



## Perennial Peanut: An Alternative Forage of Growing Importance<sup>1</sup>

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### What Is It?

The rhizoma (perennial) peanut (*Arachis glabrata* Benth.) is a primitive peanut that produces very few seed in contrast to common peanut (*Arachis hypogaea* L.). It is a warm season/tropical perennial legume native to South America. Its potential uses include hay and other dehydrated products, pasture, creep grazing, silage, ornamental, conservation cover, and living mulch in association with other crops. Perennial peanut fills a unique niche in Florida because there is no other perennial warm-season legume that rivals its forage quality, persistence, and broad spectrum of uses. In the continental United States, it can be produced commercially in Florida and the southern portions of Georgia and the Gulf Coast states.

Florigraze, released in 1979, is the most widely distributed commercially grown cultivar today (approximately 26,000 acres in Florida following the 2005 planting season). Arbrook, the latest cultivar, was released in 1986. Arbrook is less cold hardy than Florigraze and best suited to dry sites. Researchers at

the University of Florida are continuing the search for higher yielding, well-adapted cultivars.

Some have coined perennial peanut "Florida's alfalfa" because it fits so closely the quality characteristics of alfalfa as an animal feed. Crude protein of perennial peanut ranges from 13 to 20%, depending on the size and number of stems, leaf loss, and stage of maturity. The amino acid and mineral composition is very similar to alfalfa. Digestibility (IVOMD) for alfalfa and perennial peanut is also quite similar, ranging from 55 to 67%. Perennial peanut is highly palatable to most livestock and when grazed, bloating is not a problem as it is with many legumes.

As indicated by its name, "perennial" peanut is long-lived and does not require replanting once established. Currently, there are commercial plantings of Florigraze over 20 years old and assorted plantings of other perennial peanut genotypes over 30 years old. Because perennial peanut is long-lived, it develops a deep and extensive system of rhizomes and roots which enable the plant to extract moisture

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1. This document is SS-AGR-39, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Revised February 2006. Please visit the EDIS Website at <http://edis.ifas.ufl.edu>

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and nutrients from a large volume of soil, enabling it to survive dry periods and grow on less than optimum soil fertility. It is well-adapted to the droughty, infertile, well-drained, deep sands of Florida. However, it does respond to good soil fertility and moisture. Perennial peanut is a legume and therefore, requires no applied nitrogen fertilizer due to its association with nitrogen-fixing rhizobium bacteria. The association of perennial peanut with mycorrhizal organisms in the soil environment improves phosphorus availability to the plant even in phosphorus impoverished soils.

Perennial peanut was introduced into Florida from Brazil in 1936. Since its introduction, no insect, disease, or nematode pests have been identified that cause significant economic loss. Weed control is normally required following planting. A competition-free growing zone promotes above and below ground plant development, which in turn shortens the time period to complete establishment. Weed control is achieved through both mechanical (mowing) and chemical (herbicide) means. Other than the use of herbicides during establishment and occasionally during post-establishment, no other pesticides are required to protect the crop.

Perennial peanut can be used in large scale, as well as small scale, agricultural operations. Many factors influence the cost of establishing and maintaining a perennial peanut planting, including the size of the planting, intended use of the forage, source of planting material, cost of land, equipment, labor, and interest rate on borrowed money. Relative to other forage crops, perennial peanut is expensive to establish, however, this initial cost is off-set over the long term by lower production costs and higher returns.

Perennial peanut has a low fertilizer requirement, with a high resistance and/or tolerance to drought, plant, and soil-borne pests. This translates into a tremendous savings in energy and dollars, minimizing impact to the environment while producing a high value, high quality forage. **Perennial peanut fits the model for a sustainable agricultural system.** For every 1,000 acres of Coastal bermudagrass replaced with perennial peanut, an annual savings of approximately 52,000 gal of diesel fuel energy equivalent is realized.

## How Can You Get Started?

Perennial peanut is vegetatively propagated from rhizomes. Perennial peanut rhizomes are modified stems which concentrate in a 2 to 3" thick mat located just below the soil surface. These rhizomes are removed from the soil with a sprig harvester and planted as individual rhizome pieces or as various-sized sod pieces lifted with a sod lifter or other means.

When preparing to plant, the first step is to locate a well-managed nursery of perennial peanut rhizomes. Your county extension agent, authors of this document, or the Perennial Peanut Producers Association (PPPA) (a non-profit organization) can provide a current list of those who sell, dig, and plant rhizomes. Planting normally takes place during January to mid-March but planning, field preparation, location of rhizome sources, and planting equipment or contacts with individuals who plant should begin during the summer prior to winter planting. Spring and Summer plantings through the middle of August in North Florida and the middle of September in South Florida are also possible. Irrigation insures successful establishment.

Elimination of perennial grasses and broadleaved weeds prior to planting reduces the cost of controlling of these weeds post-plant and gives the newly emerging peanuts a competitive advantage. Bottom-plowing is suggested on heavy sod or compacted soils followed by disk-harrowing and herbicide applications if needed. For a winter planting, land preparation should begin early enough in late summer to allow for weed regrowth and subsequent elimination prior to frost. Early preparation also allows ample time for decomposition of plowed organic matter and provides time for accumulation of soil moisture and firming of the seedbed. A firm, even seedbed facilitates precise machine planting of the rhizomes at a depth of 1 1/2 to 2" for sandy soils and 1" for clay. Irrigation should be used when needed during establishment if available. For more information on establishment of perennial peanut, refer to fact sheet SS-AGR-35 *Perennial Peanut Establishment Guide*.

With the recent innovation of minimum-tillage sprigging, it is now possible to plant perennial peanut rhizomes into sod without the normal preplant soil preparation of plowing or disk-harrowing. To date, there is limited experience planting perennial peanut into grass sod by this method; however, it appears that the grass should be killed with a preplant herbicide to achieve a competition-free environment for the perennial peanut. A reduction in weed competition and the conservation of soil moisture under the dead and decaying grass sod is enhanced by the minimum-tillage sprigging method and should contribute to both a successful establishment of perennial peanut and a reduction in soil erosion.

### **Does It Make Money?**

Since its introduction, great advances have been made in educating potential buyers of perennial peanut products and this effort continues. In addition to making a good pasture forage, perennial peanut makes excellent dry hay, silage, haylage/balage, and has shown good pelleting quality. All animals tested to date have done very well on perennial peanut. These include horses, cattle (both beef and dairy), sheep, goats, pigs, rabbits, and ostrich. Perennial peanut meal, fed up to 80% of the ration for gestating sows, has given promising results. Feeding trials with thoroughbred geldings demonstrated that the horses ate and gained more on perennial peanut compared to alfalfa, coastal bermudagrass, and bahiagrass.

Prices of round and square-baled perennial peanut have steadily increased. A recent economic analysis indicated that even at the low end price of \$100 per ton and four tons per acre yield, perennial peanut would net over \$100 per acre, making perennial peanut more profitable than other row crops in North Florida (Hewitt, 2001).

Selected horse owners in the Ocala area of Florida indicated that the average price paid for a 60 lb bale of alfalfa in 2001 was \$8.50 or \$283 per ton. Quality perennial peanut hay is similar to alfalfa in animal performance, digestion, and palatability, therefore, it should command a price similar to that of equivalent quality alfalfa hay. Perennial peanut can be a profitable crop as indicated in the Table 1 . The current price range for good quality perennial peanut

hay is \$175 to \$265 per ton. Based on a production cost of \$273/A, this translates into a net return to the producer of around \$252 to \$402 per acre when calculated for a hay yield of 3 tn/A (Table 1). Summer rains may result in a loss in quantity as only a portion of the peanut hay produced in a season will be top quality, i.e., mold-free and pale green. However, well-cured rained-on hay makes excellent forage for backgrounding beef cattle, replacement heifers and is a good alternative to winter fed range cubes. Ensiling perennial peanut during rainy periods provides the flexibility of producing a high quality forage product.

### **References**

- Hewitt, T. 2001. Economics of Perennial Peanut Production in North Florida. Perennial Peanut Production Workshop, 2 June 2001. Moultrie, GA.

**Table 1.** Potential net profit per acre for perennial peanut hay at various yields and selling prices.

Hay Yield (tn/A)	Production Cost <sup>1</sup> (\$/tn)	Hay Selling Price (\$/tn)					
		125	150	175	200	225	
		Potential Net Profit (\$/A)					
3	91	102	177	252	327	402	
4	69	224	324	424	524	624	
5	55	350	475	600	725	950	
6	46	474	627	774	924	1074	

<sup>1</sup> Information obtained from: Economics of Perennial Peanut Hay Production, Marianna, NFREC Research Report 97-5.