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Fresh Market Southern Pea Production in South Arkansas

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Many small farmers in Arkansas grow southern peas for consumption and as a cash crop for the fresh market. Southern peas are one of the most popular vegetables consumed in the South and are grown in most home gardens. They are easy to grow and generally yield well. Southern peas, *Vigna unguiculata* (L) Walp, are also called blackeyed peas, crowder peas, field peas, cowpeas, purple hull peas or just peas. Despite the variability in types, the basic cultural practices for southern peas are similar. The variety and type grown are determined by consumer preference. Botanically, southern peas belong to the legume family and are capable of forming nitrogen-fixing nodules on their roots; therefore, little N fertilizer is needed for good yields. They also add nitrogen to soils when vines are turned under.

Varieties

Both commercial and small acreage growers of fresh market peas should select varieties acceptable to the consumers and processors. The varieties should have high yield potential and resistance to diseases and insects. Processors recommend varieties to be grown by their contract farmers.

Using certified seeds to ensure true-to-type seeds with high germination is a good practice. Southern peas come in a variety of seed and pod colors and shapes. They also vary in growth habits as shown in Table 1 on page 2.

Southern pea fresh pods may be purple, pink, green or white. Common fresh market seed types include pinkeye, blackeye, browneye, creameye and whiteeye on black seeded varieties. Pod maturity can be even, **synchronous**, needing only one harvest or uneven, **asynchronous**, needing more than one harvest. Variety plant growth habit can be bush erect, runner, creeping, semi-bush, semi-erect or climbing vine.

Over the years, farmers in southern Arkansas have predominantly grown purple hull pinkeye types for the fresh market. Table 1 provides information on varieties adaptable to Arkansas climate and soils in southeast and east central Arkansas.

Results from two years of demonstration trials at UAPB Agriculture Experiment Farm and Small Farm Outreach Research Centers at Lonoke and Marianna showed AA Cream Gold (Golden Creamy) variety outperformed other varieties tested under irrigated and non-irrigated conditions. However, Golden Creamy is not a purple hull pinkeye, which is most preferred by consumers in east Arkansas. It is a bush erect type pea that can be mechanically harvested. It was developed by the Texas Agriculture Experiment Station primarily as a canning pea.

Varieties such as Louisiana Purple Hull (Quick Pick), Texas Pinkeye, Mississippi Pinkeye, CT-California Pinkeye, Excel, Early Scarlet and Coronet are the most popular with growers and consumers in southeast central Arkansas. The Quick Pick variety is probably the most popular because of its high yield potential, large pea and erect pod growth habit that aids in hand or mechanical harvesting.

Table 1. Popular Southern Pea Varieties and Their Characteristics

Variety	Pod Color	Plant Habit*	Seed Type	Maturity**	Yield (lbs/A) Fresh Pea Shelled	Yields (lbs/A) Fresh Pea Unshelled
Coronet	Purple	R/C	Browneye	Medium	1469	3154
Texas Pinkeye	Purple	B/E	Browneye	Medium	1986	3792
LA Purple Hull (Quick Pick)	Purple	B/E	Pinkeye		1701	3563
CT-California Pinkeye	Purple	R/C	Brown	Early	1567	3587
Zipper cream	White	R/C	Cream	Late	1323	3108
Ark Blackeye	White	R/C	Blackeye	Early	2006	3949
Early Scarlet	Pink	SB/SE	Pinkeye	Medium	2622	4996
Excel	Purple	B/E	Pinkeye	Medium	1941	4279
MS Silver	White	R/C	Browneye	Late	2810	4061
Early Acre	White	B/E	Cream	Medium	1760	3575
Tex. Impr. Purple Hull	Purple	B/E	Browneye	Medium	-	-
Golden Creamy	White	B/E	Cream	Early	3105	5059

*Notation: B/E = Bush/Erect; R/C = Runner/Creeping; SB/SE = Semi-bush/Semi-erect; CV = Climbing vine
**Maturity: Late 80-90; Medium 70-78; Early 63-66

Soil/Fertilizer

Southern peas perform well on a wide variety of well-drained to somewhat less drained soils. Use soil test result recommendations when applying fertilizers. Ignoring soil test analysis may lead to abnormal crop growth – poor yield at best and total crop failure at worst.

Soil pH should be between 5.8 and 6.5. If the soil pH is lower than this range, soil test recommendations may include a lime application for the current crop and also for the succeeding one. If liming is required, apply lime two to three months before planting due to its slow reaction in soil.

Generally, 20 to 50 pounds of N per acre are needed for peas, depending on soil types, residual N, rainfall or irrigation and cultural practices such as row width and plant population. Peas, especially for the fresh markets, require plenty of potash and phosphorous for a glossy seed coat and large pods. On soil with a medium level of fertility and a good history of crop production, a pea fertilizer program should include 20 to 30 pounds N, 40 to 60 pounds P and 40 to 60 pounds K fertilizer per acre, broadcast or banded 3 to 4 inches deep, 2 to 3 inches from the seed. Additional nitrogen side dressing may be needed on sandy soils if the crop is heavily irrigated or heavy precipitation occurs during early growth stages. Seed inoculation with recommended Rhizobium bacteria (nitrogen-fixing-bacteria) may enhance yield, especially in soils where southern peas have not been grown for a while.

Seed Bed Preparation

Plow to expose the soil and harvest residues to freezing temperature in order to suppress over-wintering pests. This can be done sometime in February in southeast Arkansas. Just before planting, rework the soil again to destroy any weeds and develop a clod-free seedbed that will enhance seed germination and mechanical harvesting. Use weather station and soil thermometer equipment to ensure soil temperature has been 65°F or above for a couple of days prior to planting.

Planting Dates

In south Arkansas, peas can be planted from mid-spring (early May) through mid-summer (early August). Early market growers who plant peas along with other vegetable crops on smaller acreage do plant earlier depending on the variety and weather conditions. A few plants may be lost to chill damage, but high market prices at the farmers market outweigh the risk. In southern Arkansas, production records showed that late pea production is more challenging due to insects, especially aphids and thrips. Larger acreage growers, planting early before May, risk poor germination, stunted growth and prolonged maturity caused by chilling temperatures.

In the spring, plant after the danger of frost has passed and soil temperature within the top 4 inches is 65°F or above. The optimum temperature for pea germination ranges from 70°F to 95°F. Optimum planting dates for spring and fall peas are the second week of May and last week of July, respectively. Small acreage growers should stagger planting dates to keep a steady harvest of fresh peas to the farmers market or grocery stores. Fall pea planting should not be later than the first week of August in southern Arkansas. Growing conditions may vary within short distances, but the practical approach for fall production is to seed early enough so that cool temperatures and frost do not occur before the crop matures.

Planting Space

At the University of Arkansas at Pine Bluff experiment farms, 30-inch spacing between rows is used, and the yields are comparably satisfactory. Row spacing of 20 to 42 inches normally produces good pea yields depending on the pea type. Bush type peas can be planted in closer row spacing than vining types. The available planting and harvesting equipment play a role in choosing row spacing. Equipment used for southern pea production is traditionally used for production of other row crops. Bush type peas should be planted at a rate of four to six seeds per foot; vining type peas should be planted at one to two seeds per foot. The amount of seeds required per acre is determined by the seed size and spacing between and within rows. Small seeded varieties planted at the closest spacing will require approximately 30 pound of seeds. At wider spacing, small seeded varieties will require about 15 pounds per acre of seed. Large seeded varieties will require from 30 to 55 pounds of seed per acre based on whether a wide or narrow spacing is used.

Irrigation

Southern peas have been shown to out perform many other vegetable crops during droughty conditions. However, scientists at the University of Arkansas at Pine Bluff have recorded more than a 50 percent yield increase with flood or furrow irrigation some years, especially during drought periods. Their results further showed that furrow irrigation used less time and water per acre compared to flood irrigation. Yields from flood-irrigated plots were slightly higher than furrow-irrigated plots most years but generally not significantly higher. Generally, vegetable crops require 1 inch of soil moisture every 7 to 10 days and peas need adequate moisture during bloom and pod development.

Excessive rainfall or overhead irrigation during or 2 to 3 days before bloom disrupts pollination, causes delayed fruit set and encourages vine growth. Maintain adequate and uniform moisture throughout fruit set and pod development. Heavier soils require irrigation less often than lighter soils due to better water holding capacity.

Weed Control

Good cultural practices, including early shallow cultivation, proper plant spacing and use of herbicides, can effectively control weeds. More closely spaced rows can help with weed control through crop competition. The herbicides Treflan, Dual and Poast will control grasses. Basagran and Pursuit can control broadleaf weeds when applied early. Refer to Cooperative Extension publication MP44 for latest recommended herbicides.

Disease Control

For fresh market peas, consumers dislike diseased or insect damaged peas. Processors have zero tolerance for insect damaged pods. Following are some common diseases requiring control in Arkansas.

Mosaic and Mottle Viruses – Leaves appear crinkled and distorted. Several of these viruses known to infect peas include cucumber mosaic virus (CMV) and the blackeyed cowpeas mosaic virus (BICMV) which causes a disease called Astunt that retards plant growth, reduces yield and may cause plant necrosis.

Anthracnose – Discoloration, sometimes dark brown sunken areas appear on the stem, leaves and pods. Often, using a hand lens, a beadlike structure can be seen within these lesions.

Fusarium Wilt – Plants are stunted and leaves of infected plants often are wilted. Stems cut lengthwise at or near the soil surface show a brown discoloration in the vascular tissue.

Powdery Mildew – A white powdering fungal growth appears on the upper side of the leaves.

Downy Mildew – Yellow spots appear on the upper side of the leaves. The underside of the leaves will have a downy white fungal growth. Careful examination will detect infection on the stems and seedpods.

Cercospora Leaf Spot – Clusters of brown circular lesions with reddish-purple borders appear on leaves. The central portion of the lesion eventually turns gray and may drop out. Plants severely affected may appear ragged or blighted as lesions coalesce.

Nematodes are microscopic worms that feed on the roots of pea plants. Planting susceptible varieties will increase the population already in infected soil. Plant a resistant variety and rotate with a no host crop, i.e., sweet corn, to hold down their population increase. Check with your local Extension office for the latest nematicide recommendations.

Insect Control

The most common insect pests of southern peas include cowpea aphids, curculio, stinkbugs, leaf miners and thrips.

Cowpea Aphid – These insects can cause damage by sucking plant juices, and they are the major vectors of viral diseases from one plant to another. Generally, early spring season pea production encounters less aphid problem due to the parasitic fungi that attack the aphids. However, late planted peas with high aphid infestations need insecticide applications for effective control. To control aphid problems, apply Malathion or other chemicals recommended by your local Extension office.

Cowpea Curculio – The adult females bore holes on the pea pods and lay eggs, which eventually develop into larvae that feed on the developing seeds. These punctured pods are referred to as being stung. There is no complete control of cowpea curculio except frequent use of insecticide sprays as recommended by your local Extension office.

Stink Bugs and **Pea Leafminers** – These insects, like the aphids, suck the juices out of the developing pods. Affected pods appear blemished, shriveled and poorly developed. Seed are also blemished and shriveled.

Thrips – These pests cause leaf puckering in young plants that can easily be mistaken for viral diseases. Sometimes a high incidence occurs temporarily, especially in cool weather; plants usually recover once warm weather arrives. If heavy infestation occurs, the plants may not completely recover from the stunting.

Harvest

Peas intended for the fresh market are normally harvested 50 to 80 days after planting depending on the variety and growing conditions. Pods should be completely filled but not yet beginning to dry. This stage is referred to as the matured green stage. Hand picked peas are usually harvested more than once as the peas reach this level of maturity. One person can harvest 12 to 20 bushels of peas per day depending on yield and growth habit. It requires approximately one hour to pick a bushel of peas. The cost per man-hour depends on locations. In Lee County and the surrounding areas, pickers receive $1.25 per bucket (5 buckets per bushel). About 100 man-hours are required to harvest an acre of peas. The average yield of peas per acre is approximately 100 bushels. Good yields range from 80 to 100 bushels per acre. Irrigated crops have higher yield (100 plus bushels). Machinery for harvesting southern peas at the matured green stage is also available to farmers with larger acreage. Peas produced for canning and freezing are sold as shelled peas. If peas will be machine harvested, select a bushy, nonvining variety with sets of peas concentrated above the foliage, e.g., Louisiana Quick Pick variety.

Post Harvest Handling

Use practical and the most readily available means, including forced air cooling, to remove field heat right after pea harvest. During harvesting, place the baskets or boxes of peas under trees or shade, otherwise they will heat up and turn brownish or black, especially when harvested in hot weather. Peas can be stored three to four days at 45°F to 50°F and 80 to 90 percent relative humidity. Peas cooled to below 45°F may develop a chill injury for some varieties.

Shelled peas are also likely to change color or spoil if not cooled rapidly. Fresh-shelled peas can be stored in plastic bags for 5 to 7 days at 32°F.

Grading

Unshelled peas are graded as U.S. #1 and commercial. In U.S. #1 grade, 95 percent of the pods must be at least 5 inches long. For the U.S. commercial, no minimum length is required. Both categories consist of pods of similar varietal characteristics, which are fairly well-formed, fairly well-filled, not overly mature or excessively young. Pods must also be free from decay, worm holes and damage caused by leaves, trash, stink bugs or other insect injuries and scars, discolorations, disease and mechanical injuries.

Packing

Fresh peas are packed in bushel hampers or mesh bags weighing 25 pounds per net. Shelled peas are packed in cardboard cartons containing twelve 11-ounce cello bags.

Marketing

Fresh market peas are generally a locally marketed crop. The U-pick method of marketing fresh peas may be rare, but it is an option. The purple hull varieties are most preferred by customers as the pods turn bright purple when they are ready to harvest. Different areas of the state prefer different types of peas. The pinkeye purple hull is the most popular type in southern Arkansas.

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