

Arkansas Peanut Production Summary

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Peanut Growth and Development

Cultivated peanut, *Arachis hypogea*, is a subtropical annual member of the legume family (Fabaceae). Peanut plants grow upright or prostrate and generally 6 to 24 inches high. Yellow to orange flowers about four to six weeks after planting that are self-pollinated in the early morning near sunrise. A peg is produced one week after pollination, which elongates toward the ground to enter the soil. Once in the soil the ovary enlarges and pod growth begins. Typically, there are two seeds produced in each peanut pod.

Table 1. Growth stages of peanut.

Veg./Repro.	Title of Stage	Description
VE	Emergence	Cotyledons near emergence
VO		Cotyledons flat or open
V1	First tetrafoliate to n th tetrafoliate	Open tetrafoliate leaf
R1	Beginning bloom	one open flower
R2	Beginning peg	One elongated peg
R3	Beginning pod	One peg in soil with swollen ovary
R4	Full pod	One fully expanded pod
R5	Beginning seed	One fully expanded pod with seed cotyledon
R6	Full seed	One pod with cavity filled by seed
R7	Begin maturity	One pod with visible natural color
R8	Harvest maturity	2/3 to 3/4 pods showing colored pericarp
R9	Over mature pod	Orange-tan colored testa

Cultivar Selection

Four types of peanut are grown commercially in the U.S.; Runner, Spanish, Virginia, and Valencia. The runner type is 80% of the planted acreage in the U.S., primarily grown for peanut butter. The Spanish type is 5% of the national acreage, commonly grown in Oklahoma and Texas, and used for snacks and candy. Virginia type peanut is about 15% of the U.S. crop, mainly grown in Virginia and North Carolina for snacks and in-shell. Valencia peanut is grown in New Mexico makes up the remaining 1% and are primarily roasted and sold in-shell.

Cultivar selection is an important consideration in producing a healthy peanut crop. Though there are many runner peanut cultivars, not all are suitable for production in Arkansas. Some of the most common peanut cultivars grown in the state are listed in Table 2. All have high yield potential and good resistance to Tomato Spotted Wilt Virus (TSWV), an important peanut disease.

Table 2. Agronomic traits of four runner peanut cultivars.

Cultivar	High-oleic	Seed size	TSWV	Southern Blight	Leaf Spots
Georgia-09B	Yes	Medium	R	S	S
Georgia-06G	No	Large	R	S	S
Florida-07	Yes	Large	R	S	S
FloRun-107	Yes	Medium	R	S	S

Site Selection

Peanuts grow best in deep, well drained, sandy soils. Sandy soil types allow the peg to penetrate into the soil for normal pod development with less pod discoloration than soils with a percentage of clay. Also, peanut plants are easier to dig in sandy soil and the sand particle fall away from the pod during the digging process. Clay soil particles remain attached to pods, which add weight during transport and increased cleaning cost.

Fertility and Soil PH

Peanuts like all legumes have a symbiotic relationship with nitrogen fixing bacteria, *Rhizobium* spp. Peanut inoculants contain a specific strain of *Rhizobium* bacteria that are essential for nodule production and nitrogen fixation of peanut. The inoculants contain living bacteria thus care is needed when applying these inoculants to ensure they remain alive until the peanut plant begins to grow. Inoculants are applied at planting in a liquid or dry formulation and should be applied in moist soil near the seed. Also, dilute inoculate in non-chlorinated water because chlorinated water will kill the bacteria. Generally, 25 to 100 nodules per plant is a good count for commercial peanut production.

A good range of pH for peanut production is 6.0 to 6.8. In situations where pH is low (6.0 or less) and zinc levels are high ($> 12 \text{ mg/kg} = \sim 24 \text{ lb/A}$), zinc toxicity can occur. Zinc toxicity causes peanut stems to split. Increasing the pH between 6.2 and 6.5 when zinc levels are high will reduce the risk of Zn toxicity.

Planting Considerations

The minimum soil temperature should be consistently above $>65^{\circ}\text{F}$ at 4 inches deep before planting. Higher soil temperatures will result in a quicker germination and seedling emergence. Peanuts are typically planted at 1.5 to 2.5 inches deep in good moisture for a final population of 4 to 5 plants per ft. of row.

In a typical season for Arkansas producers, peanut seed is planted from April to May in sandy soil. Peanut plants emerge 7 to 10 days after planting (DAP) and begin to flower about 60 DAP. Pollinated flowers produce a peg that grows down into the soil where the peanut pod is formed.



Peanut plants with a few flowers.



Peanut plants with pegs (blue arrow) and immature peanut pods (red arrows) on Runner (left) and Spanish (right) peanut plants. Spanish type peanuts mature earlier than runner.

Irrigation

Currently peanut production is 100% irrigated in Arkansas with producers using both furrow irrigation and center pivot irrigation. Careful planning is needed when using furrow irrigation to ensure flooded conditions do not persist for long periods of time. Prolonged flooding will promote pod rots and other diseases, which will reduce yield and lower grades. Generally, peanut water needs are highest at pegging to pod addition and pod fill (Table 3).

Table 3. General irrigation considerations for peanut.

Plant Growth Stages	Approx. days after planting	Approx. inches per week
Emergence to Flowering	< 45	0.1 - 0.2
Flowering/Pegging to Early Pod Fill	45 - 60	0.75 - 1.0
Pegging/Early Pod Fill to Late Pod Fill	60 -110	1.5 - 2.0
Late Pod Fill to Begin maturity	110 -135	0.75 - 1.0

Harvest

For runner peanut a hull-scrap method is commonly used to predict a harvest date. Harvest based on planting date alone is risky and may result in significant yield losses. Generally, runner peanut matures in 150 to 165 days after planting; however, a peanut crop harvested one week early can result in a yield loss of 200lb/A. A hull-scrap method is based on the fact that the hull changes from white to yellow to orange to brown to black as the peanut matures. Wet pod blasters (power washer) are often used to rapidly remove the peanut hull and expose the mesocarp. Pods are grouped by color on a peanut profile board to predict a harvest date, when 65 to 70% of pods are mature. A representative sample should be

taken several plants in the field for a total of 100 pods. The first sample should be taken at 110 days after planting and then a second at 10 days before predicted harvest date.

Digging is carried out with a digger-inverter, which digs the plants, dislodges soil around pods, and invert peanut plants allowing them to dry. Pods should remain dry in windrows until the average seed moisture is 18 to 24%, typically 3 to 5 day with favorable weather conditions. Rainfall during windrow drying shortly after digging (i.e. pods with 20% moisture) may promote mold and lower grade value. Sufficiently dried peanut vines are combined or thrashed to remove pods from vines. Pod damage may occur during combining so harvesters should be adjusted daily to manufactures recommendations during harvesting. A high number of loose-shelled kernels in the bin are an indication combines are in need of adjustment. Ambient or heated air should be applied within a few hours of combining to prevent growth of bacteria or fungi.



Digging runner peanut with a six-row peanut digger-inverter



Field dried peanut plants being harvested with a peanut thrasher
(Photo by H. Ginn)

Links for Peanuts

[American Peanut Research and Education Society \(APRES\)](#)

[National Peanut Board](#)

[University of Georgia](#)

[Texas A&M University](#)

[Virginia and North Carolina](#)

[University of Florida](#)

[Clemson](#)

Peanut Companies:

[Birdsong Peanut](#)

[Golden Peanut Company](#)

[Texoma Peanut \(Clint Williams\)](#)

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