SS-AGR-109

UF UNIVERSITY of FLORIDA
IFAS Extension

Peanut Variety Performance in Florida 2003-2006 [1]

B. L. Tillman, D. W. Gorbet, M. W. Gomillion, J. McKinney, W.D. Thomas [2]

Variety choice is a critical management decision. There are several good peanut varieties to choose from today. We strongly recommend planting more than one variety on your farm, especially if you plant more than 100 acres of peanuts. Planting more than one variety can help to spread risk of losses from diseases and weather. For example, if you have fields with a history of white mold, there are varieties that have good resistance to that disease compared to some others. We recommend using the University of Georgia Disease Risk Index, or the University of Florida Plant Protection Pointers to evaluate variety resistance to diseases. Your county agent can help you find these resources. For convenience, we have included a summary table from the University of Georgia Disease Risk Index in this article (Table 5).

The first time you try a new variety we recommend planting a relatively small "test" plot (20-50 acres) to make sure you see the differences first-hand. When choosing which varieties to plant, it is important to consider pod yields and grades first, but disease resistance, maturity, seed supply, and anticipated planting dates should also be considered.

The potentially devastating effects of tomato spotted wilt virus (TSWV) in the southeast makes variety choice very important. The severity of TSWV varies from year to year and we are unable to predict disease levels for a coming crop season. Compared to the 2005 season, TSWV was very mild during the 2006 season. Since TSWV is unpredictable, planting a variety with good resistance can significantly reduce your risk of loses from TSWV. Among the tests grown in Florida, TSWV is usually most severe in Marianna, so variety performance in that location will give a good indication of the TSWV resistance of a given variety. Results often are very different between Marianna, Gainesville, and Jay, depending on TSWV and other disease pressure. Variety resistance to TSWV is summarized in Table 5 which is from the 2007 University of Georgia Disease Risk Index.

This report provides data from University of Florida trials conducted at Gainesville (Citra), Marianna, and Jay research centers from 2003-2006. Tests in Marianna and Gainesville were grown with irrigation and the tests at Jay are not irrigated. All

1. This document is SS-AGR-109, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Originally published as Marianna NFREC Research Report 07-1. Publication date March 2007. Visit the EDIS Web Site at http://edis.ifas.ufl.edu.

2. B. L. Tillman, assistant professor, Agronomy Department, North Florida Research and Education Center--Marianna, FL; D. W. Gorbet, professor, Agronomy Department, North Florida Research and Education Center--Marianna, FL; M. W. Gomillion, biological scientist, North Florida Research and Education Center--Marianna, FL; J. McKinney, senior biological scientist; Plant Science Research and Education Unit--Citra, FL; W.D. Thomas, Columbia county extension director, Lake City, FL.

tests are managed for optimum production, including the use of pesticides to control various pests. In furrow insecticides (Temik or Thimet) were used in Gainesville and Jay, but not in Marianna.

Peanut Varieties in the Southeast

Peanut acreage in the southeastern US has been historically dominated by one variety during a given time period. For about 20 years, beginning in the early 1970s and continuing through the early 1990s, Florunner was the dominant peanut variety grown in the southeast. In the mid 1990s, TSWV began to cause severe losses in Florunner and other varieties used at the time that did not have TSWV resistance. Since the late 1990s, Georgia Green has been the dominant cultivar. The primary reason for the popularity of Georgia Green was its moderate resistance to TSWV. At the time of its release, Georgia Green was the only medium maturity runner variety with resistance to TSWV.

As the TSWV epidemic of the 1990s showed, it is dangerous for the peanut industry to rely so heavily on one cultivar at a time. Like Florunner before it, Georgia Green occupied about 75% of the certified seed acreage in Alabama, Florida and Georgia in 2005 (Figure 1) and at least that amount for the previous 10 years or so. In 2006 the certified seed acreage of other varieties displaced Georgia Green (Figure 2). In particular, Georgia-02C, C-99R, AP-3, Georgia-03L, and AT3081R increased in acreage by about 20 percentage points from 2005 to 2006. To help spread the risk of losses from disease it seems preferable that no one variety occupy more than 50% of the acreage. Because the seed increase ratio of peanuts is so low, having several varieties in seed production at significant levels would allow a much quicker shift to different varieties if needed.

2006 Results

Pod yields, TSMK (total sound mature kernels) percentage, maturity and TSWV ratings for tests at three locations in Florida in 2006 are reported in Table 1. Each entry was harvested (dug) at their apparent optimum maturity stage (i.e., E = 125-130 days after planting (DAP); M = 133-139 DAP; L = 145-155 DAP). TSWV ratings were on a 1-10 scale,

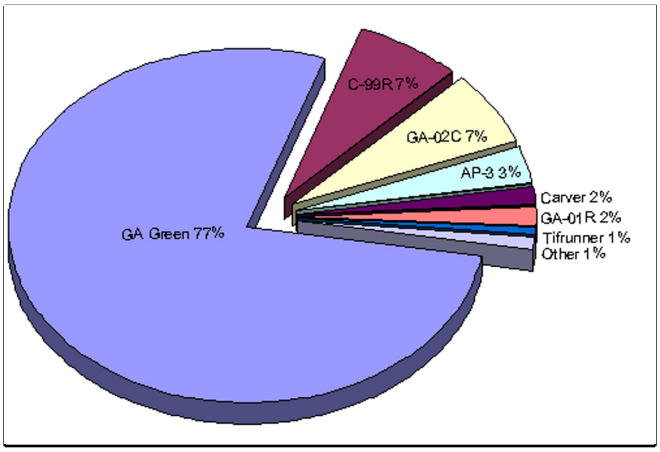

Figure 1. Certified seed acreage in Alabama, Florida, and Georgia in 2005.

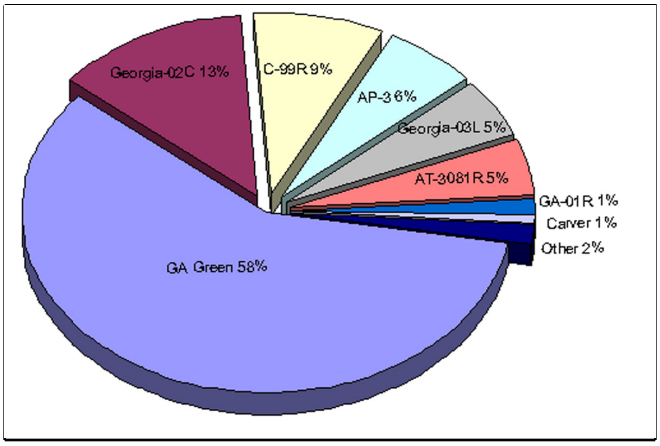

Figure 2. Certified seed acreage in Alabama, Florida, and Georgia in 2006.

where 1 = no disease and 10 = all plants with severe damage or dying.

Spotted wilt was mild in 2006 compared to 2005 and yields were generally good (Table 1). Only two early maturing varieties are available, Virugard and Andru II. Virugard was the higher yielding in 2006. Among the medium maturity varieties, all but AT3081R had higher yield than Georgia Green. Notably, Florida-07 had higher yield than all other medium maturity varieties tested. Among the late maturing varieties, Georgia-01R had the highest yield. All other late maturing varieties had similar yield. The virginia varieties had good yields in 2006 because of reduced TSWV and yields were similar among these varieties.

Four-year results

Averaging over years and locations is a powerful method of determining how a variety will perform over a wide array of environments. The performance of runner market-type varieties in Florida over the past four years (2003-2006) is shown in Table 2.

Among the medium maturity cultivars tested over the past 4 years, AP-3 has demonstrated excellent pod yields, good TSMK percentage, and the best resistance to TSWV. In 3 years of testing, Georgia-03L has had very good pod yields, TSMK and good TSWV resistance. Both AP-3 and Georgia-03L appear to have higher yield and better resistance to TSWV than Georgia Green. Among varieties tested for 2 years, Florida-07 had the highest yield.

Among the late maturing varieties tested for 4 years, Georgia-01R had the highest yield followed by C-99R. Over the 3 year period from 2004-2006, Georgia-01R and C-99R had similar yield followed by Georgia-02C. High TSMK percentage of both Georgia-01R and Georgia-02C is a strength of those varieties. Acreage of Georgia-01R has been limited because of poor seed quality, a problem shared by several late maturing varieties.

The performance of virginia market-type varieties in Florida over the past four years (2003-2006) is shown in Table 3. Most all of these varieties are more susceptible to TSWV than the popular runner varieties and, if they contract the disease, yield losses could be substantial. Even though TSWV was not severe in 2006, a new variety from Georgia, Georgia-05E was tested for the first time in Florida and appears to have good TSWV resistance. Another experimental line from Florida, UF03618 also has good resistance to TSWV.

Location Results

The pod yield of peanut cultivars grown in three locations in Florida is shown in Table 4. In general, the highest yielding entries in one location also did well in the other locations. Yields are generally lower in Jay, Florida because the peanuts are not irrigated. Pod yields in Gainesville are generally higher because tomato spotted wilt virus is very mild. In Marianna, yields can be severely limited by tomato spotted wilt virus so the most resistant varieties usually have the highest yield. TSWV pressure in Marianna was much lower in 2006 compared to 2005.

What varieties have the best resistance to TSWV and other diseases?

Disease resistance is a very important factor in choosing a variety. The reaction of several peanut varieties to some diseases that are present in Florida is presented in Table 5. In order to optimize the benefits of these varieties, it is important to chose them based on their disease resistance. From this table, it is relatively easy to find a variety with the right disease package for your situation. If white mold is a problem in some of your fields, AP-3, C-99R, or Georgia-02C would be good choices. Similarly, if you are interested in a late maturing variety, C-99R, Georgia 01R , and Tifrunner have good leafspot resistance and could allow a reduction in the frequency of fungicide sprays needed for leafspot compared to susceptible varieties.

On-Farm Tests

During the past two years, we have conducted farm-scale variety tests in Columbia County, Florida with a limited number of varieties. These tests have consisted of one to two acre replicated plots within a peanut field managed under conditions normal for the farmers who cooperated in the tests. Management included a full season fungicide program. The typical rotation on this farm is two years of peanuts and 4-5 years of bahiagrass, which usually has low disease pressure. These tests are a very good way to verify results from research trials, under low disease pressure.

Over the two years of the test, medium maturing varieties AP-3 and Georgia Green had similar yield and, in 2005, all three varieties had similar yield (Figure 2). Similar results were obtained with the late-maturing varieties on the same farm (Figure 3). Two ton per acre yields are well above the state average of 2,500 to 2,800 pounds even though in some cases the tests were planted the season after a previous peanut crop. These results show that the

yield potential of these varieties is similar under near ideal conditions with little or no TSWV but they especially show the value of long-term bahiagrass rotation with peanuts.

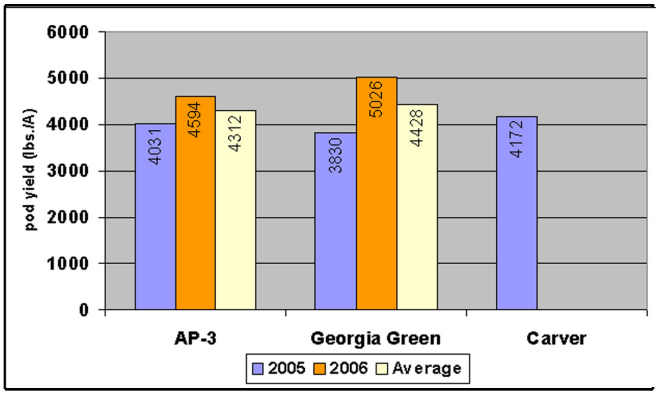

Figure 3. Performance of three medium maturity varieties in 1-2 acre replicated plots in Columbia County, Florida in 2005 and 2006. The fields were not irrigated, and, in 2005, one year of peanuts followed 4-5 years of bahiagrass. In 2006, the peanuts were the first crop planted after 4-5 years of bahiagrass.

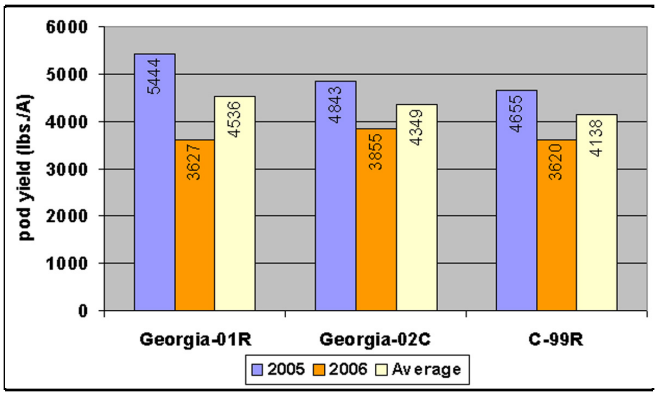

Figure 4. Performance of three late maturity varieties in 1-2 acre replicated plots in Columbia, County, Florida in 2005 and 2006. The fields were not irrigated and, in 2005, the peanuts were the first crop planted after 4-5 years of bahiagrass. In 2006, they followed one year of peanuts which were after 4-5 years of bahiagrass.

Summary

Variety choice is a critical management decision for peanut production. There are many choices among varieties suitable for production in the Southeastern US with good to excellent resistance to TSWV. Several of these varieties also have resistance to other diseases. Growing these varieties can reduce your risk and production cost. The varieties C-99R, DP-1, Hull, and Georgia 01R all have considerable resistance to leafspot which, with good crop rotation, might allow you to reduce fungicide sprays and, therefore, production costs. Some of the cultivars have good resistance to soil-borne diseases such as white mold (*S. rolfsii)* (C-99R, DP-1, CityplaceHull, & AP-3) and CBR (Georgia 01R, Georgia 02C, and Carver). Further information on these traits is available from the University of Florida Plant Protection Pointers web page (http://plantpath.ifas.ufl.edu/takextpub/ExtPubs/ppp1205.pdf) and the University of Georgia Disease Index (University of Georgia Cooperative Extension Service, 2005 Peanut Update, CSS-05-0118, pp. 41-57 or on the web at: http://www.ugapeanuts.com/).

We advise you to evaluate your production and marketing situation when choosing a variety and making arrangements for seeds of the varieties that best fit your needs. Seed supplies of some of the new cultivars (Florida-07, McCloud, York and Georgia-05E) will be very limited in 2007.

Table 1. Table 1. Performance of peanut varieties in three locations**** in Florida in 2006. Entries are sorted by market type, maturity and average yield (in descending order).

	Market		Pod Yield (lbs./A)				TSWV (1-10)***				TSMK (%)		
	Type	Maturity*	MR	GV	JY	AVG.	MR	GV	JY	AVG.	MR	GV	AVG.
Virugard	R	E	4856	4630	3940	4475	3.2	3.3	2.3	2.9	75.4	77.9	76.6
Andru II**	R	ME	4369	4420	3311	4033	2.8	3.0	2.3	2.7	75.3	77.4	76.3
Florida-07**	R	M	5915	5440	4424	5259	1.5	2.3	2.0	1.9	77.6	79.2	78.4
AT3085A**	R	M	5660	4934	3340	4644	2.5	2.3	3.0	2.6	75.9	76.7	76.3
Georgia-03L	R	M	4860	4675	3985	4507	4.3	2.7	2.3	3.1	76.5	79.4	78.0
UF03325	R	M	5308	4762	3175	4415	2.5	2.3	2.3	2.4	78.6	78.8	78.7
AP-3	R	M	5595	4221	3333	4383	1.5	2.3	2.3	2.1	75.6	71.2	73.4
Carver	R	M	5544	4392	3088	4341	2.0	2.0	2.7	2.2	77.7	77.4	77.5
21685McCloud **	R	M	5027	4188	3372	4196	2.5	3.7	2.3	2.8	79.2	68.5	73.8
AT3081R	R	M	4901	4191	2817	3970	3.8	4.0	2.7	3.5	76.3	72.4	74.4
Georgia Green	R	M	4107	4540	2578	3742	4.5	4.0	4.3	4.3	79.5	74.6	77.0
Georgia-01R	R	L	4937	5446	4566	4983	2.2	1.3	2.0	1.8	78.1	81.3	79.7
Georgia-02C**	R	L	4882	5240	3491	4538	1.8	1.7	2.3	1.9	81.5	81.2	81.4
Tifrunner	R	L	5276	4601	3701	4526	1.8	2.0	2.0	1.9	79.0	71.2	75.1
York**	R	L	5037	4598	3930	4522	2.0	1.3	2.0	1.8	74.7	75.3	75.0
C-99R	R	L	4747	4818	3633	4399	2.2	2.0	2.7	2.3	77.1	71.4	74.3
VC2	V	E	4643	4834	3449	4309	3.2	2.0	2.3	2.5	75.7	74.0	74.8
Gregory	V	ME	4869	3878	3627	4125	2.5	1.7	2.7	2.3	72.4	69.6	71.0
NCV11	V	E	4824	4226	2791	3947	4.2	3.0	3.3	3.5	73.9	74.2	74.1
VAC92R	V	E	4320	4095	2578	3664	4.3	4.0	3.3	3.9	73.9	64.1	69.0
NC12C	V	E	3788	4459	2552	3600	3.5	3.0	3.7	3.4	75.6	73.3	74.5
UF03618**	V	M	4533	5272	3078	4295	3.2	2.0	3.0	2.7	73.1	69.5	71.3
Georgia-05E	V	L	5085	4098	3020	4068	2.2	2.7	3.3	2.7	81.1	75.3	78.2

Table 1. Table 1. Performance of peanut varieties in three locations**** in Florida in 2006. Entries are sorted by market type, maturity and average yield (in descending order).

C.V.		12	12	14	13	29	23	27	--	1	--	--
LSD		794	756	612	612	2.8	2.5	2.8	--	2	--	--

*E = early, M = medium, L = late; **High oleic oil chemistry; ***Tomato Spotted Wilt Virus ratings (1-10, 1 = no disease); ****Locations: MR=Marianna, JY=Jay, GV=Gainesville. Planting Dates: MR=5/10, JY=5/18, GV=4/4

Table 2. Table 2. Performance of runner market-type peanut varieties in two or three Florida locations over the past four years (2003-2006). Entries are sorted by maturity and the four year average yield (in descending order).

Variety	Maturity*	YIELD (lbs./acre)				TSMK (%)				TSWV (1-10)***			
		2006	2-YR†	3-YR††	4-YR †††	2006	2-YR	3-YR	4-YR	2006	2-YR	3-YR	4-YR
Andru II**	ME	4033	3231	3809	3778	75.7	73.2	72.9	72.7	2.7	3.3	2.9	2.8
Virugard	ME	4475	3301	3627	3519	75.9	73.8	74.8	75.6	2.9	3.6	3.2	3.2
AP-3	M	4383	3780	4472	4485	73.8	72.7	72.9	73.2	2.1	2.7	2.3	2.1
Carver	M	4341	3331	3983	4052	77.3	74.3	74.8	74.5	2.2	3.3	2.9	2.9
Georgia Green	M	3742	3066	3797	3808	77.6	75.7	76.1	76.7	4.3	4.5	3.9	3.6
Georgia-03L	M	4507	4216	4614		77.2	75.9	75.6		3.1	3.4	3.1	
Florida-07**	M	5259	4706			77.8	76.1			1.9	2.6		
AT3085A**	M	4644	3960			75.9	74.4			2.6	2.8		
McCloud**	M	4196	3698			75.3	75.2			2.8	3.4		
AT3081R	M	3970	3434			74.7	72.2			3.5	4.0		
UF03325	M	4415				78.4				2.4			
Georgia-01R	L	4983	4475	4880	4940	78.9	77.9	78.5	78.8	1.8	2.5	2.2	2.0
C-99R	L	4399	4253	4675	4606	74.9	75.1	75.7	76.1	2.3	2.6	2.2	2.2
Georgia-02C**	L	4538	3813	4237	4080	81.1	78.6	78.6	78.3	1.9	3.0	2.6	2.4
York**	L	4522	4265			74.6	74.0			1.8	2.1		
Tifrunner	L	4526				76.1				1.9			
C.V.		13	13	12	12	3.3	2.9	2.5	2.3	26.7	25.5	25.3	24.8
LSD		415	271	234	209	3.4	1.9	1.3	1.0	0.6	0.5	0.4	0.3

*E = early, M = medium, L = late; **High oleic oil chemistry. †2 YR= average of 2004 and 2005, ††3 YR= average of 2004, 2005 and 2006; †††4 YR= average of 2003, 2004, 2005 and 2006. ***Tomato Spotted Wilt Virus ratings (1-10, 1 = no disease);

Table 3. Table 3. Performance of virginia market-type peanut varieties in two or three Florida locations over the past four years (2003-2006). Entries are sorted by the four year average yield (in descending order).

		YIELD (lbs./A)				TSMK (%)				TSWV*** (1-10)			
Variety	Maturity*	2006	2-YR†	3-YR††	4-YR †††	2006	2-YR	3-YR	4-YR	2006	2-YR	3-YR	4-YR
VC2**	E	4309	3490	3987	3920	74.8	73.4	73.2	73.5	2.5	3.5	3.3	3.2
VAC92R	E	3664	3121	3939	3916	70.4	69.8	71.4	72.1	3.9	4.4	3.8	3.7
Gregory	ME	4124	3281	3831	3880	71.2	70.5	70.9	71.4	2.3	3.3	3.2	3.2
NCV11	E	3948	3276	3772	3831	73.7	71.2	71.8	72.0	3.5	4.3	4.1	4.0
NC12C	E	3600	2881	3359	3310	74.6	73.1	73.9	74.3	3.4	4.5	4.1	4.0
UF03618**	M	4295				71.6				2.7			
Georgia-05E	M	4068				78.9				2.7			
C.V.		12.8	13.3	11.9	11.9	3.3	2.9	2.5	2.3	26.7	25.5	25.3	24.8
LSD		415	271	234	209	3.4	1.9	1.3	1.0	0.6	0.5	0.4	0.3

*E = early, M = medium, L = late; **High oleic oil chemistry. †2 YR= average of 2005 and 2006, ††3 YR= average of 2004, 2005 and 2006; †††4 YR= average of 2003, 2004, 2005 and 2006. ***Tomato Spotted Wilt Virus ratings (1-10, 1 = no disease);

Table 4. Table 4. Pod yield of peanut varieties in three Florida locations over 3 or 4 years. Entries are sorted by market type, maturity and the average yield in Marianna in descending order.

			Pod Yield (lbs./acre)													
			Marianna (MR)					Jay (JY)				Gainesville (GV)				
Name	Maturity*	Market-type	2003	2004	2005	2006	MR Average	2004	2005	2006	JY Average	2003	2004	2005	2006	GV Average
Andru II**	ME	R	2869	4569	2239	4369	3511	1529	1765	3311	2202	4501	5356	3285	4420	4391
Virugard	ME	R	2103	3863	2052	4856	3219	1462	1236	3940	2212	4284	4695	3094	4630	4176
AP-3	M	R	3957	5953	3417	5595	4730	2455	2639	3333	2809	5094	5760	3475	4221	4637
Carver	M	R	3201	4863	1997	5544	3901	2097	1471	3088	2219	5276	5711	3491	4392	4717
Georgia Green	M	R	2525	4904	1736	4107	3318	1888	2100	2578	2189	5154	5614	3333	4540	4660
Georgia-03L	M	R		5576	3198	4860	4544	2936	2943	3985	3288		5243	5637	4675	5185
Florida-07	M	R			4311	5915	5113		3204	4424	3814			4940	5440	5190
AT3085A	M	R			3298	5660	4479		2510	3340	2925			4020	4934	4477
McCloud	M	R			2878	5027	3953		2533	3372	2952			4188	4188	4188
AT3081R	M	R			2807	4901	3854		2388	2817	2602			3501	4191	3846
UF03325	M	R				5308	5308			3175	3175				4762	4762
Georgia-01R	L	R	4400	5766	3636	4937	4685	3275	3162	4566	3668	5651	5615	5105	5446	5454
C99-R	L	R	3620	5679	4046	4747	4523	3507	3875	3633	3672	5143	5356	4401	4818	4929
Georgia-02C**	L	R	2983	5105	2581	4882	3888	2520	3078	3491	3030	3666	5066	3607	5240	4395
York	L	R			4598	5037	4817		3795	3930	3863			4062	4598	4330
Tifrunner	L	R				5276	5276			3701	3701				4601	4601
VAC92R	E	V	2982	4904	2249	4320	3614	1558	1707	2578	1948	4586	6244	3775	4095	4675
VC2**	E	V	2962	4459	2285	4643	3587	1930	1868	3449	2416	4477	5502	3859	4834	4668
Gregory	ME	V	3084	4214	2055	4869	3556	1959	1568	3627	2385	4888	5647	3688	3878	4525
NCV11	E	V	2888	3769	2114	4824	3399	1817	1717	2791	2108	5046	5760	3985	4226	4754
NC12C	E	V	2431	3721	1739	3788	2920	1752	1497	2552	1934	3896	4904	3252	4459	4128
Georgia-05E	M	V				5085	5085			3020	3020				4098	4098
UF03618**	M	V				4533	4533			3078	3078				5272	5272

*E = early, M = medium, L = late; **High oleic oil chemistry;

Table 5. Disease resistance of major peanut varieties in the southeastern US. Adapted from the University of Georgia Disease Risk Index-2007. Fewer points mean better resistance.

Variety[1]	Spotted Wilt	Leaf Spot	White mold	Limb rot
SunOleic 97R[2]	50	unknown	unknown	unknown
Flavorunner 458[2]	50	unknown	unknown	unknown
NC-V 11	35	30	25	25
Georgia Green	30	20	20	15
Virugard	30	20	20	unknown
Gregory	30	30	20	25
Andru II[2]	25	30	20	25
AT 3081R	25	unknown	unknown	unknown
Attaboy*	20	15	15	unknown
McCloud[2]*	20	unknown	20	unknown
C-99R[4]	20	15	15	25
Carver[3]	20	30	20	25
AT 3085A*	20	unknown	unknown	unknown
Georgia-05E*	15	20	25	unknown
Georgia-03L[5]	15	15	10	20
Georgia-02C[2,3,5]	15	20	10	20
Georgia-01R[3]	10	10	15	15
York[2]*	10	10	10	unknown
Florida-07[2]*	10	20	15	unknown
AP-3[4]	10	25	10	25
Tifrunner	10	15	25	25
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 Carver, GA-02C, and GA-01R have increased resistance to Cylindrocladium black rot (CBR) than do other varieties commonly planted in country-region*placeGeorgia.

[4]*Varieties AP3, DP1, and C-99R are less resistant to CBR and are not recommended for fields where this disease is a problem.*