UNIVERSITY OF GEORGIA EXTENSION

UGA PEANUT PRODUCTION

The Agronomic Quick Reference Guide

ugapeanutteam.org

CULTIVAR SELECTION TIPS

W. Scott Monfort, Extension Peanut Agronomist

RUNNER MARKET-TYPE CULTIVARS

AUNPL-17 is a new high-yielding, high-oleic, TSWV-resistant cultivar released in 2017. Very Limited Commercial Seed Available.

FloRun™ 331 is a new high yielding, medium maturity, high oleic cultivar with resistance to TSWV, White Mold, and Leaf spots.

Georgia-06G is a high yielding large seeded cultivar. Georgia-06G also displays a medium maturity pattern. This cultivar was released in 2006. Georgia-06G has a high level of TSWV resistance and good yield potential in a wide range of conditions.

Georgia-09B is a high-oleic, medium maturing, medium seed size cultivar. This cultivar was released in 2009. Georgia-09B has an intermediate runner growth habit with a high resistance to TSWV.

Georgia-12Y is a high yielding, medium-late maturing cultivar with a medium sized seed. This cultivar was released in 2012. It is also TSWV resistant and white mold resistant. Due to later maturity, **Georgia-12Y is less suitable for later planting dates (after May 12). Susceptible to Rhizoctonia Limb Rot.**

Georgia-16HO is a new high-yielding, high-oleic, TSWV-resistant, large-seeded cultivar that was released in 2016. Georgia-16HO combines TSWV-resistance with the high-oleic trait for longer shelf-life and improved oil quality.

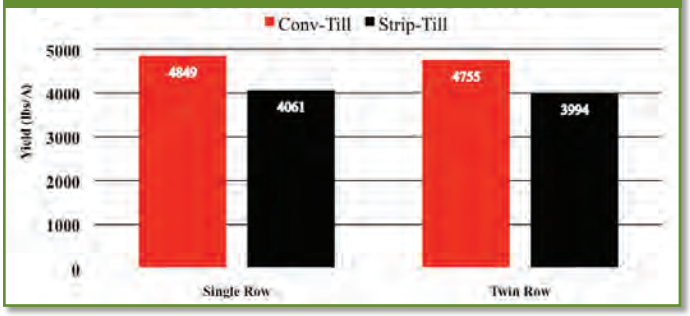
Georgia-18RU is a new high-yielding, high-grading, normal-oleic, tomato spotted wilt virus (TSWV) resistant, leaf-scorch resistant cultivar.

Tifguard has a high level of resistance to peanut root-knot nematode. Tifguard has good yield and grade potential, especially in fields where root-knot nematode is at damaging levels. It offers good resistance to TSWV and is medium maturity.

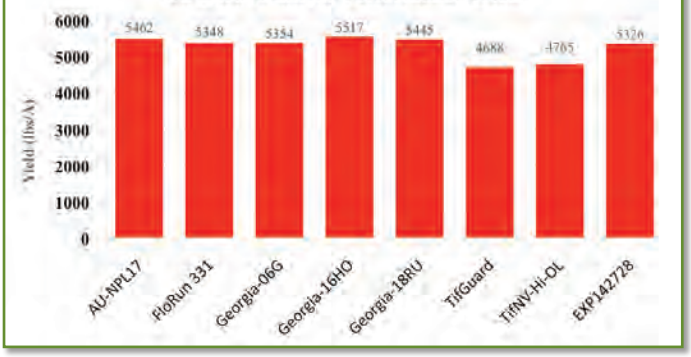
TifNV-High O/L is a high-yielding, high-oleic, cultivar with a high level of peanut root-knot nematode resistance. It is a large seeded, medium maturing, runner-type cultivar with excellent resistance to TSWV. TifNV-High O/L was released in 2014.

TUFRunner™ 297 is a medium maturing, high-oleic, extra-large seeded, runner-type cultivar. This cultivar was was released in 2014. TUFRunner '297' has very good resistance to white mold, good resistance to TSWV but is susceptible to leaf spot.

CULTIVAR BY TILLAGE TRIALS TWIN ROW COMPARED TO SINGLE ROW YIELD AVERAGED OVER 8 CULTIVARS



ON-FARM CULTIVAR PERFORMANCE TRIALS



PLANTING TIPS

Scott Tubbs, Cropping Systems Agronomist

Planting Date: The ideal planting window is between late April and late May in regards to yield potential. A good peanut crop can be grown outside of this planting window, although the risk of reduced yield is greater because of weather and risk of disease problems. Please keep these points in mind before and as you plant:

- **Planter Maintenance** – Clean seed tubes, metering units, vacuum system, inoculant tubes, insecticide hoppers and tubes.
  - Calibrate liquid and dry applicators (inoculant, insecticide, herbicide, etc.)
  - Check and replace worn parts that may affect seed placement.
  - Make sure seed meters are applying correct amount of seed.
- **Soil Temperature** – The soil temperature at the 4" depth needs to be greater than 68 Degrees F for 3 consecutive days without risk of a cold front after planting.
- **Tractor/Planter Speed** – Plant at appropriate speeds to allow for more precise placement of seed. As speed increases, planter efficiency and number of seed dropped in the furrow both decrease. This leads to increased gaps between plants which increases TSWV risk, especially if you plant before May 10.
- **Seeding Rate** – To reduce the impact of TSWV, growers need to plant enough seed to provide at least 4 plants/ft of row. Therefore, seeding rates of 6 seed/ft on singles and 6 to 7 combined seed/ft on twins (3 to 3.5 seed/ft per twin furrow) are recommended. Seeding rates also need to be adjusted for % germ of the seed being planted to ensure you have the desired plant population.
- **Seed Depth** – Check your planter in each field for adequate down pressure to ensure ideal planting depth. Seed depth is typically 2.0 to 2.5" deep. One can plant shallower with good moisture but risk losing moisture before germination and injury from Valor herbicide is increased. Peanut can emerge from depths up to 3" as long as the seed has good germination and vigor.
- **Soil Moisture** – Planting peanut in subpar moisture can result in poor germination and erratic emergence causing less than optimum plant population and increased risk of TSWV.
  - Peanut seed is too expensive to plant in dry conditions
  - Irrigated fields – planting in dry and hot conditions followed by irrigation with cold water can shock the seed and cause erratic emergence. Irrigate 1/3" to 1/2" and then plant.
- **Pre-Plant Herbicides and Irrigation** – Water pre-plant/at-plant herbicides into the soil before peanut emerge to improve weed control.
- **TSWV Risk** – To reduce TSWV risk on peanut, plant after May 10, apply phorate for thrips control, and use twin row configuration (see Peanut Rx Disease Risk Index).
- **Inoculants** – Apply inoculants in fields that have been out of peanut production for more than 5 years. However, it's a good practice to apply inoculants each year, especially following years of extreme weather conditions like prolonged hot and/or dry periods, or extended water-logged soils.

Peanut is a legume that fulfills its own nitrogen (N) requirement through symbiosis with specific *Rhizobium* soil bacteria (called *Bradyrhizobia*). This bacteria-plant interaction allows the peanut plant to convert atmospheric N to a form utilized by the plant.

INOCULANT REMINDERS

Scott Tubbs, Cropping Systems Agronomist

Handling

- Store in a cool, dry place shaded from direct sunlight until used.
- Use fresh inoculant of the proper strain.
- Do not let unused inoculant remain in hoppers for extended time. If liquid inoculant sits in tank overnight, add a fresh batch before planting.
- Fungicide seed treatment may be detrimental to adherence of powder inoculants.
- Shallow planting may result in the loss of bacteria due to hot, dry soils.
- Prepare well-drained fields to reduce risk of water-logging.
- If using a liquid inoculant, apply with chlorine-free water to avoid killing the bacteria using at least 5 gal/A of water.
- If a heavy rain occurs shortly after planting, a liquid inoculant may be diluted or carried away from the seed, reducing efficacy.
- Nodulation is delayed or reduced in the presence of excess soil N.
- Adequate soil levels of Ca, P, and K aid in Bradyrhizobia survival.
- Follow all label directions when applying pesticides and inoculants as mixes.
- Deliver product at labeled rates (1.0 fl oz per 1,000 linear row feet for most). Twin rows use same furrow rate, which doubles total quantity applied per acre compared to a single row planting.
- Addition of biological enhancement should be used with caution and may have an adverse effect on viability of the inoculant.

Nitrogen deficiency is occasionally a problem on peanuts. This could be due to a failure to artificially inoculate peanuts when needed.

- In extreme cases of poor nodulation, it may be necessary to apply N fertilizer. If you note N deficiency, apply 60 lb N/A when plant is 40 to 60 days old. A granular form (such as ammonium sulfate) is recommended.

Benefits

- Fertilizer savings - N-fixing ability replaces the need to apply N fertilizers.
- Residual soil N – 50 to 100 lb N/A may be added to the soil as a result of growing an effectively nodulated peanut crop.
- Benefit to rotated crops - Will provide subsequent crops with available N, enhancing yield and reducing fertilizer costs of the following crop.
- Improved soil conditions - legumes decompose rapidly, leaving organic matter in the soil which improves its physical, chemical, and biological condition

PEANUT SEED SIZE

VARIETY	SEED WEIGHT g/seed	SEED COUNT seed/lb	PLANTED, 5 SEED/FT. lbs/A	PLANTED, 6 SEED/FT. lbs/A	PLANTED, 7 SEED/FT. lbs/A
Large Seed Size*					
°TUFRunner™ '297'	0.74	615	118	142	165
Georgia-06G	0.72	632	115	138	161
°TUFRunner™ '511'	0.71	637	114	137	160
Tifguard^	0.71	643	113	135	158
°TifNV-High O/L^	0.71	644	113	135	158
°Georgia-16HO	0.70	650	112	134	156
Georgia-07W	0.68	668	109	130	152
°Florida-07	0.68	685	106	127	148
Medium Seed Size*					
Georgia Greener	0.65	694	105	126	147
°Georgia-09B	0.65	703	103	124	145
Georgia-12Y	0.64	710	102	123	143
Small Seed Size*					
Georgia Green§	0.59	769	94	113	132
°Georgia-13M	0.57	800	91	109	127
°Georgia-14N^	0.55	827	88	105	123

** There is no official standard to define the classifications of "Large, Medium, or Small" for runner peanuts. Category limits are not an official classification.*

°Indicates a high-oleic variety.

^Denotes resistance to the Peanut Root-Knot Nematode (Meloidogyne arenaria).

§Data from 2011-2013

▪Data only available for 2017-2018. Data in table is the average of UGA Statewide Variety Testing irrigated trials at 3 locations from 2015-2017.

SPRAYING TIPS

Simerjeet Virk, Extension Precision Ag Specialist

Timely and effective pesticide applications in peanut production is critical to protect yield and quality from pests throughout the season. Several factors during spray applications can influence the coverage and efficacy required for effective pest control. Please consider these points before and during pesticide applications to maximize the spray performance of application equipment:

- Check pesticide labels for recommended rate and droplet size requirements to select the best nozzle that meet those application requirements.
- Medium to coarse droplets are more effective for herbicide applications whereas fungicide applications generally require finer droplets for increased coverage and efficacy.
- Maintain consistent ground speed and spray pressure during application to achieve the desired droplet size for optimum coverage and canopy penetration.
- Select nozzles for the application rate and droplet size at operating pressures of 30 – 50 psi.
- Calibrate sprayer properly to verify the actual application rate in gallons per acre. Spray output should be checked at multiple locations across the boom/spray width.
- Increase carrier volume/application rate for improved coverage. Do not lower spray volume below the minimum recommended rate specified on the pesticide label.
- Spray at ground speeds of or less than 10 mph to obtain consistent and more uniform coverage across the field
- Lower boom height to 20-24 inches above the soil or crop canopy to maintain adequate spray overlap and application uniformity across the boom.
- Consider wind speed and direction during spray applications. Avoid spraying when wind speeds are more than 10 mph to reduce off-target movement of pesticides.
- Avoid spraying when the conditions for temperature inversions are favorable.
- Use a rate controller for flow rate adjustments with changes in ground speed to maintain target application rate throughout the field during spraying.
- Advanced technologies such as pulse width modulation (PWM) and auto-boom height can also be utilized to minimize variations in application rate and coverage across the field.

PEANUT FERTILITY CHECKLIST

Glen Harris, Extension Soils Specialist

COMPONENT	SOIL TEST SUFFICIENCY LEVEL	RECOMMENDATIONS/COMMENTS
pH	6.0 – 6.5	– Below 6.0 risks zinc and aluminum toxicity – Above 6.5 risks manganese deficiency (refer to charts in UGA Peanut Production Guide) – Grid sampling and variable rate liming is recommended – Dolomitic lime is recommended over calcitic lime to maintain good soil test Mg levels unless these levels are already very high (>150)
Nitrogen (N)	Soil Not Tested	– Consider using an inoculant, preferably liquid, every field, every year but especially if out of peanut production for 3 years or more – Apply 60 lbs/N if you have an inoculant failure (40-60 DAP)
Sulfur (S)	Soil Not Tested	– Sulfur is not a limiting factor on Coastal Plain soils due to deep tap root, gypsum use and subsoil sulfur
Phosphorous (P)	30 lb/a	– Sufficiency level is lower than for other crops since peanut is a deep tap rooted crop and good scavenger of P – If soil test P is maintained at good levels for other crops in rotation then P fertilizer should not be needed. However, if soil test P is considered low enough, P fertilizer will be recommended and should be applied Soil Test P (lb/A) / P2O5 Recommended (lb/A): < 15 / 80; 16-30 / 50; 31-60 / 0; >60 / 0
Potassium (K)	60 lb/a	– Sufficiency level is lower than for other crops since peanut is a deep tap rooted crop and good scavenger of K – If soil test K is maintained at good levels for other crops in rotation then K fertilizer should not be needed. However, if soil test K is considered low enough, K fertilizer will be recommended and should be applied Soil Test K (lb/A) / K20 Recommended (lb/A): < 30 / 80; 31-60 / 50; 61-150 / 0; >150 / 0 – Excess K in the pegging zone (top 4 inches of soil) can interfere with calcium uptake by pods and cause pops
Calcium (Ca)	500 lb/a and Ca:K of at least 3:1 in pegging zone	– If EITHER of these levels are not met, then apply 1000 lb/a gypsum at early bloom to runner-type peanuts – All peanuts to be saved for seed should receive 1000 lb/a gypsum at early bloom even if these levels are met – All Virginia-type peanuts should receive 2000 lb/a gypsum at early bloom even if these levels are met
Magnesium (Mg)	60 lb/a	– Since peanut is also a good scavenger of Mg this sufficiency range which is used for other crops in rotation should be more than adequate – Dolomitic lime is the most economical source of magnesium
Boron (B)	Soil Not Tested	– 0.5 lb B/A is recommended, preferably split in 2 applications of 0.25 lb B/a each with early fungicide sprays – It takes 1.25 lb/a Solubor to get 0.25 lb B/a and 1 quart (32 oz) of 10 % Liquid Boron to get 0.25 lb B/a – Excessive foliar boron may be toxic to peanuts so do not exceed 0.5 lb B/a for a seasonal total
Manganese (Mn)	pH / Soil Mn (lb/a): 6.0 / 6; 6.5 / 11; 7.0 / 17	– The higher soil pH is maintained the higher the soil test manganese needs to be maintained to avoid manganese deficiency on peanut – Symptom of deficiency is interveinal chlorosis, often late in the season on terminal growth – If deficiency is confirmed by tissue testing apply 0.5 lb Mn/a using manganese sulfate – Yield reductions are more likely if the symptoms occur early in the growing season so early detection and multiple sprays may be required
Zinc (Zn)	2-8 lb/A	– Zinc deficiency is rare in peanut, however zinc toxicity often occurs, especially when soil test zinc levels are high and soil pH is low – Zinc toxicity is often seen on new ground (low pH), old pecan orchards and old barn sites that had galvanized roofs – In order to avoid zinc toxicity, maintain soil pH at or above the levels below: Soil Test Zn (lb/A) / Min. Soil pH: 20 / 6.0; 30 / 6.1; 40 / 6.2; 50 / 6.3; 60 / 6.4; 70 / 6.5; >70 / Call Me
Copper (Cu), Iron (Fe), Molybdenum (Mo) and Chlorine (Cl)	Soil Not Tested	– No documented cases of deficiencies of these micronutrients in Coastal Plain peanut production – Tissue test levels of copper often appear low, yield response to foliar copper sprays have not resulted in increased yields – Even though Mo is important for N fixation, no yield advantage has been documented from foliar applied Mo. Coastal Plain soils are high in iron therefore deficiency of this element are unheard of

FIGURE 1. RELATIONSHIP BETWEEN PH AND MANGANESE AVAILABILITY. MAINTAIN SOIL TEST MANGANESE LEVELS ABOVE THE LINE TO HELP AVOID MANGANESE DEFICIENCY.
Source: Soil test Handbook for Georgia.

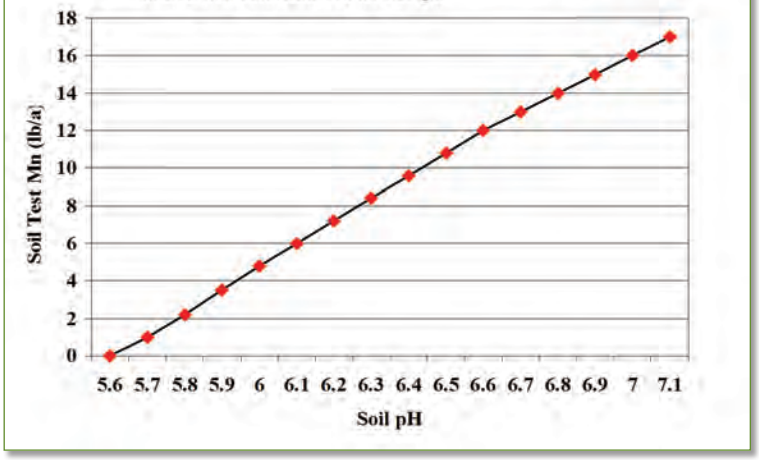
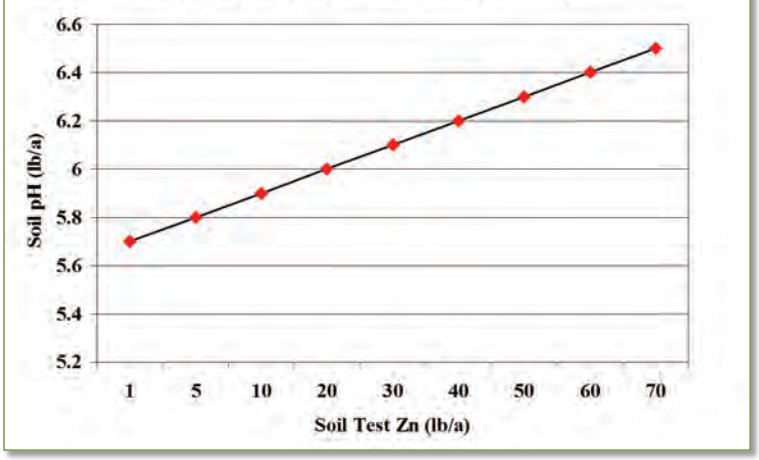


FIGURE 2. RELATIONSHIP BETWEEN pH AND ZINC AVAILABILITY. MAINTAIN SOIL pH LEVELS ABOVE THE LINE TO HELP AVOID ZINC TOXICITY.
Source: Davis-Carter, J. et al. 1991 Peanut Research Extension Report



WATER UTILIZATION AND IRRIGATION MANAGEMENT

Wesley M. Porter, Extension Irrigation Specialist

Weather Conditions

- Are variable, can be difficult to plan for, and have a large impact on crop growth, development, and yield. Farmers must find ways to adapt to changing conditions and manage the crop in these conditions.
- 2014 and 2019 were the only years that could be considered dry, while in excess of 20 inches of rainfall was received during 2015-2018, and 2020.
- Even wet years were dynamically different in the average temperatures, rainfall distribution, water requirements and yield.
- The UGA Checkbook (Figure 1) is one of the most commonly used methods for irrigation scheduling, but caution is advised as it was developed based on historical averages, thus, is not an exact fit for years that are either wetter or drier than normal as it will over and under predict water need in those years respectively.
- The total estimated water requirement from the UGA Checkbook for peanuts is 18 inches.

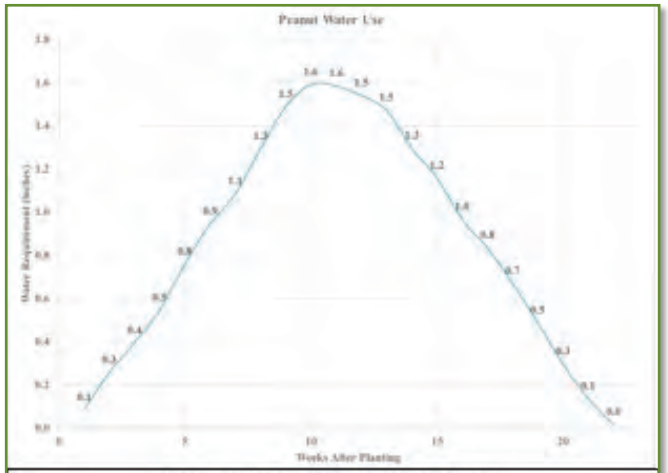


Figure 1. Water Use of Peanut by Week

Irrigation Scheduling

- There are many options available to producers to determine when and There are many options available to producers such as the UGA Checkbook, UGA Easypan, online scheduling tools, and soil and/or crop sensors. The UGA Easypan, (http://extension.uga.edu/publications/detail.cfm?number=B1201) is a simple way to estimate in field ET. There are online scheduling tools such as Irrigator Pro (http://irrigatorpro.org/) and PeanutFARM (http://peanutfarm.org/). More advanced irrigation scheduling methods include sensors. Two sensors types are capacitance and tensiometic (Meter and Watermark are two common of each type). There are a wide variety of sensor options that would be easily integrated into a producer's practice.

IRRIGATION SCHEDULING TREATMENT DIFFERENCES

Irrigation Treatment	2017 Irrigation (in.)	2017 Yield (lbs/ac)	2018 Irrigation	2018 Yield (lbs/ac)
Dryland	1.00	5875	2.5	5591
WaterMark 45kPa	2.85	6396	2.5	5849
UGA EasyPan	4.75	5987	-	-
50% Checkbook	6.75	6262	4.00	6231
Checkbook	10.50	5749	6.70	6147
PeanutFARM	5.50	5936	4.80	5984
IrrigatorPro	4.00	6260	3.30	6433

Irrigation Scheduling Trial at Stripling Irrigation Research Park in Camilla, GA.
Table 1. Mean Results from in 2017 (24.3 inches of rain) and 2018 (32.4 inches of rain).

- There was excessive rain received during both years and no major differences in yield treatments. However, there are clear differences between which scheduling methods perform the best across environments and years. These methods are Irrigator Pro and a 45 kPa SWT sensor. The Checkbook applied more irrigation with lower yields compared to more advanced methods. Even 50% Checkbook out yielded the Checkbook. Each method has potential for successful adoption, but it is up to the producer to make the decision on which method is the best for their operation. Each method has associated time and financial costs, but with the proper management the return on investment can be very short. Additional information about individual variety performance and scheduling method can be obtained through your local county agent.

PLANT GROWTH REGULATORS

Scott Monfort, Extension Peanut Agronomist

- Prohexadione calcium (PC) is the only plant growth regulator currently registered for use on peanuts. It is sold as Apogee ® or Kudos®, and is formulated as a 27.5% wettable granules.
- Virginia type peanuts - two applications of 7.25oz per acre.
- Runners type peanuts - two applications of 3.63oz to 5.44oz per acre
- There are a few concerns regarding the use of PC that need to be considered.
  - The use of PC is only recommended on irrigated acres where vines growth is excessive
    - Use of PC in non-irrigated or in irrigated fields where vine growth is not an issue will lead to stunted growth and potential yield loss.
  - **Application timing is crucial!**
    - **1st application = when greater than 50% lateral vines are touching in the row middles (Not at 50% Lapped** - this will be too early) (See Images below.)
    - **2nd application = 14 to 21 days after 1st application**
  - Include COC (1 quart/acre) and UAN (1 pint/acre) or AMS with PC to help with plant uptake and consistency of performance.
  - PC requires eight hours for absorption by the peanut foliage to be effective.
  - PC is not recommended on plants that are under stress due to lack of moisture, disease pressure, or other stress conditions.

50% LAP - Do Not Apply **50% Lateral Vines Touching - Apply**

Image 1&2. Timing of initial application of PC on peanuts where 50% of lateral vines are touching in row middles.

Tank-Mix Considerations

- Based on communication with BASF and others, PC has been shown to be compatible with many of the fungicides and insecticides growers utilize in peanut. The only problem is there are thousands of chemical combinations used in peanut each year. The only true way to determine if a select mixture is compatible is to do a compatibility test. Growers need to remember to include COC and UAN or AMS with PC to help with plant uptake and consistency of performance. This could affect compatibility with other products or cause increased burn on peanut.

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IMPORTANT LINKS

UGA Peanut Team Website – ugapeanutteam.org

Climate Outlook – *Pam Knox, Agricultural Climatologist*
https://site.extension.uga.edu/climate

Agricultural Economics – *Adam Rabinowitz and Amanda Smith, Extension Economists*
Website -- http://agecon.uga.edu/extension.html
Budgets -- http://agecon.uga.edu/extension/budgets.html
Ag Economics Blog -- https://site.extension.uga.edu/aaecext/