

Peanut Variety Performance in Florida, 2010–2013¹

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Introduction

Variety choice is a critical management decision in producing a peanut crop. Since several good peanut varieties are available, it is essential to know each variety's attributes and how different varieties might fit into a farm plan.

When trying a new peanut variety for the first time, plant a relatively small test plot (20–50 acres) that will allow you to see the differences between varieties firsthand. Be aware, however, that comparing varieties planted in different fields, or even in different parts of the same field, can be misleading due to potential differences between fields, such as soil type, irrigation/rainfall, soil-borne diseases, and planting date. When choosing which varieties to plant, consider pod yields and grades, and also consider a variety's disease resistance, maturity, seed supply, and anticipated planting dates.

Growers planting more than 100 acres of peanuts should plant at least two varieties. Planting more than one variety can help to spread risk of losses from weather, reduce opportunities for disease, and limit delays in harvest operations. For example, if a field has a history of white mold, use varieties that have a better resistance to that disease compared to other varieties. Use the *Peanut Disease Risk Index* to evaluate variety disease resistance (<http://www.caes.uga.edu/commodities/fieldcrops/peanuts/documents/2014-Peanut-update.pdf>, pp. 38–51). Your county UF/IFAS Extension agent can provide other useful

resources. A summary table from the *Peanut 2014 Disease Risk Index* is included in this article (see Table 4).

Variety choice is also very important because of the potentially devastating effects of tomato spotted wilt virus (TSWV) in the southeastern United States. Severity of TSWV varies from year to year, and scientists are unable to predict disease levels for an upcoming crop season. Because TSWV is unpredictable, planting a peanut variety with good resistance to TSWV can significantly reduce the risk of losses from that disease. Over the past several seasons (2010–2013), spotted wilt incidence has been much lower than in previous seasons. However, there is no reason to believe that the disease has disappeared or the incidence will remain low, so continue to mitigate risk of losses from spotted wilt.

This report provides data conducted from trials in Florida at UF/IFAS research centers located in Gainesville (Citra), Marianna, and Jay from 2010–2013. Among the sites in Florida where peanut variety resistance to TSWV has been tested, 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. Oftentimes, results are very different between Marianna, Gainesville, and Jay, depending on TSWV pressure, other disease pressure within those areas, and environmental conditions, including soil type and rainfall. Table 4 includes summarized data for variety resistance to TSWV.

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Tests in Marianna and Gainesville were grown with irrigation. The tests at Jay were not irrigated except in 2012. All tests were managed for optimum production, including the use of pesticides to control various diseases, insects, and weeds. In-furrow insecticides (aldicarb [Temik] or phorate [Thimet]) were used throughout the trials. Plots consisted of two rows spaced 36 inches apart (91 cm) and 15 feet long (4.6 m). The seeding density was six seeds per foot of row. Plots were dug and inverted based on relative maturity and were allowed to dry in the field 3–5 days prior to harvest—either with a commercial two-row peanut combine or by hand using a stationary plot thresher. A subsample of 200 g of pods was used to determine the Total Sound Mature Kernels percentage (TSMK).

Peanut Varieties in the Southeastern United States

Historically, peanut acreage in the southeastern United States has been dominated by one variety during a given period. For about 20 years, from the early 1970s and continuing through the early 1990s, ‘Florunner’ was the dominant peanut variety grown in this region. In the mid-1990s, however, TSWV began to cause severe losses in Florunner and other varieties used at the time that did not have TSWV resistance. From the late 1990s until the 2006 and 2007 season, ‘Georgia Green’ was the dominant cultivar planted in this region, rising quickly in popularity due to its moderate resistance to TSWV, good grades, and good pod yield. When it was released in 1996, it was the only medium-maturity runner variety with resistance to TSWV.

Nevertheless, as the TSWV epidemic of the 1990s had demonstrated, the practice of relying heavily on one cultivar at a time is dangerous for the peanut industry. Like Florunner before it, Georgia Green occupied about 75% of the certified seed acreage in Alabama, Florida, and Georgia in 2005. In the 10 or more years before 2005, Georgia Green had also occupied at least that amount of acreage in these states. In 2006, however, other peanut varieties began to displace Georgia Green in certified seed acreage in this region. By 2009, Georgia Green occupied only about 10% of the seed acreage in Alabama, Florida, and Georgia, and by 2010, Georgia Green was only 2% of the seed acreage. By 2012–13, Georgia-06G occupied 77%–79% of the certified seed acreage similar to Georgia Green in 2005 (Figure 1 and Figure 2). In 2012, however, there were four other cultivars with at least 5% of the acreage. Maintenance of cultivar diversity requires that several cultivars have at least 5% of the seed acreage.

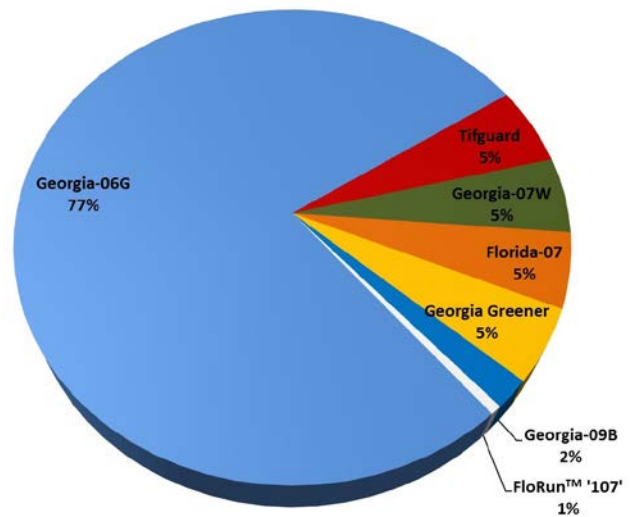


Figure 1. Certified seed acreage in Alabama, Florida, and Georgia in 2012.

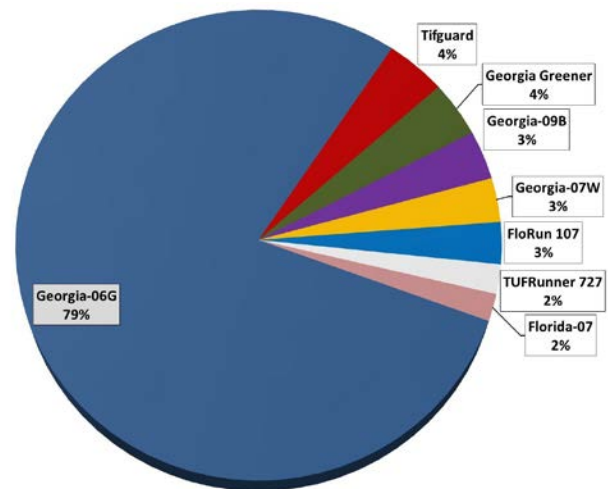


Figure 2. Certified seed acreage in Alabama, Florida, and Georgia in 2013.

On an industry-wide scale, it seems preferable that no one variety occupies more than 50% of the certified seed acreage. Diversity in peanut varieties planted can reduce the risk of losses from disease and provide a buffer against differential environmental impacts on a given variety. Considering that the seed-increase ratio of peanuts is low, having several varieties in seed production at significant levels allows a much quicker shift to different varieties, if needed. Using the information on variety performance provided below, it is possible to devise a plan that uses several varieties to spread risk of losses from disease. This information also helps in choosing varieties based on their relative maturity and disease resistance to help spread harvest and planting operations over a longer period.

Recently Released Varieties

Several new runner varieties have been released over the past several years.

In 2009, 'Georgia-09B' was released by the University of Georgia. Georgia-09B is a backcross selection from a cross of Georgia Green and Georgia-02C developed to be high oleic. It has normal runner seed size, medium maturity, and moderate resistance to spotted wilt.

In 2010, 'FloRun™ '107'' was released by the University of Florida. FloRun™ '107' has a normal runner seed size, medium maturity with resistance to spotted wilt, and high oleic oil chemistry.

The cultivar 'TUFRunner™ '727'' was released in 2012 from the University of Florida. TUFRunner™ '727' is a high oleic, medium-late maturity variety with large runner seed and excellent disease resistance.

The University of Georgia released 'Georgia-10T' in 2010 and 'Georgia-11J' in 2011. Georgia-10T is a late maturity, normal oleic variety with excellent resistance to spotted wilt. Georgia-11J is a Virginia type with high oleic oil chemistry.

In 2012, the University of Georgia released 'Georgia-12Y', and in 2013 'Georgia-13M'. Georgia-12Y is a medium-late maturity, normal oleic runner with excellent yield potential. Georgia-13M is a medium seed size, high oleic runner type.

In 2013, the University of Florida released 'TUFRunner™ '511'', a large seeded, high oleic runner with excellent yield potential and grades.

Current Varieties

Three runner type varieties are available from the University of Florida:

- 'Florida-07' is a large seeded, high oleic runner type with excellent resistance to spotted wilt and white mold, combined with excellent yield and good grades. FloRun™ '107' is a high oleic, runner with normal runner seed size and good resistance to TSWV.
- The variety TUFRunner™ '727' is a large seeded runner type with very good resistance to white mold and leaf spot diseases.
- The Virginia-type variety, 'Florida Fancy', was released by University of Florida in 2007. Florida Fancy has high oleic oil chemistry and standard Virginia-type pod and

seed size. Florida Fancy has demonstrated very good yield potential, and it has among the best resistance to TSWV available in a Virginia-type variety.

University of Georgia has four runner varieties available:

- 'Georgia-06G' was released in 2006. Georgia-06G is a large-seeded runner with good TSWV resistance.
- 'Georgia Greener' and 'Georgia-07W' were both released in 2007, Georgia Greener has smaller seed than Georgia-06G and very good resistance to TSWV. Georgia-07W has large seed and very good resistance to TSWV and white mold.
- 'Georgia-09B' is a high oleic variety with excellent grades, medium maturity, and competitive pod yield.

The US Department of Agriculture (USDA) released a runner variety in 2007—"Tifguard". It is a medium-maturing, large-seeded runner. It is also the first variety to combine resistance to TSWV and a high level of resistance to root-knot nematode. That combination of resistance to disease and nematodes will allow growers in the southeastern United States to take advantage of the same root-knot nematode resistance as in 'NemaTam', a peanut variety developed in Texas and released in 2002. Seed of Tifguard have been available since the 2011 season. Growers who normally use 1,3-D (Telone) to control nematodes should be able to cultivate Tifguard on nematode-infested sites without using Telone.

2013 Results

Table 1 details pod yields, total sound mature kernels percentage (TSMK), maturity, and TSWV ratings for tests at three locations in Florida in 2013. Each entry was harvested (dug) at its apparent optimum-maturity stage (i.e., E = 125–130 days after planting [DAP]; M = 133–139 DAP; M–L = 140–145; L = 146–155 DAP). Ratings for TSWV were on a 1–10 scale, where 1 = less than 10% diseased plants, and 10 = more than 90% diseased plants.

Spotted wilt pressure was moderate in 2013, and yields were excellent; even though leaf spot was an issue in later planted tests, it was not a factor in these tests. Among the medium-maturity varieties tested, Georgia-12Y had the highest pod yield, which was greater than other runner cultivars. Pod yield was similar among TUFRunner™ '511', Georgia-06G, Florida-07, TUFRunner™ '727', Georgia-07W, Georgia-09B, and McCloud. Among the Virginia-type varieties, 'Bailey' had the highest pod yield. Grades were generally very good in 2013 with most cultivars TSMK percentage in the mid- to high 70% range. TUFRunner™ '511', Georgia-09B,

Georgia-06G, and TUFRunner™ '727' had the highest TSMK grade among the runner cultivars.

Results from any single year should not be used to determine variety performance for the purpose of variety selection. Rather, the results from 2013 presented here are

simply a reflection of the growing season that occurred in that year and how varieties performed. The multi-year results are better suited for comparison of the performance of varieties year over year and are a better estimate of how they could perform in any given season.

Table 1. Performance of peanut varieties in three locations in Florida in 2013, with varieties sorted by market type, maturity, and then yield, in descending order (MR=Marianna, GV=Gainesville, and JY=Jay).

	Market		Pod Yield (lb/acre)				TSMK (%)			TSWV (1–10 rating***)		
	Type	Maturity*	MR	GV	JY	AVG.	MR	GV	AVG.	MR	GV	AVG.
Georgia-12Y	R	M–L	6686	5472	5730	5963	76.7	77.9	77.3	1.0	1.0	1.0
TUFRunner™ '511'***	R	M	6229	5192	5285	5569	77.7	80.3	79.0	1.5	1.7	1.4
Georgia-06G	R	M	6382	5323	4869	5525	79.6	79.2	79.4	1.2	1.7	1.4
Florida-07 **	R	M	5708	4780	5737	5408	74.2	75.5	74.8	1.0	1.7	1.3
TUFRunner™ '727'***	R	M–L	5926	4766	5466	5386	77.8	79.2	78.5	1.2	1.3	1.4
Georgia-07W	R	M	5792	5176	5111	5360	77.2	76.9	77.0	1.0	1.7	1.2
Georgia-09B **	R	M	6482	5363	4230	5359	78.4	80.3	79.4	1.5	1.0	1.2
McCloud **	R	M	6003	4778	5250	5344	77.6	76.2	76.9	1.3	1.3	1.2
Georgia Greener	R	M	6108	5140	4537	5262	77.7	77.1	77.4	1.0	2.3	1.4
FloRun™ '107' **	R	M	5379	5301	5095	5258	73.2	76.1	74.6	1.8	1.3	1.4
Tifguard	R	M	5213	4744	4392	4783	77.2	78.1	77.6	1.0	1.3	1.1
Bailey	V	M	5755	5266	5424	5482	73.0	74.9	73.9	1.0	1.7	1.2
Georgia-08V **	V	M	5808	5124	5276	5403	76.5	78.5	77.5	1.2	2.0	1.4
Florida Fancy **	V	M	5658	3812	5679	5050	73.8	72.6	73.2	1.0	1.0	1.0
CHAMPS	V	M	5869	3848	4711	4809	74.6	76.3	75.4	1.2	1.7	1.4
C.V.			5	7	9	7	1.8	1.5	1.7	26.7	34.3	31.6
LSD			362	490	674	299	2.4	2.0	1.6	0.4	0.7	0.4

*E = 125–130 days after planting (DAP); M = 133–139 DAP; M–L = 140–145; L = 146–155 DAP

**High oleic

***Ratings for TSWV were on a 1–10 scale, where 1 = no disease, and 10 = all plants severely diseased or dying.

Multi-Year Results

Averaging over two or more years and locations is a good method of determining how a peanut variety will perform over a wide array of environments. The performance of runner market-type peanut varieties in Florida over the past four years (2010–2013) is shown in Table 2.

Among the medium-maturity cultivars tested during 2010–2013, TUFRunner™ '511' had the highest pod yield. TUFRunner™ '511', TUFRunner™ '727', Georgia-06G, Georgia-07W, Georgia-09B, and Georgia Greener had the highest TSMK grade among the medium-maturity types.

Location Results

The pod yield of peanut cultivars grown at three Florida locations is shown in Table 3. In general, the highest-yielding entries in one location also did well in the other locations. Yields are sometimes lower in Jay because the peanuts are not irrigated at that location. Pod yields in Gainesville are generally higher because TSWV is very mild in this area. In Marianna, yields can be severely limited by TSWV. For that reason, varieties that are most resistant to TSWV usually have the highest yield in Marianna. In Marianna, TSWV pressure was much lower in 2013 compared to previous years, so the impact in these tests is minimal.

Table 2. Performance of runner market-type peanut varieties in 2–3 Florida locations over four years (2010–2013), with entries sorted by maturity and four-year average yield, in descending order.

Name	YIELD (lb/acre)				TSMK (%)			
	2013	2-YR [†]	3-YR ^{††}	4-YR ^{†††}	2013	2-YR	3-YR	4-YR
TUFRunner™ '511' **	5569	5913	6195	6203	79.0	79.3	79.0	78.8
Georgia-06G	5525	5675	5885	5988	79.4	79.8	79.5	79.7
Florida-07 **	5408	5745	5935	5963	74.8	75.0	75.0	75.2
FloRun™ '107' **	5258	5791	5950	5917	74.6	76.7	76.6	76.6
TUFRunner™ '727' **	5386	5671	5803	5825	78.5	78.5	78.4	78.8
Georgia-07W	5360	5736	5731	5808	77.0	78.3	78.4	78.8
Georgia-09B **	5359	5603	5686	5793	79.4	79.8	79.2	79.6
Georgia Greener	5262	5288	5666	5685	77.4	78.7	79.0	79.1
McCloud **	5344	5380	5567	5545	76.9	77.4	77.3	77.4
Tifguard	4783	5155	5240	5348	77.6	78.1	77.8	77.8
C.V.	7	8	8	8	1.7	1.5	1.5	1.4
LSD	299	261	218	204	1.5	0.9	0.8	0.6

**High oleic
[†]Average of 2011 and 2012 test data
^{††}Average of 2010, 2011, and 2012 test data
^{†††}Average of 2009, 2010, 2011, and 2012 test data

Varieties with the Best Resistance to TSWV and Other Diseases

Disease resistance is a very important factor in choosing a peanut variety. The reaction of most varieties to the most prevalent peanut diseases in Florida is detailed in Table 4. To optimize the disease-resistance benefits of these varieties, choose varieties based on their disease resistance in relation to diseases known to be problematic, or suspected of being problematic, in a particular field or farm.

Use Table 4 to find a variety with the right disease package for your situation. If white mold is a problem in some of your fields, the following varieties would be good choices:

- Florida-07
- Tifguard
- TUFRunner™ '727'
- Georgia-12Y
- Georgia-07W

For another example, Tifguard and TUFRunner™ '727' have demonstrated some resistance to leaf spot. Use of these varieties in fields with a history of leaf spot could reduce the risk of losses from that disease. In situations where leaf spot risk is low, it might also allow for a reduction in the frequency of fungicide sprays needed for leaf-spot control compared to the need for such sprays with leaf spot–susceptible varieties. The variety Tifguard has resistance to root-knot nematode and so would be a good choice in

fields with a history of that pest. Varieties that have enough resistance to TSWV to be planted relatively early include the following:

- Florida-07
- Georgia-12Y
- Georgia-06G
- Tifguard
- Georgia-07W

Summary

Variety choice is clearly a critical management decision for peanut production. Today, there are several very good peanut varieties to choose from with similar pod yield and grade performance. Many varieties with good-to-excellent resistance to TSWV are suitable for production in the southeastern United States. Additionally, several of these TSWV-resistant varieties also have resistance to other diseases. Growing disease-resistant varieties can reduce risk and production cost.

Table 3. Pod yield of peanut varieties in three Florida locations over four years, 2010–2013, with entries sorted by market type, maturity, and the overall average yield, in descending order.

Name	Market Type	Pod Yield (lb/acre)																Overall Average
		Marianna (MR)				Jay (JY)				Gainesville (GV)				GV Average	Overall Average			
		2010	2011	2012	2013	MR Average	2010	2011	2012	2013	JY Average	2010	2011			2012	2013	
TUFRunner™'511' **	R	6327	7259	5460	6229	6319	-	6188	-	5285	5737	6140	6549	7398	5192	6320	6203	
Georgia-06G	R	6502	6950	4437	6382	6068	-	5338	-	4869	5104	6292	6417	7366	5323	6349	5988	
Florida-07**	R	6453	6673	5408	5708	6060	-	6128	-	5737	5932	5702	5954	7092	4780	5882	5963	
FloRun™'107' **	R	5868	6279	5437	5379	5741	-	6147	-	5095	5621	5702	6219	7743	5301	6241	5917	
TUFRunner™'727' **	R	6189	6005	5060	5926	5795	-	6015	-	5466	5741	5643	6047	7135	4766	5898	5825	
Georgia-07W	R	6075	6249	4982	5792	5775	-	5066	-	5111	5089	6153	5852	7620	5176	6200	5808	
Georgia-09B**	R	5774	6213	4220	6482	5673	-	5628	-	4230	4929	6663	5633	7718	5363	6344	5793	
Georgia Greener	R	6023	6840	3924	6108	5724	-	6135	-	4537	5336	5496	5915	6732	5140	5821	5685	
McCloud**	R	5679	6247	4185	6003	5529	-	5940	-	5250	5595	5230	5448	6687	4778	5536	5545	
Tifguard	R	5861	5866	4627	5213	5392	-	5045	-	4392	4719	5698	5235	6801	4744	5619	5348	
Florida-EP™'113'	R	4714	5059	4769	5309	4963	-	4969	-	4346	4658	4604	5112	6864	4388	5242	5014	
Bailey	V	5943	6273	5372	5755	5836	-	6650	-	5424	6037	5950	6754	8114	5266	6521	6150	
Georgia-08V**	V	6669	6744	4401	5808	5905	-	7193	-	5276	6234	5566	5814	7578	5124	6020	6017	
Florida Fancy**	V	5041	5014	5150	5658	5216	-	7028	-	5679	6354	5272	5579	7417	3812	5520	5565	
CHAMPS	V	-	5416	3259	5869	4848	-	5995	-	4711	5353	-	5326	7159	3848	5444	5198	
C.V.		12	6	10	4	8	-	11	-	9	10	7	8	7	7	7	8	
LSD		935	530	655	362	323	-	852	-	674	538	541	622	706	490	293	204	

**High oleic

Table 4. Disease resistance of major peanut varieties in the southeastern United States (fewer points mean better resistance and lower risk of losses to disease).

Variety ¹	Spotted Wilt Points	Leaf Spot Points	White Mold Points
Georgia Green	30	20	25
Florida Fancy ²	25	20	20
Georgia-09B2	20	25	25
FloRunTM '107' ²	20	25	20
Georgia Greener ³	10	20	20
TUFRunnerTM '727' ^{1,2}	15	15	15
Georgia-06G	10	20	20
Florida-07 ²	10	20	15
Georgia-07W	10	20	15
Tifguard ⁴	10	15	15
Bailey ³	10	15	10
Georgia-12Y ¹	5	20	15

Source: Adapted from the 2014 Peanut Rx, compiled by the University of Georgia, the University of Florida, and Auburn University.

¹Adequate 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.

²High oleic variety

³Varieties Georgia Greener and Bailey have greater resistance to *Cylindrocladium* black rot (CBR) than do other varieties commonly planted in Georgia.

⁴Tifguard has excellent resistance to the peanut root-knot nematode.