 12.0 fl oz will provide adequate control of white mold and limb rot when used as a part of a soilborne program and will provide exceptional leaf spot control.
   vi. An ideal use of Headline would be 9 fl oz/A at 40 days after planting, 7.2 fl oz/A Folicur at 60 days after planting, and 12.0 fl oz/A Headline at 74 days after planting.
   vii. Results from 2009 suggest that growers can greatly improve management of white mold with Headline when it is applied at NIGHT.

n. Management with mixed programs. Some peanut growers in Georgia are experimenting with fungicide programs that mix different fungicides for the control of soilborne diseases and the results can be

outstanding. The goal in mixing fungicides is to capture the best control available through the use of multiple chemistries. While some of these programs, like the alternate use of Folicur and Abound, for a total of four soilborne fungicide applications, appear to be quite effective, the grower must accept all responsibility if his program is off-label.

o. **Managing White Mold with Lorsban 15G.** Prior to Folicur, the insecticide Lorsban 15G was one of the only chemicals that growers had to manage white mold. As Folicur and then Abound were labeled, growers turned away from Lorsban for control of white mold. However, results from field trials in 2003 demonstrate that application of Lorsban 15 G (13.6 lb/A) in conjunction with fungicides may provide control of white mold beyond that of the fungicides alone. It appears that Lorsban 15G may still have a place in white mold control.

Cylindrocladium Black Rot (CBR): CBR is a very challenging disease to control and of increasing importance to growers across the state. Crop rotation away from peanut and soybean is an important management tool. Also, it is important that growers not introduce infested soil from fields where CBR occurs to fields where it is not yet present. This can be done best by cleaning equipment and vehicles before traveling between fields. In recent years, it has been proven that CBR can be transmitted via seed, though at a very low rate. Growers should try to obtain seed produced in fields free of CBR. They should also recognize that much of the seed for Virginia varieties is produced in the Virginia-Carolina region where CBR is of even greater importance than it is in Georgia.

Management points for CBR

1. Crop rotation away from peanut and soybean. Unfortunately, once CBR is established in a field, it is very difficult to eliminate. Not only can the fungal pathogen survive for long periods of time in the soil, but it can also infect common weeds such as beggarweed and coffee weed.
2. **Proline 480SC** (prothioconazole) is a fungicide that is labeled to be applied in-furrow at planting time for management of CBR. The in-furrow rate is 5.7 fl oz/A. The in-furrow application of Proline promises to be a critical component for the management of CBR when followed by foliar application of the effective fungicides noted below. From numerous studies, it is demonstrated that liquid inoculants can be mixed with Proline without loss of efficacy of the fungicide or the inoculant.
    a. Where peanuts are planted in single-row patterns, the Proline is applied at 5.7 fl oz/A beneath the row.
    b. Where peanuts are planted in twin-row patterns, the Proline rate must be split under each row so that the TOTAL rate remains at 5.7 fl oz/A. Where twin rows are planted, the grower can come back an additional 5.7 fl oz/A to the seedlings 14 days after cracking.

3. Provost, Folicur, Abound, and Headline are labeled for the “suppression” of CBR. This means that these fungicides may reduce the symptoms of disease and possibly increase yields above other fungicides. Growers who are battling CBR may choose to use Provost, Folicur, Abound, or Headline for CBR suppression, though results are variable and sometimes disappointing.
4. Varieties with some level of resistance were not available to growers until recently. In the past several years, varieties Georgia-02C, Georgia Greener and Carver, have been released and appear to have at lest some level of resistance to CBR. (Note: Tifguard is no longer recognized as resistant to CBR.) Growers who have fields where CBR is found may want to consider planting these varieties.
5. It has been found that CBR is more severe in fields where the peanut root-knot nematode also occurs. Therefore, growers who manage nematodes with either Telone II or Temik 15G may find some suppression of CBR as well.
6. Fumigation with metam sodium (e.g. Vapam) at 10 gal/A directly beneath the row 10 days prior to planting is currently our best management strategy for the control of CBR. Results can be quite dramatic and can allow growers to plant peanuts in fields where it would otherwise be nearly impossible to grow a crop.

Prescription Fungicide Programs

“Prescription fungicide programs” are defined as strategies designed to maximize yields and maintain disease control in a field using the appropriate number and type of fungicide applications based upon the risk to disease in the field. The goal of prescription fungicide programs is too use the right amount of fungicide for the level of disease expected in a field and to modify the fungicide use as the risk of disease increases or decreases as the season progresses.

Fields where the risk to disease is high, for example where fields have shorted crop rotation, are planted to less resistant varieties, and weather favors disease development should receive at least seven fungicide applications during the season, and perhaps more.

Fields where the risk to disease is reduced to a low or moderate level, for example where fields have longer rotations and are planted to more resistant varieties, typically do not need the same fungicide program as a higher risk field in order to maximize yields. Research data from many on-farm and small plot studies conducted at the University of Georgia have demonstrated that growers who manage their crop so as to reduce the risk to leaf spot, white mold, and Rhizoctonia limb rot can also reduce the number of fungicide applications and increase the value of their crop by cutting production costs. In low risk fields, it is quite possible to reduce the number of fungicide applications from seven to four, so long as the grower is willing to watch the field to insure that disease does not begin to develop unnoticed.

Growers interested in developing prescription programs should first assess the risk in their field(s) using the PEANUT Rx Disease Risk Index and then contact their local county agent for guidance on a suitable fungicide program. Syngenta Crop Protection, Nichino-America, BASF, Arysta LifeSciences, and Bayer CropScience have developed their on prescription programs with input from University researchers. Growers who use an industry-sponsored prescription program in reduced risk fields can have the confidence that the company will "stand behind" these programs as long as risk level has been appropriately assessed and the appropriate fungicide program has been used.

Managing Seedling Diseases: Seedling diseases were typically not a concern for peanut growers in Georgia prior to the arrival of the tomato spotted wilt virus. Even if some plants were lost in a stand, the neighboring peanut plants were often able to compensate for the loss by growing into the vacated space. However, it is clear that spotted wilt can be devastating when fields have poor stands. For this reason, getting a good stand has become critical for growers. Below are some management techniques to reduce seedling diseases (primarily caused by *Rhizoctonia solani* and *Aspergillus* niger).

1. Rotate peanuts with grass crops to reduce the populations of *Rhizoctonia solani.*
2. Plant the peanut crop when soil temperatures are warm enough to produce rapid, vigorous germination and growth. This can help protect the plants from disease. Excessive moisture at planting will also increase the risk of seedling diseases.
3. Use quality seed that has a good germination rating and will grow vigorously.
4. Choose varieties that are known to germinate and emerge uniformly and with vigor.
5. Use only seed treated with a commercial fungicide seed treatment. The seed treatments that are put on commercial seed prior to purchase are outstanding and provide protection for the seed and seedling. Seed treatments include:
    a. Vitavax PC
    b. Dynasty PD (azoxystrobin + mefenoxam + fludioxonil)
    c. Trilex Optimum (trifloxystrobin + metalaxyl + carboxin)
    d. Trilex Star (trifloxystrobin + metalaxyl + carboxin + thiophanate methyl)
6. Use an in-furrow fungicide where the risk of seedling disease is great or where the grower wants increased insurance of a good stand.
    a. Abound at 6.0 fl oz/A in the furrow at planting can provide increased control of seedling diseases, including Aspergillus crown rot.
    b. Terraclor (64 fl oz/A) also provides additional control of seedling diseases when applied in-furrow.
    c. Growers who are most likely to yield benefits from these in-furrow fungicides are those that have poor crop rotation and a history of seedling disease in the field.

Managing root-knot nematodes: Peanut root-knot nematodes are a severe problem in some fields in Georgia, especially in the sandy soils in the southwest corner of the state. Growers initially become aware of the problem when they note stunted plants across patches in their field. At harvest, many of the pods and pegs from these fields are galled and of poor quality. Based upon conversations with growers, it is likely that many fields across the state have problems with root-knot nematodes, but growers may fail to attribute the cause to nematodes. Below are some management options.

1. Use crop rotation to avoid building large populations of nematodes in a field. Cotton is an excellent rotation crop with peanut to reduce levels of nematodes.
2. Plant the root-knot nematode resistant variety '**Tifguard**'. Use of additional nematicides is NOT needed to protect Tifguard; however it is necessary to use a product such as phorate to protect against thrips injury.
3. Treat the field with **Temik 15G**. From our trials, Temik at 10-lb/A in-furrow followed by 10 lb/A at pegging provides good control. It appears that the 10-lb/A application at pegging-time is critical. Note: growers must not apply Temik to the crop any later than 90 days before harvest.
4. **Telone II** at a broadcast rate of 6 gal/A or an in-furrow rate of 4.5 gal/A provides the most consistent and effective control of the root-knot nematodes on peanuts. The following comments are important for the most effective use of Telone II.
    a. Telone II must be applied 7-14 days before planting to avoid damaging the crop.
    b. Growers should ensure that soil conditions are favorable for the effective diffusion of Telone II at the time of fumigation. The seed bed should be carefully prepared and free from large clods of dirt. The soil should be neither too dry nor too wet. The soil should not be wet, but should "clump" together when pressed tightly in one's fist.
    c. Growers should carefully follow all safety precautions when using a fumigant such as Telone II.
    d. Some insecticide, e.g. phorate or Temik 15G, should be applied at planting to ensure adequate control of thrips.
    e. Applications of Temik 15g at 10 lb/A at pegging may still be advisable, even when Telone II was used prior to planting.
5. **NemOut** is a biological control nematicide formulated from the spores of the fungus *Paeciliomyces lilacinus*. This product can be applied both in-furrow at planting and to the peanut crop during pegging time. Because the spores are living organisms, they must be treated carefully:
    a. The formulated spores should be kept refrigerated or frozen when not used. The formulated product has a finite shelf life, even when kept cold.
    b. They spores not be subjected to excessive heat when being prepared for application.
    c. The spores should not be applied together with an in-furrow fungicide but can be applied with an in-furrow inoculant.

d. To get best performance of NemOut, it is important to apply the product with sufficient water and to ensure sufficient irrigation after application.
e. Based upon our research, the most consistent results are achieved by applying NemOut at 0.3 lb/A in-furrow and to follow at pegging time with an application of Temik 15G at 10 lb/A.
f. There is still much to learn about the efficacy of NemOut in the management of peanut root-knot nematodes in Georgia. Growers who would like to use this product are encouraged to do so on a trial basis until they are satisfied with the results achieved.

MINIMIZING DISEASES OF PEANUT
IN THE SOUTHEASTERN UNITED STATES

The 2010 Version of the Peanut Disease Risk Index

Albert Culbreath, John Beasley, Bob Kemerait, Eric Prostko,
Tim Brenneman, Nathan Smith, Scott Tubbs,
Rabiu Olatinwo and Rajagopalbabu Srinivasan
The University of Georgia, College of Agricultural and Environmental Sciences

Barry Tillman
The University of Florida, Institute of Food and Agricultural Sciences

Austin Hagan
Auburn University, College of Agriculture

Losses to tomato spotted wilt across the peanut production region of the southeastern United States were the lowest recorded since estimates began in 1990. It is estimated that losses associated with spotted wilt were about 0.5% last season. It is believed that growers were able to achieve excellent management of this disease in large part through combined use of Peanut Rx and varieties with improved resistance.

The Spotted Wilt Index and the Peanut Fungal Disease Risk Index were successfully combined in 2005 to produce the Peanut Disease Risk Index for peanut producers in the southeastern United States. The Peanut Disease Risk Index, developed by researchers and Extension specialists at the University of Georgia, the University of Florida, and Auburn University, is now officially known as “PEANUT Rx”. The 2010 version of PEANUT Rx has been fully reviewed and updated by the authors based upon data and observations from the 2009 field season.

There have been a few updates to PEANUT Rx, 2010 from the 2009 version. The changes that have been made can be found in the cultivar/variety section of the Index.

As in the previous versions of the Disease Index, growers will note that attention to variety selection, planting date, plant population, good crop rotation, tillage, and other factors, can have a tremendous impact on the potential for disease in a field.

Spotted Wilt of Peanut

When tomato spotted wilt virus (TSWV) infects a host plant, it can cause a disease that severely weakens or kills that plant. This particular virus is capable of infecting an unusually large number of plant species including several that are important crops in the southeastern United States. In recent years, peanut, tobacco, tomato and pepper crops have been seriously damaged by TSWV. The only known method of TSWV transmission is via certain species of thrips that have previously acquired the virus by feeding on infected plants. The factors leading to the rapid spread of this disease in the Southeast are very complicated and no single treatment or cultural practice has been found to be a consistently effective control measure. However, research continues to identify factors that influence the severity of TSWV in individual peanut fields.

Peanuts and fungal diseases: an unavoidable union

Successful peanut production in the southeastern United States requires that growers use a variety of tactics and strategies to minimize losses to disease. Weather patterns in Georgia and neighboring areas during the growing season, including high temperatures, high humidity and the potential for daily rainfall and thunder storms, create the near-perfect environmental conditions for outbreaks of fungal diseases. Common fungal diseases include early and late leaf spot, rust, Rhizoctonia limb rot, southern stem rot (referred to locally as “white mold”), Cylindrocladium black rot and a host of other diseases that are common, but of sporadic importance. If peanut growers do not take appropriate measures to manage fungal diseases, crop loss in a field may exceed 50%.

Strategies for managing fungal diseases of peanut are typically dependent on the use of multiple fungicide applications during the growing season. Fungicide applications are initiated approximately 30 days after planting, as the interaction between the growth of the crop and environmental conditions are likely to support the development of leaf spot diseases. The length of the effective protective interval of the previous fungicide application determines the timing for subsequent applications. The length of time in which a fungicide can protect the peanut plant from infection is dependent on the properties of the fungicide and on weather conditions. Many growers will begin treating for soilborne diseases approximately 60 days after planting. With attention to proper timing of applications and complete coverage of the peanut canopy, growers can expect good to excellent control of leaf spot and reasonable control of soilborne diseases. Although control of leaf spot may approach 100%, growers typically can only expect about 60-70% control of soilborne diseases with effective fungicide programs.

Weather plays a major role in the potential for disease. Most fungal diseases will be more severe during periods of increased rainfall and of less concern during drier

periods. **When weather conditions are very favorable for disease, severe epidemics may occur in fields where disease was not thought to be a problem. When weather conditions are unfavorable for fungal growth, disease severity may be low even in fields where it has been common in the past.** The AU-pnut leaf spot advisory that has been used to effectively manage diseases in peanut is based on this relationship between disease and weather. Even those growers who do not use AU-pnut recognize the need to shorten the time between fungicide applications in wet weather.

Factors Affecting the Severity of TSWV on Peanut

Peanut Variety

No variety of peanut is immune to TSWV. However, some varieties have consistently demonstrated moderate levels of resistance. In addition to resistance, (reduced disease incidence), some varieties appear to have some degree of tolerance (reduced severity in infected plants) as well. Higher levels of resistance and tolerance are anticipated since peanut breeding programs are now evaluating potential new varieties for response to TSWV.

Peanut varieties can have a major impact on fungal disease. The variety 'Georgia Green' is currently planted on much of the peanut acreage in the Southeast. However, newer varieties from breeding programs at the University of Georgia and the University of Florida not only have improved resistance to spotted wilt, but to fungal diseases as well. For example, the varieties 'York,' 'Georgia-07W' and 'Georgia-03L' have resistance to leaf spot and resistance to white mold that are better than that found in Georgia Green. Varieties 'Georgia-02C' has a level of resistance to Cylindrocladium black rot (CBR) that is superior to that of Georgia Green. Just as none of the current varieties is immune to spotted wilt, none are completely immune to fungal diseases either. However, improved resistance will likely lead to reduction in disease severity. It is important to remember that improved resistance to one disease does not mean that the variety also possesses superior resistance to other diseases. For example, Georgia-03L and C99-R have greater resistance to leaf spot than Georgia Green; however Georgia Green has greater resistance to Rhizoctonia limb rot.

Planting Date

Thrips populations and peanut susceptibility to infection are at their highest in the early spring. The timing of peanut emergence in relation to rapidly changing thrips populations can make a big difference in the incidence of TSWV for the remainder of the season. Optimum planting dates vary from year to year, but in general, early-planted and late-planted peanuts tend to have higher levels of TSWV than peanuts planted in the middle of the planting season. Note: In recent years, peanut planted in the second half of May and in June have been less affected by spotted wilt than in previous years.

It is important for larger acreage peanut farmers to spread their harvest season. Some staggering of planting dates may be necessary, but to avoid spotted wilt

pressure, it may be more effective to plant varieties with different time-to-maturity requirements as closely as possible within a low-risk time period. If peanuts must be planted during a high-risk period, try to minimize the risk associated with other index factors.

Planting date can affect the severity of fungal diseases in a field. Earlier planted peanuts (April-early May) tend to have more severe outbreaks of white mold than do later planted peanuts. Earlier planted peanuts are likely to be exposed to longer periods of hot weather, favorable for white mold, than later planted peanuts which will continue to mature into late summer or early fall. However, the threat from leaf spot is generally more severe on peanuts planted later in the season than earlier. Reasons for this include the warmer temperatures later in the season that are more favorable for the growth and spread of the leaf spot pathogens and because the level of inoculum (number of spores) in the environment increases as the season progresses. Thus, later planted peanuts spend a greater portion of their growth exposed to increased leaf spot pressure than do earlier plantings.

Plant Population

An association between skippy stands and higher levels of TSWV was noted soon after the disease began to impact peanut production in Georgia. More recently, research has confirmed the impact of plant population on TSWV incidence. Low and high plant populations may actually have the same number of infected plants, but the percentage of infected plants is greater in low plant populations. In other words, a higher plant population may not reduce the number of infected plants, but it will increase the number of healthy plants that can fill in and compensate for infected plants. In some cases, low plant populations may result in increased numbers of thrips per plant thereby increasing the probability of infection. When plant populations are as low as two plants per foot, severe losses to TSWV have been observed even when other factors would indicate a low level of risk. Getting a rapid, uniform stand with the desired plant population is a function of not only seeding rate but also seed quality, soil moisture, soil temperature and planting depth.

Plant population has less effect on fungal diseases than on spotted wilt. However, it is now known that the severity of white mold increases when the space between the crowns of individual plants decreases. This is because the shorter spacing allows for greater spread of the white mold fungus, *Sclerotium rolfsii*.

Insecticide Usage

In general, the use of insecticides to control thrips vectors has been an ineffective means of suppressing TSWV. In theory, lowering overall thrips populations with insecticides should effectively reduce in-field spread of TSWV. However, insecticides have proven to be ineffective at suppressing primary infection, which accounts for most virus transmission in peanut fields. Despite the overall disappointing results with insecticides, one particular chemical - phorate (Thimet 20G and Phorate 20G), has demonstrated consistent, low-level suppression of TSWV. The mechanism of phorate's TSWV suppression is not known, but the level of thrips control obtained with phorate is

not greater than that obtained with other insecticides. Phorate may induce a defense response in the peanut plant that allows the plant to better resist infection or inhibits virus replication.

Row Pattern

Seven to ten-inch twin row spacing, utilizing the same seeding rate per acre as single row spacing, has become increasingly popular in Georgia. Research on irrigated peanuts has shown a strong tendency for significantly higher yields, a one to two point increase in grade and reductions in spotted wilt severity that have averaged 25-30%. The reason for this reduction in spotted wilt is not fully understood.

Row pattern, either single or twin row plantings, also has some effect on the potential for disease in a field. Work done at the Coastal Plain Experiment Station has lead to the observation that white mold is more severe in single rows (six seed per foot) than in twin rows (three seed per foot). White mold often develops in a field by infecting sequential plants within the same row. Planting the seed in twin rows rather than single rows increases the distance between the crowns of the peanut plants and delays the spread of white mold from plant to plant. The difference in leaf spot between single and twin row peanuts appears to be negligible.

Tillage

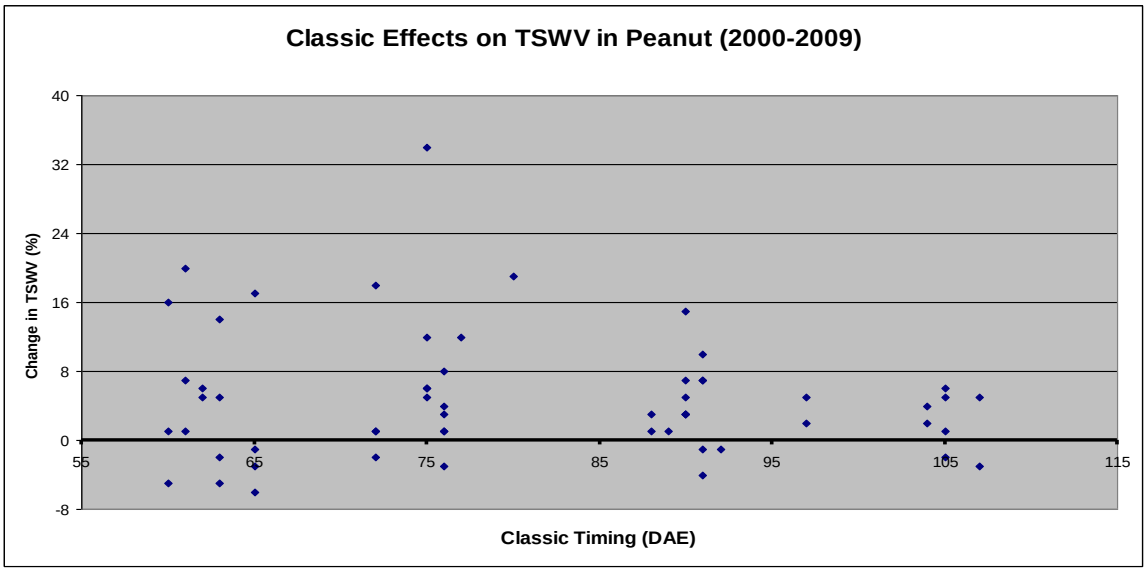
The tillage method that a grower utilizes can make a big difference in peanut yields. There are many different methods to choose from, each with its own merits and disadvantages for a given situation. Strip tillage has been shown to have some strong advantages (including reduced soil erosion and reduced time and labor required for planting), but in some situations, yields have been disappointing. Unbiased tillage research is difficult to accomplish, but studies have consistently shown that peanuts grown in strip till systems have less thrips damage and slightly less spotted wilt. On-farm observations have confirmed these results, but more studies are needed in order to characterize the magnitude of the reduction. We do not suggest that growers should change their tillage method just to reduce spotted wilt, but we have included tillage in the risk index in an attempt to better identify total risks.

Conservation tillage, such as strip tillage, can reduce the amount of disease in a peanut field. For a number of years it has been recognized that spotted wilt is less severe in strip-tilled fields than in fields with conventional tillage. However, in results from recent field trials, it has been documented that leaf spot is also less severe in strip-tilled fields than in conventionally tilled fields, so long as peanut is not planted in consecutive season. Although the exact mechanism is currently unknown, the appearance of leaf spot is delayed in strip-tilled fields and the severity at the end of the season is significantly lower than in conventional tillage. Use of conservation tillage does not eliminate the need for fungicides to control leaf spot, but helps to insure added disease control from a fungicide program. Additional studies have found that white mold was not increased in strip tillage above conventional tillage when peanut was grown in rotation with cotton. Rhizoctonia limb rot was not evaluated; however cotton is a host for *Rhizoctonia solani* and the cotton debris would likely serve as a bridge

between crops. Disease management is only one of many factors that a grower must consider when choosing to practice either conventional or conservation tillage. However, if a grower decides to practice conservation tillage with peanut production, he can expect lower levels of leaf spot in many instances.

Classic® Herbicide

Research and field observations over the past several years have confirmed that the use of Classic (chlorimuron) can occasionally result in an increased expression of tomato spotted wilt of peanut. Results from 17 field trials conducted from 2000 to 2008 are presented in the following graph:



Classic caused an 8% or less increase in tomato spotted wilt about 81% of the time and an increase of more than 8% about 19% of the time. Consequently, these results indicate that the effects of Classic on TSWV are minimal in comparison to the other production practices that influence this disease. Consequently, late-season Florida beggarweed populations that have the potential to reduce harvest efficiency and fungicide spray deposition should be treated with Classic. To date, other peanut herbicides have not been shown to have an influence on spotted wilt.

Crop Rotation

Crop rotation is one of the most important tactics to reduce disease severity in peanut production, or any other cropping situation for that matter. Increasing the number of seasons between consecutive peanut crops in the same field has been shown to reduce disease levels and increase yield. The fungal pathogens that cause leaf spot, Rhizoctonia limb rot, and white mold survive between peanut crops on peanut crop debris, as survival structures in the soil, and on volunteer peanuts. The time that passes between consecutive peanut crops allows for the degradation of the peanut crop debris, thus depriving the fungal pathogens of a source of nutrition. Also, fungal

survival structures and spores that are present in the soil have a finite period of viability in which to germinate and infect another peanut plant before they are no longer viable. Fields with longer crop rotations will have less pressure from leaf spot diseases, Rhizoctonia limb rot, white mold, and perhaps CBR, than fields with shorter rotations, or no rotation at all. In Georgia, the Cooperative Extension recommends at least two years between peanut crops to help manage diseases.

Choice of rotation crops, along with the length of the rotation, will have an impact on the potential for disease in a field. Rotation of peanut with ANY other crop will reduce the potential for early leaf spot, late leaf spot, and peanut rust. The pathogens that cause these diseases do not affect other crops. Rotation of peanuts with cotton, or a grass crop such as corn, sorghum, or bahiagrass, will reduce the potential for white mold because the white mold pathogen does not infect these crops, or at least not very well. Rotation of peanut with a grass crop will reduce the risk of Rhizoctonia limb rot. However, because cotton is also infected by *Rhizoctonia solani*, rotation with this crop will not help to reduce Rhizoctonia limb rot. Other crops, such as tobacco and many vegetables are quite susceptible to diseases caused by *Rhizoctonia solani* and will not help to reduce the severity of limb rot in a peanut field.

Special note: Soybean may be a popular crop for growers in 2009. Growers must remember that soybeans and peanuts are affected by many of the same diseases. Planting soybeans in rotation with peanuts will not reduce the risk for CBR or peanut root-knot nematodes and will have only limited impact of risk to white mold and Rhizoctonia limb rot.

Field History

The history of disease in a field can be an important hint at the possibility of disease in the future, for much the same reason as noted in the crop rotation section above. Fields where growers have had difficulty managing disease in the past, despite the implementation of a good fungicide program, are more likely to have disease problems in the future than are fields with less histories of disease.

There is some difference between white mold and Rhizoctonia limb rot with regards to field history. Where white mold has been a problem in the past, it can be expected to be again in the future. Without effective crop rotation, outbreaks of white mold can be expected to become increasingly severe each season. Rhizoctonia limb rot is a disease that is more sensitive to environmental conditions, especially rainfall and irrigation, than white mold. Therefore, the severity of Rhizoctonia limb rot is likely to be more variable than white mold from year to year based upon the abundance of moisture during the season.

Irrigation

Irrigation is a critical component of a production system and can result in large peanut yields. However, the water applied to a crop with irrigation is also beneficial for the fungal pathogens that cause common diseases such as leaf spot, Rhizoctonia limb rot, and white mold. Rhizoctonia limb rot is likely to be more severe in irrigated fields

with heavy vine growth; the increase in white mold may be less obvious. High soil temperatures as well as moisture from irrigation affect the severity of white mold.

Fungi causing leaf spot diseases need water for several important reasons, including growth, spore germination and infection of the peanut plant, and in some cases, spread of the fungal spores. Use of irrigation may extend the period of leaf wetness and the time of conditions favorable for leaf spot diseases beyond favorable conditions in a non-irrigated field. In two otherwise similar fields, the potential for disease is greater in the irrigated field.

Measuring TSWV Risk

Many factors combine to influence the risk of losses to TSWV in a peanut crop. Some factors are more important than others, but no single factor can be used as a reliable TSWV control measure. However, research data and on-farm observations indicate that when combinations of several factors are considered, an individual field's risk of losses due to TSWV can be estimated. There is no way to predict with total accuracy how much TSWV will occur in a given situation or how the disease will affect yield, but by identifying high risk situations, growers can avoid those production practices that are conducive to major yield losses. The University of Georgia Tomato Spotted Wilt Risk Index for Peanuts was developed as a tool for evaluation of risk associated with individual peanut production situations. When high-risk situations are identified, growers should consider making modifications to their production plan (i.e. variety, planting date, seeding rate, etc.) to reduce their level of risk. **Using preventative measures to reduce risk of TSWV losses is the only way to control the disease. After the crop is planted, there are no known control measures.**

The index combines what is known about individual risk factors into a comprehensive, but simple, estimate of TSWV risk for a given field. It assigns a relative importance to each factor so that an overall level of risk can be estimated. The first version of the index was developed in 1996 and was based on available research data. Small plot studies and on-farm observations have been used to evaluate index performance each year since release of the first version. In research plots where multiple TSWV management practices were used, as little as 5% of the total row feet were severely affected by TSWV compared to over 60% in high-risk situations. Yield differences were over 2000 lbs. per acre in some cases. Results of these and other validation studies have been used to make modifications in all subsequent versions of the index. Future changes are expected as we learn more about TSWV.

Keep in mind that the risk levels assigned by this index are relative. In other words, if this index predicts a low level of risk, we would expect that field to be <u>less likely</u> to suffer major losses due to TSWV than a field that is rated with a higher level of risk. A low index value does <u>not</u> imply that a field is immune from TSWV losses. Losses due to TSWV vary from year to year. In a year where incidence is high statewide, even fields with a low risk level may experience significant losses.

Measuring Risk to Fungal Diseases of Peanut

The index presented here is based upon better understanding of factors that affect disease incidence and severity. It is designed to help growers approximate the magnitude of the risk that they face from foliar and soilborne diseases in the coming season. More importantly, it should serve as an educational tool that allows the grower to predict the benefits of different management practices he makes in hopes of producing a better crop.

The risks associated with leaf spot, white mold and Rhizoctonia limb rot diseases are to be determined independently in the index system to be presented here. The magnitude of points associated with each variable is not linked between soilborne and foliar disease categories. However, the points allotted to each variable in the PEANUT Rx are weighted within a disease category according to the importance of the variable (such as variety or field history) to another variable (such as planting date). For example, within the category for leaf spot diseases, a maximum of 30 points is allotted to the variable “variety” while 0 points is allotted to the variable “row pattern”. The magnitude of points assigned within each category and to each variable has been checked to ensure that the total number of points assigned to a field is consistent with research and experience. For example, while it would be possible for a non-irrigated field planted to Georgia Green to fall in the lowest risk category, a field of irrigated Georgia Green could be in a category of “medium risk” but not “low risk”.

NOTE: When weather conditions are favorable for fungal diseases, especially when rainfall is abundant, even fields at initial “low risk” to fungal diseases may become “high risk”.

PEANUT Rx

For each of the following factors that can influence the incidence of tomato spotted wilt or fungal diseases, the grower or consultant should identify which option best describes the situation for an individual peanut field. An option must be selected for each risk factor unless the information is reported as “unknown”. A score of “0” for any variable does not imply “no risk”, but that this practice does not increase the risk of disease as compared to the alternative. Add the index numbers associated with each choice to obtain an overall risk index value. Compare that number to the risk scale provided and identify the projected level of risk.

Peanut Variety

Variety[1]	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
Flavorunner 458[2]	50	unknown	unknown	unknown
NC-V 11	35	30	30	25
AT-215*,[2]	30	30	30	unknown
Georgia Green	30	20	25	15
Florida Fancy*,[2]	25	20	20	unknown
McCloud[2]	20	25	20	unknown
AP-4*	20	20	15	unknown
C-99R[4]	20	15	15	25
AT 3085RO[2]	15	30	25	unknown
Georgia-05E	15	20	25	unknown
Georgia Greener*[3]	15	20	20	unknown
Georgia-02C[2,3,5]	15	20	10	20
Georgia-03L[5]	15	15	10	20
AP-3[4]	10	25	10	25
Georgia-06G	10	25	25	unknown
Florida-07[2]	10	20	15	unknown
Georgia-07W*	10	15	10	unknown
Tifguard[6]	10	15	10	unknown
York[2]	10	10	5	unknown
Georganic	5	10	10	unknown

**Data for these new varieties is limited and risk ratings will undergo changes as needed in the future.*

[1]*Adequate research data is not available for all varieties with regards to all diseases. Additional varieties will be included as data to support the assignment of an index value are available.*

[2]*High oleic variety.*

[3]*Varieties Georgia-02C and Georgia Greener have increased resistance to Cylindrocladium black rot (CBR) than do other varieties commonly planted in Georgia.*

[4]*Varieties AP-3 and C-99R are less resistant to CBR and are not recommended for fields where this disease is a problem.*

[5] *The malady referred to as "funky" or "irregular" leaf spot tends to be more severe in Georgia-02C and Georgia-03L than in other varieties. Although this condition can look like early leaf spot (Cercospora arachidicola), the cause "funky" leaf spot is unknown. Disease losses are not typically associated with funky leaf spot.*

[6]*The new variety Tifguard has excellent resistance to the peanut root-knot nematode*

Planting Date

Peanuts are planted:	Spotted Wilt Points[1]	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
Prior to May 1	30	0	10	0
May 1 to May 10	15	0	5	0
May 11-May 31	5	5	0	0
June 1-June 10	10	10	0	5
After June 10	15	10	0	5

Plant Population (final stand, not seeding rate)

Plant stand:	Spotted Wilt Points[1]	Leaf Spot Points	Soilborne Disease Points	
			White mold[2]	Limb rot
Less than 3 plants per foot	25	NA	0	NA
3 to 4 plants per foot	15	NA	0	NA
More than 4 plants per foot	5	NA	5	NA

[1]*Only plant during conditions conducive to rapid, uniform emergence. Less than optimum conditions at planting can result in poor stands or delayed, staggered emergence, both of which can contribute to increased spotted wilt. Note: a twin row is considered to be one row for purposes of determining number of plants per foot of row.*

[2]*It is known that closer planted peanuts tend to have an increased risk to white mold.*

At-Plant Insecticide

Insecticide used:	Spotted Wilt Points*	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
None	15	NA	NA	NA
Other than Thimet 20G or Phorate 20G	15	NA	NA	NA
Thimet 20G, Phorate 20G	5	NA	NA	NA

[*]*An insecticide's influence on the incidence of TSWV is only one factor among many to consider when making an insecticide selection. In a given field, nematode problems may overshadow spotted wilt concerns and decisions should be made accordingly.*

Row Pattern

Peanuts are planted in:	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
Single rows	15	0	5	0
Twin rows	5	0	0	0

Tillage

Tillage	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
conventional	15	10	0	0
reduced*	5	0	0	5

** For fungal diseases, this is does not apply for reduced tillage situations where peanut is following directly behind peanut in a rotation sequence. Limb rot can exist on some types of crop debris and use the organic matter as a bridge to the next peanut crop.*
***"Funky" or "irregular" leaf spot tends to be more severe in conservation tillage than in conventional tillage, though this malady is not typically associated with yield losses.*

Classic® Herbicide

	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
Classic Applied	5	NA	NA	NA
No Classic Applied	0	NA	NA	NA

Crop Rotation with a Non-Legume Crop.

Years Between Peanut Crops*	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
0	NA	25	25	20
1	NA	15	20	15
2	NA	10	10	10
3 or more	NA	5	5	5

**All crops other than peanut are acceptable in a rotation to reduce leaf spot. Cotton and grass crops will reduce the severity of white mold. Rhizoctonia limb rot can still be a significant problem, especially with cotton, under a longer rotation with favorable conditions, e.g. heavy vine growth & irrigation/ rainfall. Rotation with soybeans can increase risk to white mold, Rhizoctonia limb rot, and CBR. Rotation with grass crops will decrease the potential risk of limb rot; tobacco and vegetables will not.*

Note that rotation of peanuts with soybeans may lower the risk for leaf spot diseases, but it does not reduce the risk to CBR or peanut root-knot nematodes and only has minimal impact on risk to white mold or to Rhizoctonia limb rot.

Field History

Previous disease problems in the field?*	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
NO	NA	0	0	0
YES	NA	10	15	10

** "YES" would be appropriate in fields where leaf spot and/or soilborne diseases were a problem in the field despite use of a good fungicide program.*

Irrigation

Does the field receive irrigation?	Spotted Wilt Points	Leaf Spot Points	Soilborne Disease Points	
			White mold	Limb rot
NO	NA	0	0	0
YES	NA	10	5*	10

** Irrigation has a greater affect on Rhizoctonia limb rot than on southern stem rot (white mold) or Cylindrocladium black rot.*

Calculate Your Risk

Add your index values from:

	Spotted Wilt Points	Leaf Spot Points	White Mold Points	Rhizoctonia Limb Rot Points
Peanut Variety				
Planting Date				
Plant Population		----		----
At-Plant Insecticide		----	----	----
Row Pattern				
Tillage				
Classic® Herbicide		----	----	----
Crop Rotation	----			
Field History	----			
Irrigation	----			
Your Total Index Value				

Interpreting Your Risk Total

Point total range for tomato spotted wilt = 35-155.
Point total range for leaf spot = 10-100.
Point total range for white mold = 10-95.
Point total range for Rhizoctonia limb rot = 15-75.

Risk

	Spotted Wilt Points	**Leaf Spot Points**	**Soilborne Points**	
			white mold	**limb rot**
High Risk	**≥115**	**65-100**	**55-80**	**45-75**
High Risk for fungal diseases: Growers should always use full fungicide input program in a high-risk situation.				

Medium Risk	**70-110**	**40-60**	**30-50**	**30-40**
Medium Risk for fungal diseases: Growers can expect better performance from standard fungicide programs. Reduced fungicide programs in research studies have been successfully implemented when conditions are not favorable for disease spread.				
Low Risk	**≤65**	**10-35**	**10-25**	**15-25**
Low Risk for fungal diseases: These fields are likely to have the least impact from fungal disease. Growers have made the management decisions which offer maximum benefit in reducing the potential for severe disease; these fields are strong candidates for modified disease management programs that require a reduced number of fungicide applications.				

Examples of Disease Risk Assessment

Situation 1.
A grower plants **Georgia Green** (30 spotted wilt points, 20 leaf spot points, 25 white mold points, 15 limb rot points) on **May 5** (15 spotted wilt points, 0 leaf spot points, 5 white mold points, 0 limb rot points), with **two years between peanut crops** (0 spotted wilt points, 10 leaf spot points, 10 white mold points, 10 limb rot points) on **conventional tillage** (15 spotted wilt points, 10 leaf spot points, 0 white mold points, 0 limb rot points), **single row spacing** (15 spotted wilt points, 0 leaf spot points, 5 white mold points, 0 limb rot points), in an **irrigated field** (0 spotted wilt points, 10 leaf spot points, 5 white mold points, 10 limb rot points) with **a history of leaf spot disease**, but **not soilborne diseases** (0 spotted wilt points, 10 leaf spot points, 0 white mold points, 0 limb rot points) using **Classic® herbicide** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), **Temik 15G at-plant insecticide** (15 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with a **final plant population** of 2.8 plants per foot of row (25 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points).

Points:
Spotted wilt: **120** (high risk) leaf spot: **60** (medium risk), white mold: **50** (medium Risk), Rhizoctonia limb rot: **35** (medium risk)

Situation 2.
A grower plants **Georgia-02C** (15 spotted wilt points, 20 leaf spot points, 10 white mold points, 20 limb rot points) on **May 15** (5 spotted wilt points, 5 leaf spot points, 0 white mold points, 0 limb rot points), with **three years between peanut crops** (0 spotted wilt points, 5 leaf spot points, 5 white mold points, 5 Rhizoctonia limb rot points) on **strip tillage** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 5 limb rot points), **twin row spacing** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), in an **irrigated field** (0 spotted wilt points, 10 leaf spot points, 5 white mold points, 10 limb rot points) with **no history of leaf spot disease or soilborne disease**

(0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with **NO Classic® herbicide** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), **phorate at-plant insecticide** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with a **final plant population** of 4.2 plants per foot (5 spotted wilt points, 0 leaf spot points, 5 white mold points, 0 limb rot points).

Points:
Spotted wilt: **40** (low risk), leaf spot: **40** (medium risk), white mold: **25** (low risk), Rhizoctonia limb rot: **40** (medium risk)

Situation 3.
A grower plants **Georgia Green** (30 spotted wilt points, 20 leaf spot points, 25 white mold points, 15 limb rot points) on **May 15** (5 spotted wilt points, 5 leaf spot points, 0 white mold points, 0 limb rot points), with **one year between peanut crops** (0 spotted wilt points, 15 leaf spot points, 20 white mold points, 15 limb rot points) on **conventional tillage** (15 spotted wilt points, 5 leaf spot points, 0 white mold points, 0 limb rot points), **twin row spacing** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), in an **irrigated field** (0 spotted wilt points, 10 leaf spot points, 5 white mold points, 10 limb rot points) with **a history of leaf spot disease, white mold, but not Rhizoctonia limb rot** (0 spotted wilt points, 10 leaf spot points, 15 white mold points, 0 limb rot points) with **NO Classic® herbicide** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), **Orthene insecticide** (15 spotted wilt points, 0 leaf spot points, 0 white mold, 0 limb rot points) with a **final plant population** of 3.5 plants per foot of row (15 spotted wilt points, 0 leaf spot points, 0 white mold, 0 limb rot).

Points:
Spotted wilt points: **85** (medium risk), leaf spot risk: **65** (high risk), white mold: **65** (high risk), limb rot: **40** (medium risk)

Situation 4.
A grower plants **AP-3** (10 spotted wilt points, 25 leaf spot points, 10 white mold points, 25 limb rot points) on **April 28** (30 spotted wilt points, 0 leaf spot points, 10 white mold points, 0 limb rot points) with **one year between peanut crops** (0 spotted wilt points, 15 leaf spot points, 20 white mold points, 15 limb rot points) on **strip tillage** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 5 limb rot points), **twin row spacing** (5 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) in a **non-irrigated** field (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points) with **a history of leaf spot, white mold, and Rhizoctonia limb rot** (0 spotted wilt points, 10 leaf spot points, 15 white mold points, 10 limb rot points), with **NO Classic® herbicide** (0 spotted wilt points, 0 leaf spot points, 0 white mold points, 0 limb rot points), using **Thimet at-plant insecticide** (5 spotted wilt points, 0 leaf spot points, 0 white mold, 0 limb rot points) with a **final plant population** of 4.4 plants per foot of row (5 spotted wilt points, 0 leaf spot points, 5 white mold, 0 limb rot).

Points:
Spotted wilt risk: **60** (low risk) leaf spot risk: **50** (medium risk), white mold: **60** (high risk), limb rot: **55** (high risk)

"Planting Windows" to Attain Low Risk for Spotted Wilt

If planting date were the only factor affecting spotted wilt severity, growers would have no flexibility in when they planted. Fortunately, other factors are involved and by choosing other low risk options, growers can expand their planting date window. Remember, the goal is to have a total risk index value of 65 or less, regardless of which combination of production practices works best for you. The following table demonstrates how the planting date window expands as other risk factors go down. For example, where a grower achieves a good stand, uses strip tillage and twin rows, and Thimet, but does not use Classic, he may plant a "10" or "15" point variety at ANY time in the season and still be at "Low" risk for spotted wilt.

	Points assigned to the peanut variety of interest		
	20	15	10
Production practices and final stand	**Planting date options to achieve a "LOW RISK" for Spotted Wilt using above varieties**		
Poor stand, conventional tillage, single rows, Temik, Classic is used	NONE	NONE	NONE
Average stand, twin rows, conventional tillage, Thimet, no use of Classic	May 11-25	May 11-June 5	May 1-June
Good stand, strip tillage, twin rows, Thimet, no use of Classic	After May 1	ANY	ANY

PEANUT INSECT MANAGEMENT

David Adams

Insect management problems in 2009 were less significant compared to the past several years. However, significant problems were encountered and insecticides were applied to many problem fields. Tobacco budworm populations occurred in mixed populations of corn earworm. In fields that needed treating the budworm/bollworm ratio was commonly 60/40, respectively. In 2009 co. agents, consultants and growers identified the budworm and initiated the appropriate insecticides for control.

Threecornered alfalfa hopper (TCAH) has risen to the level of KEY PEST status over the past few years. The key pest is the one that very often triggers the first insecticidal treatments that can influence other pest activities if conditions are appropriate for their development thus leading to more insecticidal inputs. Management decisions for TCAH are judgment calls with some degree of scientific backing. Since the first migration of adults occurs in late June and early July this would be the best opportunity to control the egg-laying adult population severely limiting the subsequent and most damaging nymph populations in August and September. The judgment is whether there are enough TCAH in the early populations to warrant a treatment. It is an easy decision if there are 1 adult per foot of row, but what if there are only 1 per 3 feet of row. If this is the only limiting factor in high yielding peanuts, then one might choose to piggy-back a treatment with a fungicide application. If as an agent/consultant/grower you have experience with the various varietal responses to TCAH, then it is better to yield to your best judgment. The one parameter that we do know is that if peanuts are within 30 days of digging, no treatments are necessary.

PEANUT WEED CONTROL

Eric P. Prostko, Extension Agronomist - Weed Science

USE STAGE/ AND HERBICIDE	BROADCAST RATE/ACRE: AMOUNT OF FORMULATION/A	BROADCAST RATE/ACRE: LBS ACTIVE INGREDIENT/A	REMARKS AND PRECAUTIONS
EARLY PREPLANT FOLIAR BURNDOWN OF EMERGED ANNUAL WEEDS AND/OR COVER CROPS IN REDUCED TILLAGE SYSTEMS			
glyphosate (various trade names) 3.00 lb ae/gal 3.73 lb ae/gal 4.00 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 5.00 lb ae/gal	 16 - 48 oz 13 - 39 oz 12 - 36 oz 11.7 - 35 oz 11 - 32 oz 10 - 29 oz	0.38 to 1.13 ae	Apply any time prior to planting to control emerged weeds. Refer to specific label for weeds controlled, application rates, adjuvants, and precautions. Glyphosate does not adequately control cutleaf eveningprimrose or Carolina geranium, and may not provide acceptable control of wild radish. For cover crop control only, use the following rates: wheat < 12", 0.56 lb ae/A; wheat > 12", 0.75 lb ae/A; rye < 18", 0.56 lb ae/A; rye > 18", 0.75 lb ae/A. Glyphosate can also be tank-mixed with **Valor** (1-3 ozs/A), **Aim** (1-2 ozs/A), or **ET** (0.5-2.0 oz/A) to improve the spectrum of control, particularly for annual morningglories. Refer to specific comments for Valor. **Applications to wheat and rye should be made before the boot stage or after the wheat is fully headed.** MOA = 9.
glyphosate (various trade names) 3.00 lb ae/gal 3.73 lb ae/gal 4.00 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 5.00 lb ae/gal + 2,4-D amine (various trade names) 3.8 lb/gal	 16 - 48 oz 13 - 39 oz 12 - 36 oz 11.7 - 35 oz 11 - 32 oz 10 - 29 oz + 0.5 to 1.0 pt	0.38 to 1.13 ae 0.24 to 0.48	Refer to comments for glyphosate applied alone. 2,4-D is the most cost-effective option available for burndown of cutleaf eveningprimrose. 2,4-D does not control Carolina geranium. Some 2,4-D products are labeled for application to previous crop stubble or fallow land. In this case, the label directs the user to not plant a crop "until 3 months after application or until the product disappears from the soil". MOA = 9 + 4.
paraquat (Gramoxone Inteon) 2.0 lb/gal (Gramoxone Max/ Firestorm/Parazone) 3.0 lb/gal	 2.5 to 3.75 pt 1.7 to 2.5 pt	0.63 to 0.94	Apply anytime prior to planting to control emerged weeds. Add non-ionic surfactant at 1 qt/100 gals or crop oil at 1 gal/100 gals. **Paraquat will not adequately control horseweed, swinecress, purslane speedwell, curly dock, cutleaf eveningprimrose, and larger wild radish**. For cover crop control only, use the following rates: wheat, 0.63 lb ai/A (2.5 pt/A of 2.0 lb/gal or 1.7 pt/A of 3.0 lb/gal); rye, 0.50 lb ai/A (2.0 pt/A of 2.0 lb/gal or 1.3 pt/A oz/A of 3.0 lb/gal). **Cover crops must be mature (seedheads) for adequate control.** Can also be tank-mixed with Valor (1-3 ozs/A) to improve the spectrum of control and provide residual weed control. Refer to specific comments for Valor. MOA = 22.
paraquat (Gramoxone Inteon) 2.0 lb/gal (Gramoxone Max/ Firestorm/Parazone) 3.0 lb/gal + 2,4-D amine (various trade names) 3.8 lb/gal	 2.5 to 3.75 pt 1.7 to 2.5 pt 0.5 to 1.0 pt	0.63 to 0.94 0.24 to 0.48	Refer to comments for paraquat applied alone. 2,4-D is the most cost-effective option available for burndown of cutleaf eveningprimrose. 2,4-D does not control Carolina geranium. Some 2,4-D products are labeled for application to previous crop stubble or fallow land. In this case, the label directs the user to not plant a crop "until 3 months after application or until the product disappears from the soil". MOA = 22 + 4.

USE STAGE/ AND HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION/A	LBS ACTIVE INGREDIENT/A	
PREPLANT SOIL INCORPORATED			
ethalfluralin (Sonalan) HFP 3.0 lb/gal	2 pt	0.75	Controls annual grasses and small-seeded broadleaf weeds. Soil incorporate 2 to 3 inches deep within 2 days of application. Incorporation with implements other than power tiller requires two passes, preferably at cross angles. May be tank-mixed with Outlook or Dual for control of mixed infestations of annual grasses and nutsedge. *Sonalan may also be applied as a surface application to freshly prepared seedbeds but* ***must be incorporated by 0.5-1.0" of rainfall or irrigation within 2 days after application.*** MOA = 3.
pendimethalin (Prowl/Pendimax) 3.3 lb/gal (Prowl H_20) 3.8 ACS	1.8 to 2.4 pt 2.0 pt	0.75 to 1.0 0.95	Controls annual grasses and small-seeded broadleaf weeds. Soil incorporate 1 to 2 inches deep within 7 days of application. Incorporation with implements other than power tiller requires two passes, preferably at cross angles. Use high rate for Texas panicum or where heavy weed populations are anticipated. May be tank-mixed with Frontier/Outlook, Dual, or Pursuit for control of mixed infestations of annual grasses and nutsedge. *Prowl can be applied immediately after planting to a freshly prepared seedbed up to 2 days after planting but before crop emergence.* ***However, adequate incorporation in the form of 0.75" of irrigation or rainfall is needed within 48 hours for optimum activation when applied by this method.*** **In strip- tillage production systems, the rate of pendimethalin should be increased to 3.0 pts/A (Prowl 3.3EC) or 2.6 pts/A (Prowl H_2O)**. MOA = 3.
dimethenamid- P (Outlook/Propel) 6.0 lb/gal	12 to 21 oz	0.56 to 0.98	Controls some annual grasses (not Texas panicum) and small-seeded broadleaf weeds. Suppresses yellow nutsedge but not purple nutsedge. May be tank-mixed with Prowl/Pendimax or Sonalan for control of mixed infestations of annual grasses and yellow nutsedge. PPI treatments generally provide better control of yellow nutsedge. MOA = 15.
metolachlor (Stalwart, Parallel PCS, Me-Too Lachlor) *S*-metolachlor (Dual Magnum 7.62EC) (Dual II Magnum 7.64EC) (Cinch 7.64EC)	1.0 to 1.33 pt 1.0 to 1.33 pt	1.0 to1.33 0.95 to 1.27	Controls some annual grasses (not Texas panicum) and small-seeded broadleaf weeds and may provide limited Florida beggarweed suppression. Controls or suppresses yellow nutsedge but not purple nutsedge. Incorporation with implements other than power tiller requires two passes, preferably at cross angles. Deep incorporation may reduce effectiveness. May be tank-mixed with Prowl/Pendimax or Sonalan for control of mixed infestations of annual grasses and yellow nutsedge. PPI treatments generally provide better control of nutsedge. Heavy rainfall after planting and/or non-uniform incorporation may result in crop injury expressed as delayed emergence and stunted growth of emerging plants. The generic formulations of metolachlor (**Parallel PCS**, **Stalwart**, **Me-Too-Lachlor**) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials. MOA = 15
diclosulam (Strongarm) 84WG	0.45 oz	0.024	Provides general broadleaf weed control. Incorporate into top 1-3" of final seedbed. Good to excellent control of many species including bristly starbur, wild poinsettia, eclipta, and copperleaf. Should be tank-mixed with a grass herbicide. **Poor control of sicklepod.** Control of nutsedge has been variable and inconsistent. Can also be applied preemergence. **Crop rotation restrictions: cotton = 10 months; soybeans = 0 months; wheat, barley = 4 months; oats, rye = 6 months; corn = 18 months (10 months - IR hybrids); tobacco, sorghum = 18 months; other crops = 30 months.** MOA = 2.

imazethapyr (Pursuit) 2.0 lb/gal 70 DG	 4 oz 1.44 oz	0.063	Controls purple and yellow nutsedge, wild poinsettia, wild radish, pigweed, burgherkin, and several other annual species. Does not control Florida beggarweed or sicklepod. Shallow incorporation is preferred. May be tank- mixed with Dual, Prowl/Pendimax, or Sonalan. Incorporated treatments are more persistent than preemergence or postemergence applications and are more likely to result in carryover. **Rotation intervals for various crops include the following: lima beans, southern peas, soybeans, peanuts, CLEARFIELD corn hybrids - 0 months; wheat, rye - 4 months; field corn - 8.5 months; barley, tobacco - 9 months; bahiagrass, cabbage, canteloupe, cotton, cucumber, Irish potato, lettuce, oats, onion, sorghum, sunflower, sweet corn, sweet potato transplants, sweet pepper transplants, tomato transplants; and watermelon - 18 months; canola - 40 months.** MOA = 2.

USE STAGE/ AND HERBICIDE	**BROADCAST RATE/ACRE**		**REMARKS AND PRECAUTIONS**
	AMOUNT OF FORMULATION/A	**LBS ACTIVE INGREDIENT/A**	
CHEMIGATION			
metolachlor - (Stalwart, Parallel PCS, Me-Too-Lachlor), *S*-metolachlor - (Dual Magnum 7.62E), (Cinch 7.64EC) pendimethalin - (Prowl/Pendimax) 3.3EC (Prowl H_20 3.8ACS)			May be applied by injection through center pivot irrigation systems. Use at normal recommended rates. Apply after planting but before crop emergence. Requires proper system calibration and safety devices (check valves, cutoff switches, etc.) to provide effective weed control and prevent environmental contamination. Accurate herbicide application through chemigation may provide superior weed control compared to conventional ground applications. The generic formulations of metolachlor (**Parallel PCS**, **Stalwart**, **Me-Too-Lachlor**) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials.
PREEMERGENCE			
imazethapyr (Pursuit) 2.0 lb/gal 70 DG	 4 fluid oz 1.44 oz	0.063	See comments for Pursuit PPI. Controls the same weeds as listed for Pursuit PPI but with greater dependency on rainfall or irrigation for activation. MOA = 2.
metolachlor (Stalwart, Parallel PCS, Me-Too-Lachlor) *S*-metolachlor (Dual Magnum 7.62EC) (Dual II Magnum 7.64EC) (Cinch 7.64EC)	1.0 to 1.33 pt 1.0 to 1.33 pt	1.0 to 1.33 0.96 to 1.27	Controls some annual grasses (not Texas panicum) and small-seeded broadleaf weeds. Provides some suppression of sicklepod and Florida beggarweed. Apply after planting and before crop and weeds emerge. If Dual is used as a PPI treatment, any additional application of Dual should be delayed until peanuts begin emerging (AC). Multiple applications--preplant incorporated followed by at-cracking treatments--improve control of sicklepod, Florida beggarweed, and yellow nutsedge. Preemergence treatments generally provide better broadleaf weed control/suppression. Up to 2 pts/A of any metolachlor formulation can be applied preemergence for the partial control of Florida beggarweed in the southeast Do not apply more than 2.66 pts/A/year of Stalwart/Parallel/Me-Too-Lachlor or 2.8 pts/A/year of Dual Magnum/Dual II Magnum/Cinch formulation. The generic formulations of metolachlor (**Parallel**, **Stalwart**, **Me-Too-Lachlor**) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials. MOA = 15.
dimethenamid-P (Outlook/Propel) 6.0 lb/gal	12 to 21 oz	0.56 to 0.98	Controls some annual grasses (not Texas panicum) and small-seeded broadleaf weeds. Provides some suppression of sicklepod, Florida beggarweed. Apply after planting and before crop and weeds emerge. May be used in a split application method. Preemergence treatments generally provide better broadleaf weed control/suppression. Do not exceed 21 oz/A/year of Outlook/Propel 6E. MOA = 15.
diclosulam (Strongarm) 84WG	0.45 oz	0.024	Refer to PPI section. MOA = 2.

flumioxazin (Valor) 51WP	3.0 oz	0.096	Apply immediately after planting but no later than 2 days after planting. Plant peanuts at least 1.5" deep. **DO NOT** irrigate when peanuts are cracking. Rainfall or irrigation at cracking will cause temporary crop injury that should not result in reduced yields if applied according to the label. Valor will provide good to excellent control of many broadleaf weeds including Florida beggarweed, Palmer amaranth, and tropic croton. **Valor will not control annual/perennial grasses, sicklepod, nutsedge, and cocklebur**. Valor can be tank-mixed with Prowl, Sonalan, Dual Magnum, or Outlook. **Can also be used in strip-tillage peanut production systems in combination with glyphosate or paraquat to improve burndown control**. Rotation restrictions include the following: cotton - 2 months; field corn - 2 months; soybeans - 0 months; tobacco - 2 months; wheat - 2 months. Refer to current product label for additional rotational restrictions. **Completely clean spray equipment THE SAME DAY OF USE as directed on the herbicide label!!!!** MOA = 14.

	BROADCAST RATE/ACRE		
USE STAGE/ AND HERBICIDE	**AMOUNT OF FORMULATION/A**	**LBS ACTIVE INGREDIENT/A**	**REMARKS AND PRECAUTIONS**
AT CRACKING OR EARLY POSTEMERGENCE			
imazethapyr (Pursuit) 2.0 lb/gal 70 DG	 4.0 oz 1.44 oz	0.063	See comments for Pursuit PPI and PRE. Provides effective control of nutsedge, wild poinsettia, wild radish, bristly starbur, prickly sida, and several other annual species. Weed size is especially critical for effective control of nutsedge, bristly starbur, and prickly sida. If weeds are emerged, surfactant or crop oil concentrate should be included. May be tank-mixed with paraquat or 2,4-DB for broader spectrum control of emerged weeds. MOA = 2.
metolachlor (Stalwart, Parallel PCS, Me-Too-Lachlor) 8.0 lb/gal *S*-metolachlor (Dual Magnum) 7.62 lb/gal	1.0 to 1.33 pt 1.0 to 1.33 pt	1.0 to 1.33 0.95 to 1.27	See comments for Dual PPI and PRE. Compared to PPI and PRE treatments, AC applications provide better control of non-emerged broadleaf weeds such as Florida beggarweed and sicklepod. May be tank-mixed with paraquat treatments for improved contact activity and for suppression/control of problem broadleaf weeds and yellow nutsedge. May also be tank-mixed with Basagran, Basagran + 2,4-DB, or Storm. **Do not use Dual II Magnum/Cinch formulations after peanut emergence.** Do apply more than 2.66 pts/A/year of Stalwart/Parallel/Me-Too-Lachlor or 2.8 pts/A/year of Dual Magnum. Research has shown that Dual will provide good to excellent residual control of tropical spiderwort if applied before weed emergence. Do not apply within 90 days of harvest. The generic formulations of metolachlor (**Parallel PCS**, **Stalwart**, **Me-Too-Lachlor**) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials. MOA = 15.
paraquat (Gramoxone Max/ Firestorm/Parazone) 3.0 lb/gal (Gramoxone Inteon) 2.0 lb/gal	5.4 fluid oz 8.0 fluid oz	0.125	Provides effective contact control of sicklepod, Florida beggarweed, Texas panicum, and many other problem weeds. When used alone, paraquat is not effective on smallflower morningglory, prickly sida, wild radish, or tropic croton. Apply anytime **up to 14 days after ground crack**. After 14 days after ground crack, apply in combination with Basagran or Storm. Include NIS at 1 qt/100 gal spray solution with all paraquat treatments. Do not make more than 2 applications per season. Do not apply a total of more than 10.8 ozs/A/year (Gramoxone Max) or 16.0 ozs/A/year (Gramoxone Inteon). Peanut foliage injury is usually temporary. Conditions of high humidity, wet foliage, and/or wet soils result in greater foliage burn. Thrips injury retards crop recovery. Research indicates no adverse effects of adding chlorothalonil products with paraquat tank-mixtures where fungicide treatments are needed. **The success of "at-crack" sprays can be greatly improved by 1) applying herbicides in a minimum of 15 GPA; 2) using flat fan nozzles; 3) decreasing ground speed**; **and 4) using lower spray pressures (30 PSI). Rain-free period for paraquat is 30 minutes.** MOA = 22.

paraquat (Gramoxone Max/ Firestorm/Parazone) 3.0 lb/gal (Gramoxone Inteon) 2.0 lb/gal + bentazon+acifluorfen (Storm) 4.0 lb/gal	8.0 fluid oz 12.0 fluid oz + 1-1.5 pt	0.188 + 0.5 + 0.25	Provides effective, broad-spectrum weed control. Provides some suppression of yellow nutsedge. Addition of Dual or Frontier/Outlook improves contact activity and provides residual weed suppression/control, but could result in increased foliar peanut burn. Apply anytime up to 28 days after ground crack. Include NIS at 1 qt/100 gal spray solution with all paraquat treatments. **The success of "at-crack" sprays can be greatly improved by 1) applying herbicides in a minimum of 15 GPA; 2) using flat fan nozzles; 3) decreasing ground speed**; **and 4) using lower spray pressures (30 PSI)** Research indicates no adverse effects of adding chlorothalonil products with paraquat tank-mixtures where fungicide treatments are needed MOA = 22 + 6 +14. * Dual Magnum or generic metolachlors can be used in combination with this treatment to provide residual control of pigweed and tropical spiderwort. NIS is **not** recommended if Dual Magnum or generic metolachlors are used with paraquat + Storm.
paraquat (Gramoxone Max/ Firestorm/Parazone) 3.0 lb/gal (Gramoxone Inteon) 2.0 lb/gal + bentazon (Basagran) 4.0 lb/gal	8.0 fluid oz 12.0 fluid oz + 0.5 to 1.0 pt	0.189 + 0.25 + 0.5	Provides effective, broad-spectrum weed control. Provides some suppression of yellow nutsedge. Generally reduces peanut injury compared to other paraquat treatments. The lower rate of Basagran (0.5 pt) is usually sufficient to reduce peanut foliar burn and provide control of smallflower morningglory. The higher rate (1 pt) is necessary for control of weeds such as bristly starbur and prickly sida. Apply anytime up to 28 days after ground crack. Include NIS at 1 qt/100 gal spray solution with all paraquat treatments. **The success of "at-crack" sprays can be greatly improved by 1) applying herbicides in a minimum of 15 GPA; 2) using flat fan nozzles; 3) decreasing ground speed**; **and 4) using lower spray pressures (30 PSI).** . Research indicates no adverse effects of adding chlorothalonil products with paraquat tank-mixtures where fungicide treatments are needed. MOA = 22 + 6. * Dual Magnum or generic metolachlors can be used in combination with this treatment to provide residual control of pigweed and tropical spiderwort. NIS is **not** recommended if Dual Magnum or generic metolachlors are used with paraquat + Basagran.
diclosulam (Strongarm) 84WG	0.45 ozs	0.024	24(c) label for use in Georgia**. Only weed on current 24(c) label is tropical spiderwort**. Can be applied up until 30 days after planting. Use in combination with a NIS @ 0.25% v/v (1 qt/100 gals). **When applied postemergence in peanut, cotton rotation restriction is 18 months**. Follow other rotation restrictions listed in PPI section. Label must be in the possession of user at the time of application. MOA = 2.

USE STAGE/ AND HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION/A	LBS ACTIVE INGREDIENT/A	
POSTEMERGENCE			
acifluorfen (Ultra Blazer) 2L 2.0 lb/gal	0.5 to 1.5 pt	0.125 to 0.38	Especially useful for control of morninglories, tropic croton, wild radish, wild poinsettia, hophornbeam copperleaf, and spider flower. Adjust rate according to weed size and species as noted on the label. Use 1.0 pt/A or less for control of highly sensitive species such as hemp sesbania and showy crotalaria. Slight to moderate peanut foliage burn may result. Observations over the past several years indicate that newer amine formulation may be less injurious than older sodium salt formulation. Do not apply within **75** days of harvest or more than 2 pt/A per season as a postemergence treatment. Apply with nonionic surfactant at 1 qtt/100 gal spray solution (0.25% v/v). May be tank-mixed with 2,4-DB (1 pt/A). The Blazer + 2,4-DB tank mixture is generally more injurious to peanuts than either product alone. May be tank-mixed with Basagran for control of broadleaf weeds such as morninglories, cocklebur, and prickly sida. A pre-packaged mix of acifluorfen + bentazon is marketed as Storm. **Rain-free period for Ultra Blazer is 4 hours.** MOA = 14.
bentazon (Basagran) 4.0 lb/gal	1.5 to 2.0 pt	0.75 to 1.0	Apply for postemergence control of yellow nutsedge, cocklebur, bristly starbur, smallflower morninglory, prickly sida, and certain other weeds. Treat when broadleaf weeds are small and actively growing. Adjust rate according to weed size as noted on label. Two applications may be required for control of yellow nutsedge. For yellow nutsedge, include crop oil concentrate at 1 qt/A. Do not foliarly apply sulfur 14 days before or after use of crop oil concentrate to minimize risk of peanut foliage burn. May be tank-mixed with 2,4-DB amine 2L (0.5 pt/A) for improved control of morninglories. Early-season applications of bentazon at high rates following in-furrow applications of Di-Syston may infrequently result in SEVERE peanut injury. **Rain-free period for Basagran is 4 hours.** MOA = 6.
bentazon + acifluorfen (Storm) 4 lb/gal	1.5 pt	0.5 + 0.25	Controls morninglories, cocklebur, prickly sida, ragweed, eclipta, tropic croton, and several other broadleaf weeds with less injury than Blazer alone. Application timing is critical--weeds must be small. Include surfactant or crop oil concentrate. Can be mixed with 2,4-DB for control of larger weeds and for control of sicklepod. Do not apply within 75 days of harvest. May be tank-mixed with paraquat. **Rain-free period for Storm is 4 hours**. MOA = 6 + 14.

USE STAGE/ AND HERBICIDE	BROADCAST RATE/ACRE		PRECAUTIONS AND REMARKS
	AMOUNT OF FORMULATION/A	LBS ACTIVE INGREDIENT/A	
POSTEMERGENCE continued			
2,4-DB (Butyrac 175) 1.75 lb/gal (Butyrac 200) 2.0 lb/gal (Butoxone 175) 1.75 lb/gal (Butoxone 200) 2.0 lb/gal	 14 to 18 oz 13 to 16 ozs 16 to 28 ozs 14 to 26 ozs	 0.19 to 0.25 0.20 to 0.25 0.22 to 0.38 0.22 to 0.40	Apply up to 2 applications per season as an over-the-top treatment for broadleaf weed control. Use rates and application timing varies by specific product label. For control of morningglory and citronmelon, apply in the seedling stage. Cocklebur one foot or more in height can be controlled; however, earlier treatment is preferred. Also effective for control of escaped sicklepod. Do not apply if peanuts are under drought stress. Butyrac may be applied up to 12 weeks after planting. Do not apply Butoxone within 30 days of harvest. Research indicates no adverse effects of adding chlorothalonil products with 2,4-DB where fungicide treatments are needed. **Rain-free period for 2,4-DB is 1 hour. Do not tank-mix with postemergence grass herbicides.** MOA = 4.
imazethapyr (Pursuit) 2.0 lb/gal 70 DG	 4 fluid oz 1.44 oz	0.063	See comments for Pursuit PPI, PRE, and AC/EP. Generally should be used early postemergence-when weeds are extremely small. Controls wild radish, pigweeds, morningglories, cocklebur, and several other annual species. Compared to PPI, PRE. and AC/EP treatments, POST applications are less effective on nutsedge, wild poinsettia, and some other species. Applications should be made before nutsedge exceeds 3 to 4 inches and bristly starbur exceeds 2 inches. May be tank-mixed with paraquat or 2,4-DB. Post control of escaped wild poinsettia is greatly enhanced in combination with paraquat**. Rain-free period for Pursuit is 1 hour**. Do not apply within 85 days of harvest. MOA = 2.
imazapic (Cadre)70DG (Cadre/Impose) 2AS	 1.44 oz 4.0 oz	0.063	Provides excellent control of many broadleaf and grass weeds and both purple and yellow nutsedge. Apply as an early postemergence treatment when weeds are less than 2-3 inches in height. Under conditions of heavy weed pressure, applications of Cadre 10-14 days following an at-cracking treatment (paraquat combination) has resulted in superior weed control. Do not apply within 90 days of harvest. Use with NIS (0.25% v/v) or COC (1 qt/A). Do not tank-mix with postemergence grass herbicides **Rotation restrictions include: wheat, rye - 4 months; corn, snapbeans, southern peas, soybeans, tobacco - 9 months; cotton, oats, sweet corn, grain sorghum - 18 months; canola - 40 months. See label for additional restrictions. Rain-free period for Cadre is 3 hours.** MOA = 2.
lactofen (Cobra 2EC)	 12.5 oz	0.195	Apply after peanuts reach 6 true leaf stage of growth. Use a crop oil concentrate at 1% v/v (1 gal/100 gals). Provides good control of pigweeds, morningglories, ragweed, copperleaf, wild poinsettia, and eclipta. Cobra can be tank-mixed with Basagran, Cadre, Pursuit, Select, and 2,4-DB**.** Pre-harvest interval is 45 days. **Rain-free period is 30 minutes.** MOA = 14.
sethoxydim (Poast) 1.5 lb/gal (Poast Plus) 1.0 lb/gal	 1.0 to 1.5 pt 1.5 to 2.25 pt	0.19 to 0.28	For control of annual and perennial grasses. Apply when annual grasses are small (1-6 inches) and actively growing. Under favorable conditions, large Texas panicum can be controlled. For perennial grass control, two applications are usually required for satisfactory control. Always apply with 1 qt/A crop oil concentrate. Tank-mixtures with other herbicides, such as 2,4-DB, may reduce grass control. Do not apply sulfur 14 days before or after application to minimize risk of peanut foliage burn. Reduced spray volumes (10 GPA) may improve grass control. Do not apply within 40 days of harvest. **Rain-free period for Poast is 1 hour.** MOA = 1.

USE STAGE/ AND HERBICIDE	BROADCAST RATE/ACRE: AMOUNT OF FORMULATION/A	BROADCAST RATE/ACRE: LBS ACTIVE INGREDIENT/A	PRECAUTIONS AND REMARKS
POSTEMERGENCE continued			
clethodim (Select, Arrow, others) 2EC (Select Max) 0.97EC	6 to 8 oz 12 to 16 oz	0.09 to 0.125	For control of annual and perennial grasses. Apply when grasses are small (<6 inches) and actively growing. Under favorable conditions, large Texas panicum and bermudagrass can be effectively controlled. Heavy bermudagrass pressure or larger Texas panicum will require a follow-up treatment. When tank-mixing with a broadleaf herbicide or controlling perennial grasses, increase rates (8-16 ozs/A-Select; 16-32 oz/A-Select Max). Do not apply more than 32 oz/A/year (Select) or 64 oz/A/year (Select Max). Always apply with a crop oil concentrate at 1% v/v (Select/Arrow). A NIS (0.25% v/v) can be used with Select Max to reduce crop injury potential. May be tank-mixed with Basagran, Blazer, Storm, Orthene, Danitol, or Folicur. **Do not tank-mix with chloro-thalonil products or reduced grass control can occur**. Do not apply within 40 days of harvest. **Rain-free period is 1 hour.** MOA = 1.
fluazifop-P (Fusilade DX) 2 lb/gal	8 - 24 oz	0.125 - 0.375	For the control of annual and perennial grass weeds. Use rate depends upon weed and weed size. Refer to table at the end of this section for specific information about rates and timings. Do not apply more than 48 oz/A/season. Do not apply more than 24 oz/A/application. Maintain a minimum of 14 days between application. Use a NIS @ 0.25% v/v or COC @ 1% v/v. PHI = 40 days. **Rain-free period = 1 hour**. MOA = 1. Fusilade also has some activity on bristly starbur (i.e. goathead or Texas sandspur)
chlorimuron (Classic) 25DF	0.5 oz	0.008	Make one application per season as an over-the-top treatment for mid-season Florida beggarweed and bristly starbur control or suppression. Under favorable conditions--good soil moisture, moderate temperatures, and high relative humidity--other species such as cocklebur, ragweed, and sicklepod may be suppressed. Avoid applications during periods of drought/heat stress because of potential for poor weed control and crop injury. **Applications of Classic may not provide acceptable control of Florida Beggarweed that has escaped control or is regrowing after an previous application of Cadre.** Include nonionic surfactant at 1 qt/100 gals spray solution with all Classic applications. Addition of ammonium sulfate (2 lb/A) or feed grade urea (2 gal/A) improves activity on bristly starbur. Classic can be applied from 60 days after peanut emergence to within 45 days of harvest. **APPLICATIONS OF CLASSIC APPLIED FROM 60 DAYS AFTER CROP EMERGENCE TO 45 DAYS BEFORE HARVEST MAY CAUSE AN INCREASE IN TSWV SYMPTOMS.** Temporary yellowing of peanut foliage and reduction of canopy growth sometimes occur. Can be tank-mixed with Bravo or 2,4-DB. However, combinations of Classic + 2,4-DB result in significantly more foliar crop injury compared to Classic alone. Do not use on Spanish peanut. Do not use the combination of Classic + 2,4-DB on Southern Runner. Do not tank-mix with elemental sulfur. Rain-free period for Classic is 1 hour**. <u>Do not use Classic on Georgia-06G</u>.** MOA = 2.
HARVEST AID			
carfentrazone (Aim) 2EC	1 - 2 oz	0.156 - 0.031	Useful for the late-season dessication/defoliation of annual morningglories (*Ipomoea* sp.). Aim is less effective on smallflower morningglory. Apply 7 days before harvest. Use in combination with either a NIS (0.25% v/v) or COC (1% v/v). Aim may cause peanut leaf spotting or burning. Use at least 15 GPA for optimum results. Do not graze or feed peanut hay to livestock. Only 1 application per season is permitted. Rain-free period = 6-8 hours . MOA = 14.

Table. 1. Summary of peanut grass herbicides.

	HERBICIDE				
	Fusilade DX	**Poast**	**Poast Plus**	**Select**	**Select Max**
Maximum Rate/A/Season	48 oz	2.5 pt	3.75 pt	32 oz	64 oz
Maximum Rate/A/ Application	24 oz	1.5 pt	2.25 pt	16 oz	32 oz
broadleaf signalgrass	12 oz (2-4")	1.0 pt (up to 8")	1.5 pt (up to 8")	6-8 oz (2-6")	9-16 oz (2-6")
crabgrass	12 oz (1-2")	1.0 pt (up to 6")	1.5 pt (up to 6")	6-8 oz (2-6")	9-16 oz (2-6")
crowfootgrass	NL*	NL	NL	6-8 oz (2-6")	9-16 oz (2-6")
field sandbur	12 oz (2-4")	1.25 pt (up to 3')	1.875 pt (up to 3")	6-8 oz (2-6")	9-16 oz (2-6")
goosegrass	8 oz (2-4")	1.0 pt (up to 6")	1.5 pt (up to 6")	6-8 oz (2-6")	9-16 oz (2-6")
Texas panicum	12 oz (2-8")	1.0 pt (up to 8")	1.5 pt (up to 8")	6-8 oz (2-6")	9-16 oz (2-6")
rhizome johnsograss	12-24 oz (1st) (8-18") 8-24 oz (2nd) (6-12")	1.5 pt (1st) (up to 25') 1.0 pt (2nd) (up to 12")	2.25 pt (1st) (up to 25") 1.5 pt (2nd) (up to 12")	8-16 oz (1st) (12-24") 6-8 oz (2nd) (6-18")	12-32 oz (1st) (12-24") 9-24 oz (2nd) (6-18")
bermudagrass	12-24 oz (1st) (4-8" runners) 8-24 oz (2nd) (4-8" runners)	1.5 pt (1st) (up to 6" stolon) 1.0 pt (2nd) (up to 4" stolon)	2.25 pt (1st) (up to 6" stolon 1.5 pt (2nd) (up to 4" stolon	8-16 oz (1st) (3-6" runners) 8-16 oz (2nd) (3-6" runners	12-32 oz (1st) (3-6" runners) 12-32 oz (2nd) (3-6" runners)

*NL= crowfootgrass was not listed on the product label.

SUGGESTED HERBICIDE PROGRAMS FOR THE CONTROL OF TROPICAL SPIDERWORT (BENGHAL DAYFLOWER) IN PEANUT:

Program 1

a) **PRE Immediately After Planting**: Valor @ 3 oz/A + Dual Magnum or generic metolachlor (Stalwart, Parallel PCS, Me-Too-Lachlor) @ 1 pt/A **and**

b) **POST when spiderwort is 1-2" tall:** Cadre/Impose 2L @ 4 oz/A or Strongarm @ 0.45 oz/A + Dual Magnum or generic metolachlor (Stalwart, Parallel PCS, Me-Too-Lachlor) @ 1 pt/A.

Program 2

a) **AT-CRACK (before 28 days after peanut cracking)**: Apply Gramoxone Inteon @ 12 oz/A or Firestorm/Parazone @ 8 oz/A + Basagran @ 8 oz/A + Dual Magnum or generic metolachlor (Stalwart, Parallel PCS, Me-Too-Lachlor) @ 1 pt/A **and**

b) **POST (2-3 weeks after at-crack spray):** Apply Cadre/Impose 2L @ 4 oz/A or Strongarm @ 0.45 oz/A + Dual Magnum or generic metolachlor (Stalwart, Parallel PCS, Me-Too-Lachlor) @ 1 pt/A.

*When using Dual Magnum or generic metolachlor POST in combination with Cadre/Impose, Gramoxone/Firestorm, or Strongarm, additional spray adjuvants (NIS, COC) are not necessary. The maximum amount/A/year of Dual Magnum that can be applied is 2.8 pts. The maximum amount/A/year of Stalwart, Parallel PCS, or Me-To-Lachlor that can be applied is 2.66 pts.

Weed Response to Burndown Herbicides Used in Peanut

Eric P. Prostko, A. Stanley Culpepper, and Steve M. Brown

Weed Species	Burndown Treatment[1]							
	2,4-D [3]	glyphosate acid[2]	glyphosate acid [2] + 2,4-D [3]	glyphosate acid [2] + Valor	glyphosate acid[2] + Aim or ET	paraquat	paraquat + 2,4-D	paraquat + Valor[4]
GRASSES / SEDGES								
annual bluegrass	N	E	E	E	E	G-E	G-E	
bermudagrass	N	F	F	F	F	P	P	
crabgrass	N	E	G-E	E	E	G		
goosegrass	N	E	G-E	E	E	F-G		
Italian ryegrass	N	G-E	G	G	G	P-F	P-F	
johnsongrass	N	G-E	G	G-E	G-E	P		
little barley	N	E	E	E	E	G	G	
sandbur	N	E	G-E	E	E	G		
Texas panicum	N	E	G-E	E	E	G		
volunteer corn	N	E	E	E	E	F-G		
purple nutsedge	N	F-G	F-G	G	F-G	P-F		
yellow nutsedge	N	F	F	F	F	P-F		
BROADLEAVES								
bristly starbur	G	G-E	G-E	E	E	E		
buttercup	G	G-E	E	G-E	G-E	E		
Carolina geranium	F	P-F	G	G	F-G	G-E	G-E	
chickweed	P	E	E	E	E	E	E	
citronmelon	F	G-E	E	E	E	F		
cocklebur	E	E	E	E	E	G-E		
coffee senna	G	E	E	E	E	F		
corn spurry	P-F	G-E	G-E			F-G		
cowpea	G	E			E	E		
cudweed	P-F	G-E	G-E	E		F-G		
curly dock	P-F	F	F-G	F	F	P	P-F	
eveningprimrose, cutleaf	E	P-F	E	F-G	F	P-F	E	F-G
eclipta	P	F			G-E	F		G
Florida beggarweed	P-F	E	E	E	E	E		
Florida pusley	F	F	G	F-G	G	F		G
field pansy	P-F	F-G	F-G	G		G-E		
hemp sesbania	G-E	P-F	E		G-E	F		
henbit	P-F	F	G-E	E	E	G	G-E	
horsenettle	F	F			P-F	P-F		
Horseweed	F-G	F-G	G-E	F-G	G	F	G	F
ALS-resistant	F-G	F-G	G-E	F-G	G	F	G	F
Glyphosate-resistant	F-G	P	F-G	P	F	F	G	F

lambsquarters	E	G	E		G-E	F-G		

Weed Response to Burndown Herbicides Used in Peanut (continued)

Burndown Treatment[1]								
2,4-D [3]	**glyphosate acid[2]**	**glyphosate acid [2] + 2,4-D[3]**	**glyphosate acid [2] + Valor**	**Glyphosate[2] + Aim or ET**	**paraquat**	**paraquat + 2,4-D**	**paraquat + Valor[4]**	
morningglory, *Ipomoea*	G	F	E	E	E	F-G		
morningglory, smallflower	F	G	E	E	G-E	P		
Pennsylvania smartweed	F	G	G		G-E	P		
Pigweed	G-E	G-E	E	E	E	G	G-E	G-E
ALS-resistant	G-E	G-E	G-E	E	E	G	G-E	G-E
Glyphosate-resistant	G-E	P	F-G	P	F	G	G-E	G-E
prickly sida	F-G	F-G	G		F-G	P-F		
purslane	G-E	F-G	G-E	G	F-G	G		
ragweed	E	G	E		G-E	G		
redweed	F	G			G-E	F		
shepherdspurse	G	G			G	G	G-E	
sicklepod	F-G	G-E	E	E	G-E	E		
speedwell	P-F	G-E	G-E	E	E	F	G	
spurred anoda	F-G	G			G	F-G		
swinecress	F-G	F-G	G	F-G	F-G	P	P-F	
tropic croton	F	G-E	G-E	E	G-E	F		
tropical spiderwort	G-E	P	G-E	F	Aim = G-E ET = P-F	G	G-E	
velvetleaf	F-G	G			E	P		
vines (maypop, trumpet creeper, bigroot mg)	F	P-F			P-F	P		
Virginia pepperweed	G-E	G			G	P-F	G-E	
volunteer peanuts	P	F	F	F-G	F	P	P	F-G
wild lettuce	G	G	G-E	E	G-E	P		
wild poinsettia	F-G	G			G-E	G-E		
wild radish	G	F-G	E	G	G	F	F-G	G
COVER CROPS								
clover	F	F	F-G		F	F-G		
lupine	G	G	G		G	F-G		
small grains	N	E	G-E	E	E	G		G
vetch	G	F	G-E	F	F	F		

Key: E = 90% or better control; G = 80% to 90% control; F = 60% to 80% control; P = 30% to 60% control; N = < 30% control.

[1]Application rates per acre: 2,4-D, 1 pt; glyphosate acid, 0.75 lb a.e.; paraquat , 0.63 lb a.i.; Valor, 1 to 2.0 oz (Note: if 3 ozs/A of Valor is used, burndown control may be better than indicated and residual control will be increased); Aim , 1-2 oz/A; ET, 0.5-2.0 oz/A.

[2]Mixing herbicides with glyphosate occasionally reduces grass control (including cover crops). This is more likely to occur with large weeds in dry conditions.

[3]Labels for 2,4-D are ambiguous concerning the waiting period between application and planting.

[4]Use a NIS (0.25% v/v) or COC (1% v/v) with this tank-mixture. A COC may be preferred if weeds are large.

WEED RESPONSE TO HERBICIDES USED IN PEANUTS

Eric P. Prostko, Extension Agronomist - Weed Science

	I PPI/PRE[1,2]						**PRE**		**POSTEMERGENCE**	
	Prowl Pendimax Sonalan	**Dual Magnum[3]**	**Lasso Intrro**	**Frontier Outlook**	**Pursuit**	**Strongarm**	**Solicam**	**Valor**	**Paraquat[4]**	**Paraquat + Storm**
Perennials bermudagrass	P	P	P	P	P	P	P	P	P	P
johnsongrass-rhizome	P	P	P	P	P	P	P	P	P	P
nutsedge, purple	P	P	P	P	G	P-F	P-F	P	P-F	F
nutsedge, yellow	P	F-G	F	F	F-G	P-F	P-F	P	P-F	F-G
Grasses (annual) broadleaf signalgrass	G-E	F-G	P	F	P	P	G	P	G	G
crabgrass	E	E	E	E	F	P	G-E	P	F-G	F-G
crowfootgrass	E	E	E	E	P	P	G	P	G	G
fall panicum	G	G	G	G	P-F	P	G	P	G	G
goosegrass	E	E	E	E	F	P	G	P	F-G	F-G
johnsongrass-seedling	E	F	F	F	G	P		P	G	G
sandbur	E	F-G	F-G	F-G		P		P	F	F-G
Texas panicum	G-E	P	P	P	P-F	P-F	P	P	G-E	G-E
Broadleaves bristly starbur	P	P	F	P	F	E	P-F	F	P-F	F-G
burgherkin	P	P	P	P	E	G	G	G	F	G
carpetweed	G	P-F	P-F	G	F-G	G	G		F-G	G
citronmelon	P	P	P	P	P	G		G	F	G
cocklebur	P	P	P	P	G-E	G-E	P-F	P	G	G-E
coffee senna	P	P	P	P	F-G	P	F	P-F	F	E
copperleaf	P	P		F-G	P	G-E		G-E	P	G
cowpea	P	P	P	P	P	P	P	P-F	F-G	F
crotalaria	P	P	P	P				G		F-G
croton, tropic	P	P	P-F	P	P	F-G	G	G	P	G

dayflower, Benghal tropical spiderwort	P	G-E	F	F	G	G	P-F	F	G	G
eclipta	P	P-F	P-F	P-F	P	G-E	P	G-E	P-F	F-G
Florida beggarweed	P	P-F	F	P-F	P	F-G	G	G-E	G-E	G-E
Florida pusley	E	G-E	G-E	G-E	G	G-E	G-E	G-E	P	P
groundcherry, cutleaf	P	G	G	G						
jimsonweed	P				G	G-E	F-G	G	P	F

WEED RESPONSE TO HERBICIDES USED IN PEANUTS (continued)

	I PPI/PRE[1,2]						PRE		POSTEMERGENCE	
	Prowl Pendimax Sonalan	**Dual Magnum**[3]	**Lasso Intrro**	**Frontier Outlook**	**Pursuit**	**Strongarm**	**Solicam**	**Valor**	**Paraquat**[4]	**Paraquat + Storm**
hairy indigo	P	F				G	G	G	F	
hemp sesbania	P	P	P	P	P	P-F	P	G		G
horseweed								G-E	P	P
lambsquarters	E	F	F	G	F	G-E	F-G	G-E	F	F-G
morningglory spp.	P	P	P	P	G	F-G	P-F	F-G	P	F
cypressvine	P	P	P	P	G		F	G	F-G	F-G
entireleaf/ivyleaf	P	P	P	P	G	F-G	P	F-G	F	G
pitted	P	P	P	P	G	F-G	P	F	F	G
purple moonflower	P	P	P	P			P		F	G
red	P	P	P	P	G	F		G	F	G
smallflower	P	P	P	P	E	G	P-F	G-E	P	G-E
tall	P	P	P	P	G			F-G	F	G
Pigweeds ALS-resistant	G G	G G	G G	G G	E P	G P	G G	E E	F F	G-E G-E
poorjoe										
prickly sida	P	F	F	F	G-E	F-G	G-E	G-E	F	G
primrose, cutleaf evening									P	P
purslane	G-E	G	G	G	G		F	G-E	G	G
ragweed	P	P	P	F-G	P	G-E	G	G-E	P-F	G
redweed	P					G	G-E	G-E	F	G
spurred anoda	P	P	P	P		F-G		F	P	G
sicklepod	P	P	F	P	P	P	F	P	G-E	G-E
smartweed	P				G	G		P-F	G-E	G

spider flower	P	P	P	P	G					
spurge spp.	P	P-F	P	P-F			F-G	G-E		
velvetleaf	P	P	P	P	P-F	G-E		F	F	F-G
wild poinsettia	P	P	P	P	E	G-E	P	F-G	F	G
wild radish	P	P	P	P	E		F		F	G

Abbreviations: E = Excellent (> 90%); G = Good (80-89%); F = Fair (70-79%); P = Poor (< 70%). (If no letter is given, response is unknown.) PPI=Preplant Incorporated, PRE=Preemergence.
[1]Ratings for Pursuit PPI and PRE are similar. [2]Ratings for Dual, Lasso and Frontier PRE and AC are similar. See remarks for additional information.
[3] The generic formulations of metolachlor (**Parallel PCS**, **Stalwart**, **Me-Too-Lachlor**) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials.
[4]Comercially available as Gramoxone Max/Firestorm or Gramoxone Inteon.

WEED RESPONSE TO HERBICIDES USED IN PEANUTS (continued)

	POSTEMERGENCE												
	Strongarm **	**Paraquat + Basagran**	**2,4-DB**	**Pursuit**	**Basagran**	**Ultra Blazer**	**Cobra**	**Storm**	**Cadre**	**Fusilade**	**Select**	**Poast**	**Classic**
Perennials bermudagrass	P	P	P	P	P	P	P	P	P	G	G	F-G	P
Johnsongrass-(rhizome)	P	P	P	P	P	P	P	P	F-G	G-E	G	F-G	P
nutsedge, purple		F	P	G	P	P	P	P	G-E	P	P	P	P
nutsedge, yellow		F-G	P	F-G	G	P	P-F	F	G-E	P	P	P	F-G
Grasses broadleaf signalgrass	P	G	P	P	P	P	P-F	P	G	G	G-E	G-E	P
crabgrass	P	F-G	P	P-F	P	P	P-F	P	G	G	G-E	G-E	P
crowfootgrass	P	G	P	P-F	P	P	P	P	G	F-G	G	F-G	P
fall panicum	P	G	P	P	P	F	P	P	G	G-E	G-E	G-E	P
goosegrass	P	F-G	P	P	P	P	P	P	F	G	G	G	P
johnsongrass-seedling	P	G	P	F	P	P	P	P	F-G	G-E	G-E	G-E	P
sandbur	P	F-G	P		P	P	P-F	P	G	G	G	G	P
Texas panicum	P	G-E	P	P-F	P	P	P	P	F-G	G	G-E	G-E	P
Broadleaves bristly starbur	E	F	P-F	P-F	G	P-F	G	F-G	F	F	P	P	F
burgherkin		F	F	F	P	G	G	F	G-E	P	P	P	P
carpetweed		P	P	F-G	P	G-E	G-E	G	F-G	P	P	P	
citronmelon		F	G	P	P	F	G	F	G	P	P	P	P
cocklebur	E	G	E	E	E	G	G-E	E	E	P	P	P	F

coffee senna		E	F-G	F	G	P	P-F	F	G	P	P	P	P3
copperleaf	P	P	P	P	P	G-E	G-E	F	P-F	P	P	P	P
cowpea		P-F	P-F	P	P	P-F	P-F	P-F	P-F	P	P	P	F
crotalaria					P	E	E	G-E		P	P	P	
croton, tropic	P	P	P	P	P	E	E	G-E	P	P	P	P	P
dayflower, Benghal tropical spiderwort	G	G	P	F-G	G	P	P	P	F-G	P	P	P	F
eclipta	G-E	F	P	P	G	F-G	F-G	G	P-F	P	P	P	P
Florida beggarweed	P-F	G-E	P	P	P	P	P-F	P	F-G	P	P	P	F-G
Florida pusley		P	P	P	P	P	F-G	P	P	P	P	P	P
groundcherry, cutleaf		F-G			P	G	G	F-G		P	P	P	
jimsonweed		E	P	F-G	E	E	E	G	E	P	P	P	

WEED RESPONSE TO HERBICIDES USED IN PEANUTS (continued)

	POSTEMERGENCE												
	**Strongarm ** **	**Paraquat + Basagran**	**2,4-DB**	**Pursuit**	**Basagran**	**Ultra Blazer**	**Cobra**	**Storm**	**Cadre**	**Fusilade**	**Select**	**Poast**	**Classic**
hairy indigo			F	P	P	G	G	F	F	P	P	P	F-G
hemp sesbania				P	P	E	E	G-E	P	P	P	P	F-G
horseweed ALS-resistant	G P	P	P	P	P	P	P	P	P	P	P	P	F P
lambsquarters		F	F	P	F	P-F	P-F	F	P-F	P	P	P	P
morningglory spp.	G-E	F-G	F-G	G	F	G-E	G-E	G	G	P	P	P	
cypressvine		G-E	F	G	G	G	G-E	G	G	P	P	P	
entireleaf/ivyleaf	G-E		G	F-G	P	G	F-G	F	G	P	P	P	
pitted	G-E		F-G	G	P	G-E	G	F-G	G	P	P	P	
purple moonflower	F-G		F-G	P	P	G-E	G-E	G	F	P	P	P	P
red			G		F-G	G-E	G-E	G-E		P	P	P	
smallflower	G-E	G-E	F	E	E	G-E	G-E	G-E	E	P	P	P	
tall			G		P	G	G	F-G	G	P	P	P	
Pigweeds ALS-resistant	P P	F-G F-G	F F	E P	P P	G-E G-E	G-E G-E	G G	E P	P P	P P	P P	F P
poorjoe			F			G	G			P			
prickly sida		G	P	P-F	G	P	G	G	G	P	P	P	P

primrose, cutleaf evening	P	P	G-E	P	P	P	F-G	P	P	P	P	P	P
purslane		G	G	P-F	G	E	E	G-E	P-F	P	P	P	
ragweed	E	F	F	P	F	E	E	G	F	P	P	P	P-F
redweed		G	P	P	G	P	F	G	G	P	P	P	P
spurred anoda		F-G	P		G	P	P	F	G	P	P	P	
sicklepod	P	G	F-G	P	P	P	P-F	P	G-E	P	P	P	P-F
smartweed		G	P	G-E	G-E	G-E	G-E	G-E	F-G	P	P	P	P
spider flower				F-G		G	G	F	F-G	P	P	P	F
spurge spp.			P	P	P	F	F	F		P	P	P	P
velvetleaf		G	P	P-F	G	P-F	G	F-G		P	P	P	
wild poinsettia	P-F	G-E	P	P-F	P	G-E	G-E	G	E	P	P	P	P
wild radish	G-E	F	P	G-E	P-F	E	E	G	E	P	P	P	P

Abbreviations: E = Excellent (> 90%); G = Good (80-89%); F = Fair (70-79%); P = Poor (<70%). If no symbol is given, response is unknown. [4]Palmer amaranth control may be less than indicated.
**24(c) label for use in Georgia only for tropical spiderwort.