Peanut Stop
Virginia Ag Expo

Virginia Tech
Virginia Agricultural Experimental Station
Virginia Cooperative Extension

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Topics

Peanut acreage and yields in Virginia
Budgets
Peanut varieties
Mid-season peanut insect pests
Seeding rates
Irrigation
Digging and harvesting
Weed control
Diseases

Peanut yield (pound/acre), acreage, and contract price (USD) from 2013 in Virginia				
Year	Acreage	Yield (state AVG)	Yield (VA winners)	Contract price
2013	16,000	4,000	6,216	525
2014	18,000	4,500	6,058	475/500
2015	18,000	3,850	6,009	425

Yield (pounds/acre) of peanut contest winner per county in Virginia							
Year	Dinwiddie	Greensville	Isle of Wight	Suffolk	Southampton	Surry	Sussex
2013	5,083	4,240	5,825	5,421	5,688	6,216	5,512
2014	4,786	5,411	5,803	4,981	6,058	5,921	5,849
2015	4,385	4,548	6,028	5,129	6,009	5,775	5,319

Peanut Budgets

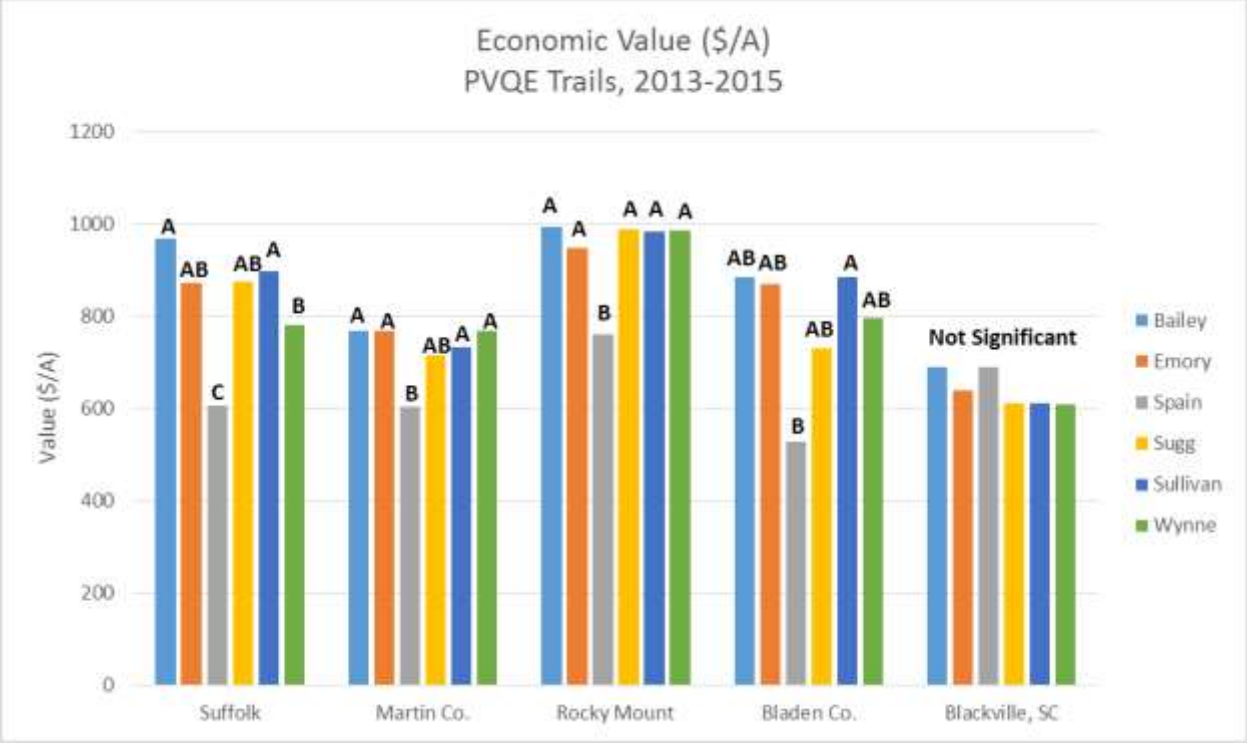
	Net Return ($/acre) at $535/ton Reference Price Over Potential Contract Price					
	Total Cost ($/acre)					
Peanut Yield (pounds/acre)	750	800	850	900	950	1000
	Net Return ($/acre)					
3000 (1.5 tons)	53	3	-47	-97	-147	-197
3500 (1.75 tons)	186	136	86	36	-14	-64
4000 (2 tons)	320	270	**220**	170	120	70
4500 (2.25 tons)	454	404	354	304	254	204
5000 (2.5 tons)	588	538	488	438	388	338

	Net Return ($/acre) at $470/ton Loan Rate Plus Payment Rate					
	Total Cost ($/acre)					
Peanut Yield (pounds/acre)	750	800	850	900	950	1000
	Net Return ($/acre)					
3000 (1.5 tons)	-45	-95	-145	-195	-245	-295
3500 (1.75 tons)	73	23	-27	-77	-127	-177
4000 (2 tons)	190	140	**90**	40	-10	-60
4500 (2.25 tons)	308	258	208	158	108	58
5000 (2.5 tons)	425	375	325	275	225	175

*From David Jordan, NCSU

Variety performance by location. Three-year averages (2013-2015)

Variety	ELK	DK	SMK	Yield
	%	%	%	Pounds/acre
Bailey	40 c	1.2 b	65 ab	4683 a
Sullivan	42 bc	1.2 b	64 b	4600 ab
Emery	50 a	1.4 b	66 a	4523 ab
Sugg	42 bc	1.8 b	64 b	4509 ab
Wynne	44 b	1.8 b	63 b	4475 ab
Spain	43 bc	4.3 a	58 c	4256 b
Mean	**44**	**2.0**	**64**	**4508**
$LSD_{0.05}$	**3**	**0.8**	**2**	**403**



Currently grown Virginia-type peanut cultivars

Mid-season peanut insect pests

Note: most of the information provided below is adapted from the Virginia Cooperative Extension Field Crops Pest Management Guide and North Carolina's Peanut Information for the Carolinas and Virginia.

Leafhopper

This small, wedge-shaped, light green to yellow insect migrates into Virginia and both nymphs and adults damage peanut by sucking plant juices from the leaflet midvein and injecting toxins. Injured leaf tips show a characteristic V-shaped yellowing known as "hopperburn" that may take a week to develop after feeding. If 25% of leaves have hopperburn and leafhoppers are active, a foliar treatment may be needed. Again, it is important to make sure that leafhoppers are still present in the field if you decide to treat (you should be able to see leafhoppers move/jump/fly when the foliage is disturbed). Pyrethroids are an option, and Lorsban 15G (chlorpyrifos) applied at-pegging against southern corn rootworm will also control leafhoppers.

Potato leafhopper nymph and adult (both photos courtesy of Marlin E. Rice).

Hopperburn in peanut.

Spider mites

Spider mites suck plant juices from the underside of peanut leaflets, turning them brown. They also create webbing on the leaves. These mites are associated with hot, dry weather. They are often first found along peanut field edges, especially those bordered by weeds, brush, or corn, with infestations later radiating outwards. Natural enemies and diseases assist in mite control, but broad-spectrum insecticide applications that remove beneficial insects may cause mite populations to flare. Treatment decisions should consider whether hot, dry conditions are expected to continue. The earlier the infestation is found, the better (hopefully before many eggs are deposited). Two applications are often needed 5 days apart to kill newly hatched mites. Use 20-25 gallons of water per acre and high pressure to ensure good coverage. Comite (propargite) and Danitol (fenpropathrin) are options to consider, but they will not kill eggs. Brigade (bifenthrin) could be used late in the season as a cleanup spray.

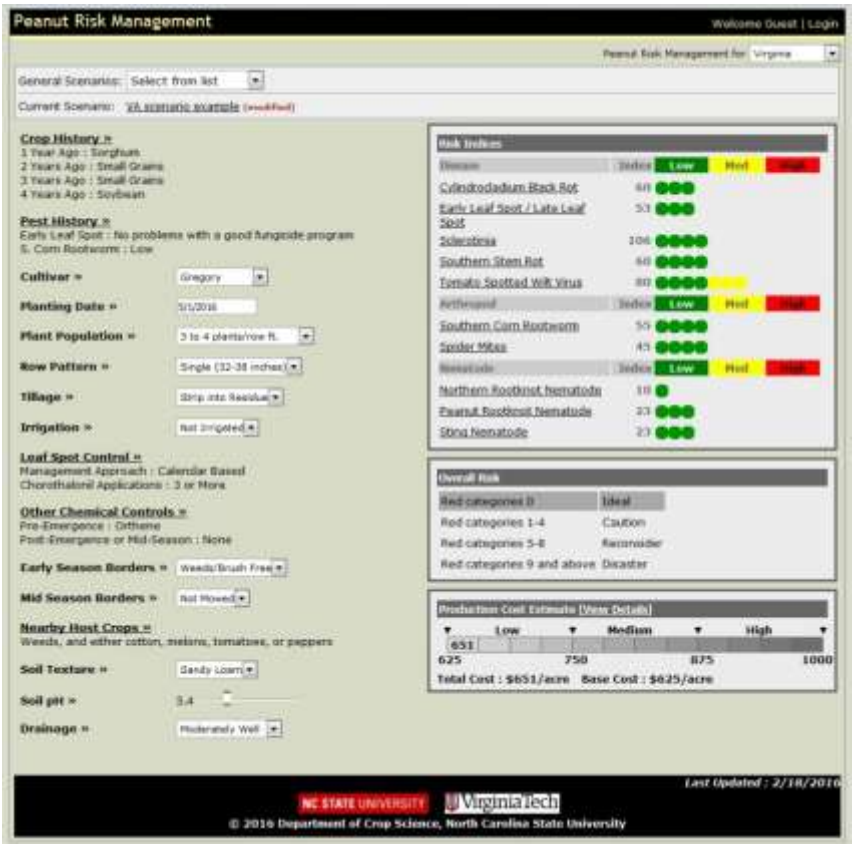
Spider mites and their webbing.

Leaves turned brown from spider mite feeding.

Southern corn rootworm

Rootworm larvae live in the soil and will feed on peanut pegs and pods. Since the larvae are difficult to sample/scout, a risk index was developed to help determine whether preventive treatments are needed on a field-by-field basis. Control decisions should be based on factors such as cultivar, planting date, soil texture, and soil drainage (see "Peanut Risk Management" next page). If the field is at risk, insecticide applications (e.g., Lorsban 15G) should be timed at-pegging (typically occurring the first two weeks of July), although some growers go as early as mid-June to help with leafhopper management and to reduce vine injury caused by equipment.

Southern corn rootworm larvae, adult, and scarred and punctured pods.



Peanut risk management example, from http://www.peanut.ncsu.edu/riskmgmt/Risk.aspx

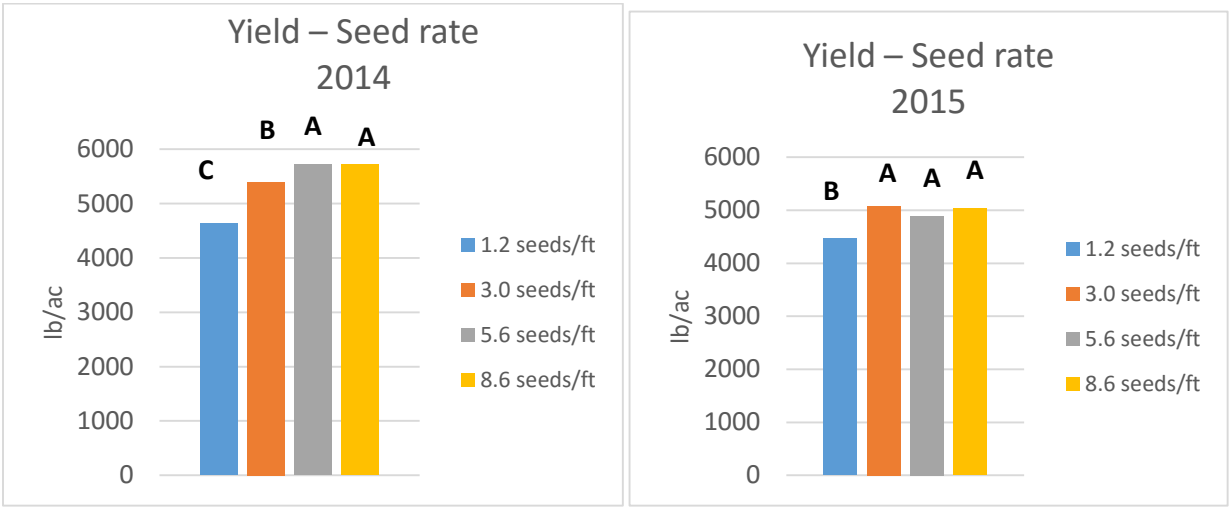
Corn earworm

Corn earworm moths fly out of field corn in late July, searching for a suitable host on which to lay eggs. There is usually just one generation per year in peanut, with larvae occurring in August to early September. Their feeding causes peanut leaflets to appear ragged, but most defoliation injury will not reduce yield or peanut grade. Fall armyworm and beet armyworm larvae also can cause similar defoliation. Scout by shaking plants and counting the larvae that fall onto a beat cloth (or simply fall on the ground)—the threshold is 4 larvae per row foot. Treatments that are

applied to early instars are more effective than those against late instars, so it helps to catch an infestation in its early stages. Applications should take into account what other arthropod pests are present in the field, and whether there may be any pesticide resistance issues with the corn earworm. Products with different chemistries to meet these situations are described in the *Field Crops Pest Management Guide*.

Corn earworm larva and injury to peanut.

Seeding rates



While a good crop stand is important, depending on the environment, seeding rates can be adjusted to reduce the expensive seed costs.

Peanut inoculation

Legumes like peanut can have their roots colonized by nitrogen fixing bacteria (*Bradyrhizobium* species). Many bacteria species live naturally in soils, but peanut requires certain ones that may

not be available on land out of peanut production for longer than 3 years. As recommended in the Virginia Peanut Production Guide, use of inoculants is essential for obtaining high yields.


Nodules on peanut roots inoculated in small containers in a greenhouse and transplanted in the field.

Earlier research shows that a number of 15 'big' nodules on the tap roots at 45 days after planting (DAP) are indication of good inoculation. However, we found that good inoculation by this definition can happen as soon as 12 DAP, if conditions are optimal.

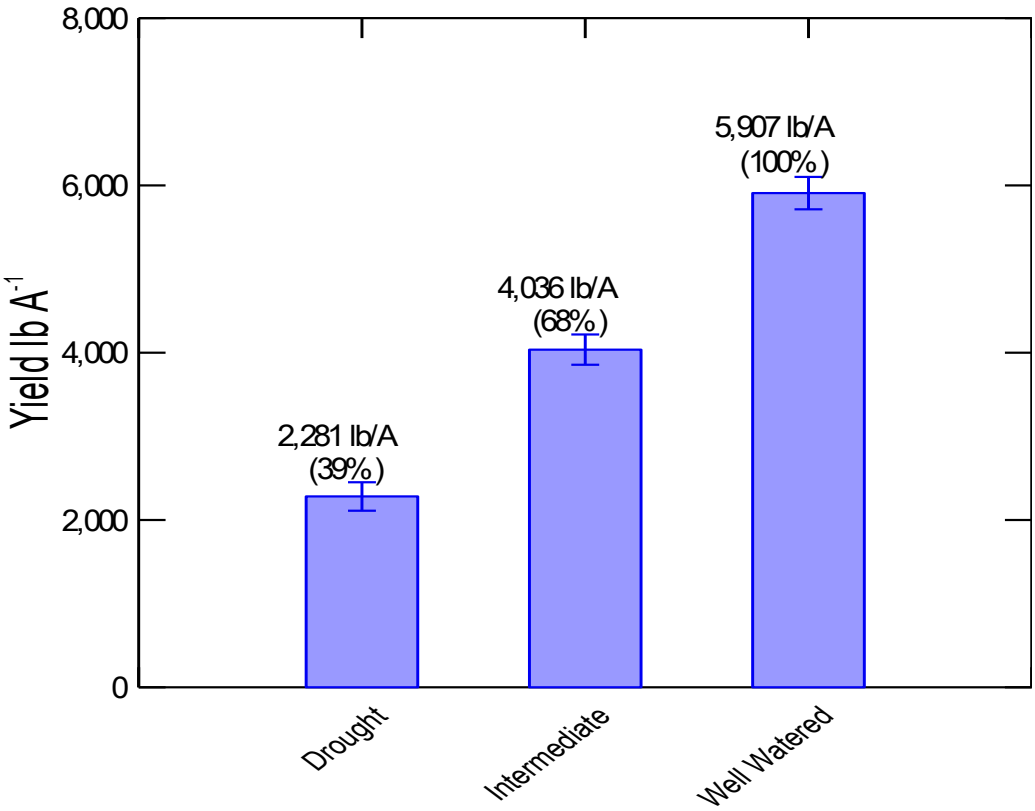
Nodules on a peanut root at 15 DAP.

Bacteria are living organisms; therefore, inoculants need to be handled with care to avoid bacteria exposure to either high or cool temperatures. Once in the soil, bacteria need optimum temperature and moisture. If too dry or too wet they may not survive, colonize the roots, or fix nitrogen. Poor nodulation will result in yellow plants with less vine growth and reduced yield. On poor nodulated plants mineral nitrogen can be used but research showed that yields are still lower in comparison with well nodulated plants.

Poor vine growth due to poor nodulation under cool and wet soil moisture in Southampton County, VA.

Peanut irrigation

Peanut is sensitive to drought. To grow and yield profitably, regular amounts of water ranging from 1 inch per week at early growth stages to 3 inches per week during seed development to a total of 25 inches of water per growing season are required.



Peanut yield response to irrigation in research plots at Tidewater AREC in Suffolk, VA.

Digging and harvesting peanuts

Choosing the right time for peanut harvest, not too soon and not too late, has potential to increase yields by 300 to 500 pounds per acre, but choosing that time is challenging by the crop being in the ground. Scientists developed a 'color chart' system to help farmers make the right decision. Although not very handy for all farmers, the system works pretty well. However, to utilize this method, farmers will need to have the chart (which they can find in local county Extension offices, a bucket with a wired basket to slide in, and a pressure washer. After removal of pod external layer, they can see the mesocarp color which indicates the maturity. Then, by placing them on specially developed pod color boards, they can determine how close they are to harvest. In case this seems too complicated, they can simply bring samples of peanuts to the 'pod blasting clinics' organized in September by Extension agents and specialists. Complicated decisions arise when due to unfavorable weather conditions, usually in dry years, peanut tends to set two crops making the decision on which to keep and which to sacrifice tough.

Two crops of peanuts in a field under drought (left) in comparison with a well-watered field (right).

Weed control

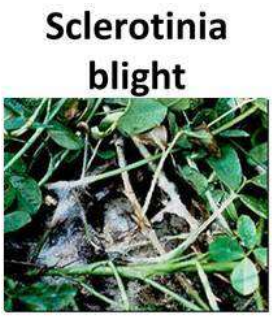
Herbicide Options for Controlling ALS-Resistant Palmer Pigweed in Peanuts.		
Preplant Incorporated	**Preemergence**	**Postemergence**
Pendimethalin	Alachlor	Paraquat
Ethalfluralin	Dimethenamid	Paraquat + 2,4-DB
Acetochlor	Metolachlor	Paraquat + Bentazon + Acifluorfen
Alachlor	Acetochlor	Acifluorfen
Dimethenamid	Flumioxazin	Acifluorfen + 2,4-DB
Metolachlor		Acifluorfen + Bentazon
Notes: PPO-resistant Palmer pigweed exist in Arkansas, Mississippi, and Tennessee, and is likely present in North Carolina. In the absence of PPO-inhibiting herbicides (Valor SX, Ultra Blazer, Cobra, Storm), Palmer pigweed will be difficult to control in peanuts. Limiting use of the PPO-herbicides in peanuts and rotational crops will be vital to protecting this valuable mode of action.		Acifluorfen + Bentazon + 2,4-DB
		Lactofen
		Lactofen + Bentazon
		Lactofen + Bentazon + 2,4-DB

Non-treated Check. *Courtesy of E. Prostko, University of Georgia.*

Prowl H_2O @ 34 oz/A (PRE), Valor @ 3 oz/A (PRE), Strongarm @ 0.23 oz/A (PRE),Cadre @ 4 oz/A (40 DAP), and COC @ 1% v/v (40 DAP). *Courtesy of E. Prostko, University of Georgia.*

Diseases in peanut

Major peanut diseases in Virginia and the Virginia-Carolina region and their management are presented below.



MANAGEMENT OF FUNGAL DISEASES OF PEANUT				Fungicides	
Disease	Crop rotation	Host resistance	Fumigation	In furrow, seed	Foliar
Early and late leaf spot	✓				✓*
Cylindrocladium black rot	✓	✓	✓	✓	✓
Sclerotinia blight	✓	✓			✓*
Southern stem rot	✓	✓			✓
Web blotch	✓	✓			✓
Tomato spotted wilt virus		✓			

*For leaf spot and Sclerotinia blight advisories, see the Virginia Peanut-Cotton Infonet (http://webipm.ento.vt.edu/cgi-bin/beta2.cgi)