

Peanuts

Cheryl Kaiser¹ and Matt Ernst²

Introduction

Peanuts (*Arachis hypogaea*), also referred to as groundpeas or groundnuts, are an annual herbaceous legume with an indeterminate growth habit. As these alternate names imply, this unique plant produces its fruit (peanut) below ground. Once the small yellow flowers are self-pollinated, the fertilized ovary elongates into a “peg,” which grows downward and penetrates into the soil. Peanuts develop underground at the ends of the pegs. The peanut seed is referred to as a kernel and the outer shell is called a pod or hull.

Peanuts generally require a long growing season to fully mature, which is why most of the large scale commercial peanut production in the U.S. takes place in the South. Nevertheless, some peanut cultivars require a somewhat shorter growing season and could be grown in Kentucky for local markets.

Marketing

Peanuts can be grown for the dry market, in which case they are dried and processed into shelled or unshelled roasted nuts, peanut butter, candy, and other food products. Small growers, such as those who are likely to investigate peanut production in Kentucky, may choose to process their own peanuts to sell at a number of local markets. Freshly roasted nuts could be sold at farmers markets, fairs, roadside markets, or even provided at sporting events or to catering services.



Unprocessed green (freshly dug, not dried) and raw (freshly dug, somewhat dried) peanuts can be marketed for boiled peanuts, a popular Southern snack. These fresh market peanuts may be sold for consumers to boil or marketed already boiled. Market options for freshly dug peanuts include farmers markets and other direct markets, as well as local grocery stores. Fresh peanuts are more perishable than dry peanuts and are often sold by volume (bushel) instead of weight. Producers should negotiate and/or communicate the unit of sale and price with prospective customers.



Market Outlook

The U.S. is the world's third-largest producer of peanuts, behind India and China. Production is

¹Cheryl Kaiser is a former Extension Associate with the Center for Crop Diversification.

²Matt Ernst is an independent contractor with the Department of Agricultural Economics.

concentrated in the southeastern U.S., especially Georgia. Weather-conditions in 2011 contributed to a much smaller peanut crop than normal. Substantial increases in consumer prices paid for peanut butter and other peanut products in the U.S. market were forecast for 2012.

The market for freshly dug peanuts is more likely to be a very small local niche market for Kentucky producers. Producers should identify potential markets, develop a business and marketing plan, and estimate costs of production (including the cost of harvest labor) before launching a new or unfamiliar crop. Although consumer interest in local foods continues to increase, production conditions are not always ideal for new or novel crops. Offering product samples and consumer education, through point-of-purchase materials and other media, are also important for marketing a new or unfamiliar crop to a local market.

Production Considerations

Cultivar selection

There are four types of peanuts grown in the U.S.: runner, Valencia, Virginia, and Spanish. Of these, early maturing cultivars of the Valencia and Spanish types may be best suited for the Kentucky growing season and markets.

Valencias are sweet flavored nuts that typically have three to four seeds per pod. They are often roasted and sold unshelled or made into all-natural peanut butter. Valencias are excellent for boiling. Spanish peanuts have two to three small kernels with red skins in each pod. They are used for peanut candies, shelled salted nuts, and peanut butter. Growers should select cultivars based on disease resistance, maturity, yield, and marketability.

Site selection and planting

Peanuts grow best on a light-colored, loose, friable soil with good drainage. Nuts grown in sandy loam soils will have brighter appearing hulls with less staining compared to nuts grown in clay soils. This crop should not be planted in the same site more than one year out of three

or four. Peanuts do well after perennial grasses, corn, grain sorghum, and small grains, but should not be planted following other legumes, such as soybeans or forage legumes.

Seeds are planted after danger of frost has passed and soils have warmed sufficiently. Peanuts can be grown in single or twin rows using conventional or strip tillage practices. Strip tillage offers the advantages of moisture conservation and less soil erosion along with a reduction in time and cost for land preparation. Florida growers using strip tillage have observed fewer leaf spot and tomato spotted wilt virus (TSWV) disease problems, as well. Peanuts can also be planted in hills or ridges for improved drainage. Raised beds may also promote faster germination and reduce pod losses when digging at harvest. Irrigation will be especially important during flowering, peg formation, and pod formation.

Pest management

Peanuts are susceptible to a number of disease problems that can result in yield losses. These include southern stem rot (*Sclerotium rolfsii*), white mold (*Sclerotinia minor*), fungal leaf spots, rust, root knot nematode, and TSWV. Contamination from aflatoxin-forming fungi (*Aspergillus* spp.) can occur in storage when peanuts are improperly cured. Damaging insect pests include wire worms, lesser corn stalk borers, and potato leafhopper. Cutworms can become a problem when peanuts are planted too soon after killing the cover crop.

Purchase pest-free, quality seed of cultivars with disease resistance. Inspect seed carefully for discoloration, shriveling, or the presence of foreign matter (such as fungal sclerotia). Seed should be fungicide-treated to protect against seed rots and damping-off fungi. Following a good crop rotation program will be essential for reducing disease incidence and insect populations. Scouting throughout the growing season can help the producer determine when and how often pesticides should be applied.

Weeds need to be controlled season-long; weedy growth at harvest can make digging more difficult. However, cultivation should be avoided during the growing season so as not to injure developing pods. The judicious use of herbicides can make cultivation unnecessary.

Harvest and storage

Peanuts bloom and produce pods over an extended period of time after planting. Since pods do not all mature at the same time, it can be difficult to determine the optimum time to harvest a field. Occasionally pulling plants at various field sites and checking pods for maturity is one way to determine when to harvest. Large commercial growers in the South often use podblasters and accompanying charts to establish maturity more accurately. Dry market peanuts are harvested when the majority of pods have a veined surface, the seed coats are pink to red, and the inner pod surfaces are brown.

Fresh market peanuts are normally harvested at an earlier stage than those grown for the dry market. Consumers prefer kernels that are not fully mature so the nuts will be soft and absorb more salt during boiling. Harvesting the crop too soon, however, will result in peanuts that are not as flavorful.

Crops harvested before a killing frost are mowed to remove excess top growth for more efficient harvesting. Hand harvesting results in less bruising and is the preferred method for fresh market peanuts or whenever shell appearance affects marketability. Plants are dug, shaken to remove excess soil, and then turned over to expose the nuts to the sun. Large producers in the South have specialized equipment (known as a digger-shaker-inverter) to accomplish this. Small growers handy with machinery could adapt a turning plow or potato digger for peanut harvest with fairly good success.

Dry market peanuts are left to partially cure in windrows for a few days before the peanuts are removed, cleaned, and dried with hot air to

complete the curing process. It is important to maintain the right temperature and air flow during drying to preserve the quality and flavor of the peanuts. Green peanuts are marketed soon after digging while raw peanuts may be allowed to dry in the windrows. Fresh peanuts can be boiled and then frozen or canned for a longer storage life. Fully cured nuts (7.5 percent moisture content) for the dry market can be stored in an insect-free cooler at 50° F for several months at 30 percent relative humidity. However, even under the best conditions, peanuts are considered semi-perishable.

Labor requirements

Labor needs per acre will depend upon the production system and scale of peanut production. On a per acre basis, labor needs are likely to be similar for a crop such as sweetpotatoes: approximately 16 hours for production, 40 hours for harvest, and 40 to 50 hours for postharvest handling. For specialty niche production per 100-foot row, labor needs could be similar to root crops like carrots: approximately 2 hours for production, 4 hours for harvest, and an additional 1 hour for postharvest handling.

Economic Considerations

Initial investments include land preparation, purchase of seed, and installation of an irrigation system. Commercial peanut production input costs have steadily increased in recent years. For large-scale systems in states like Georgia, production costs fall in the \$1,000 per acre range.

Production costs for irrigated peanut production in the southeast are estimated at about \$550 per acre, with mechanized harvest and marketing costs at about \$100 per acre. Total expenses per acre, including both variable and fixed, would come to approximately \$1,000. Returns on peanuts will be highly varied according to yield and market price. Producers interested in different returns at different peanut yield scenarios should consult the budgets in the University of Georgia Peanut Outlook, published annually.

For small-scale niche production, such as for sales at farmers markets or to local groceries, peanuts could generate costs and returns comparable to crops such as sweetpotatoes or carrots. Production costs for a 100-foot bed of such crops can range from \$60 to \$100, largely depending on the seed cost, with fixed costs of about \$10 to \$20 per bed. Based on green peanut yields of 40 pounds per 100-foot row, producers would need to receive prices of \$2.50 per pound to generate positive returns to land, labor, and management.

Selected Resources

- Alternative Field Crops Manual: Peanut (University of Wisconsin and University of Minnesota, 1991) <http://www.hort.purdue.edu/newcrop/afcm/peanut.html>
- Conservation Tillage Peanut Production, SS-AGR-185 (University of Florida, 2009) <http://ufdc.ufl.edu/IR00003724/00001>
- Management and Cultural Practices for Peanuts, SS-AGR-74 (University of Florida, 2009) <http://edis.ifas.ufl.edu/aa258>
- USDA, Oklahoma State University release new peanut variety <http://www.foodengineeringmag.com/articles/94260-usda-oklahoma-state-university-release-new-peanut-variety>
- Peanut Information for the Carolinas and Virginia (North Carolina State University, Clemson University, and Virginia Tech, 2011) <http://www.peanuts.ncsu.edu/>
- Peanut Profile (Agricultural Marketing Resource Center, 2011) http://www.agmrc.org/commodities__products/nuts/peanut_profile.cfm
- Peanut Update (University of Georgia, 2011) <http://www.caes.uga.edu/commodities/fieldcrops/peanuts/2011peanutupdate/index2011.html>
- Producing Peanuts for the Fresh (Green/Boiling) Market, SS-AGR-190 (University of Florida, 2011) <http://edis.ifas.ufl.edu/ag194>

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Photos by David Vance, USDA-ARS (plants with immature peanuts); Jack Dykinga, USDA-ARS (harvested peanuts); and USDA-ARS (flower)

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