

# Southern Peas FOR TEXAS

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J. E. Hutchison, Director, College Station, Texas

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# Southern Peas for Texas

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**SOUTHERN PEAS** (*Vigna sinensis*), a favorite vegetable of the South for years, are gaining fast in popularity. Southern peas are a leading staple in the diet of many families. They are eaten as green snaps, green shell peas, dried peas and canned or frozen peas. Since World War II, they have become a welcome addition to the diet of many people in the North. The Southern pea is neither a pea nor a bean, but is more closely related to the true snap beans *Phaseolus* than to the English pea *Pisum*. The plant is distinctive in growth habit and the peas are entirely different in flavor from either group.

The Southern pea probably originated in India and finally was introduced into Florida. The group was designated as cowpeas about 1898. The preferred term, "Southern pea," is of more recent origin. Until recent years, the varieties grown were native species or chance hybrids which were mostly small and dark-seeded types.

Intensive breeding programs by institutions in the South have done much in recent years to improve the size of seed, color, productiveness and flavor. Cultural practices, fertilizers, irrigation methods, disease and insect control and utilization of the product have been improved.

The comparative ease of production and its culinary appeal assure the Southern pea a prominent place in the American diet.

## Varietal Grouping

Southern peas are classified into 13 horticultural groups, based on pod color, seed size, shape, color and color patterns and plant growth habit and characteristics. Any particular seed pattern may be classed as *crowder*, *semicrowder* or *non-crowder*. Blackeyes, creams, purple hulls, brown or patterned seed types may be either crowder or noncrowder. The term crowder simply means that the peas are so tightly crowded in the pods that the seeds are flattened on the ends.

## Horticultural Groupings

*Vigna sinensis* (sub. *sesquipedalis*), asparagus bean group, contains one variety of importance, the Yard Long.

*Vigna sinensis* includes the groups of chief horticultural importance, purple hull, blackeye, crowder, black crowder, speckle crowder, browneye crowder, browneye, spotted crowder, brown crowder, cream crowder and cream groups.

*Vigna sinensis* (sub. *cylindrica*), the catajang group includes such varieties as lady cream, sometimes called rice.

**PURPLE HULLS**—Purple hull peas have deep purple pods at green shell stage, turning chocolate to black on drying. Plants show considerable purple pigment especially on stems and flower stalks. The seed is mostly a light buff with tan or maroon eye. The Purple Hull varieties make relatively attractive canned or frozen packs. The flavor is milder than that of the blackeye groups. The purple pod aids in judging the proper stage of green shell maturity.

**BROWN CROWDERS**—The seed are solid buff or brown and crowded in the pod. Most varieties are quite tiny and prostrate. The dark color when cooked makes them unpopular for processing. Most varieties require 75 days or more for maturity and some mature only during a short day in the fall.

**BROWNEYES**—Seed are very light buff to cream with buff or brown eye pattern. Pods are yellow when mature. Flavor and appearance after cooking are similar to purple hull varieties. Most varieties are not widely adapted.

**BLACKEYES**—Blackeyes are best known throughout the country, and enjoy a certain prestige in the South as a "good luck" food on New Year's Day along with rice and hog jowl. The seed are white with blackeyes. Pods are green with a purple tip, turning yellow with maturity. Blackeyes have a strong characteristic flavor popular in the South. Most varieties are acceptable

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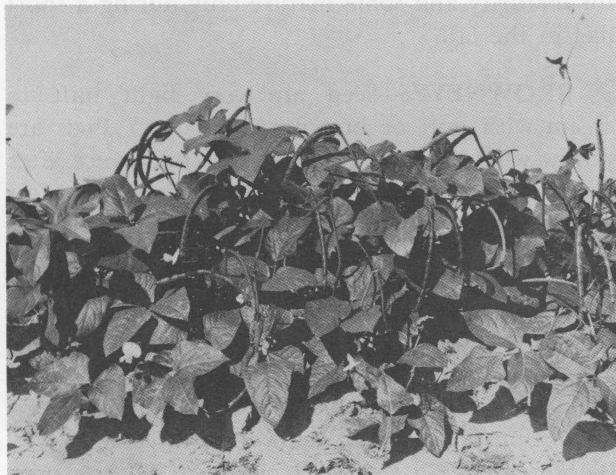
*New type plant with pods well above the foliage for easier harvesting.*

for freezing, but less attractive as a canned product than the purple hull, cream or browneye types.

**CREAMS**—Seed are cream with no eye color. Plants are entirely free of pigment. They are mildest in flavor of varieties, and more acceptable to people being introduced to Southern peas for the first time. They are fairly well adapted to canning although some varieties mush badly. They are excellent as a frozen product.

### Varietal Considerations

There is more to consider in selection of varieties than adaption. Day length may be a factor in production. Some Southern pea varieties flower and fruit properly only during a short day of 12 to 13 hours. Such varieties are suitable for fall production only in Texas. Fortunately, the greater



*Old type plant with pods within the foliage.*

part of varieties adapted to Texas are more or less day neutral and can be grown in spring or fall.

Maturity is important since the spring season is terminated by hot, dry conditions and the fall season by low temperatures. Varieties maturing in 60 to 65 days give greatest return. Equally important is the uniformity of maturity. For fresh market, varieties which yield their crop over a long season may be preferred. For processing, the variety should produce a high percentage of the crop at one time since mechanical harvesting ultimately must be considered. For the dry-pea trade, the seed must be uniform, attractive and free from excessive splitting. Growth habit is important in all cases since harvesting is much easier from plants which carry the pods well above the foliage.

Ease of shelling and percentage shellout are important both for the fresh market and processing. Some varieties produce top yields, but the pods are difficult to open. This is an aggravation to hand shelling and a direct loss to the processor. The processor also must have varieties that give a high percentage shellout with minimum of seed-coat cracking. For the dry-pea trade and seed production, dry pods should be free from premature shattering.

### Recommended Varieties

New varieties constantly replace the old ones in one or more areas of the State. However, tentative recommendations can be given. The variety selected should depend on whether the peas are grown for fresh market, processing or dry-shell trade. If for a fresh market, the variety will depend on whether it is for local market or shipping. For example, the brown crowders are not popular over a wide area, but in certain locations they are highly popular with a small segment of the population. The county agent can assist greatly in selecting varieties for any particular area. The following list of suggested varieties may vary from time to time and with locality.

**BROWN CROWDERS**—Dixie Lee, Brown Sugar crowder

**PURPLE HULLS**—Purple Hull 49, Commercial purple hull, Bush Baby purple hull

**BLACKEYES**—Extra Early Blackeye, California No. 5, Grant blackeye, Blackeye 8152, Giant blackeye, Louisiana Purchase

BROWNEYES—Alabunch, Alabrowneye, Dixie Queen Browneye, Early Dixie Queen

CREAMS—Cream 40, Cream 8, Long Pod Cream, Cream 12

## Cultural Practices

*Soils*—Southern peas grow on many soil types. The highest yields are on the sandy loams and lighter clay soils. High yields can be obtained on lighter sandy soils if adequate moisture and fertility are maintained. The idea that Southern peas are highly drouth resistant has led to many unproductive acres being planted in the State.

*Land preparation*—Land used for Southern peas should have all refuse turned under in the fall or winter to get good decomposition of the plant materials and reduce the carry over of curculio beetles. Deep plowing is recommended since Southern peas have extensive root systems and will benefit from the added moisture-holding capacity of deeply prepared land. Beds should be reworked just prior to planting to destroy weeds and germinating weed seeds. Moisture should be adequate at planting time since irrigation following planting reduces emergence and ultimate stand, and if the weather is cool, will cause rotting of seed.

*Fertilizers*—Southern peas fix some nitrogen from the air when soil is supplied with nitrogen-fixing bacteria. Hence they do not respond greatly to heavy applications of nitrogen. Most areas of Texas are adequately supplied with the bacteria from the many species of leguminous plants native to the State. Where fields have not grown leguminous crops recently or do not have

a stand of native legumes it may pay to inoculate seed.

Fertilizer trials on Bowie fine sandy loam have responded to nitrogen up to 40 pounds per acre. Heavier applications may accelerate vegetative growth, but give no increase in yield.

Response of Southern peas to phosphorus up to 80 pounds per acre, has been found on fine sandy loam soils.

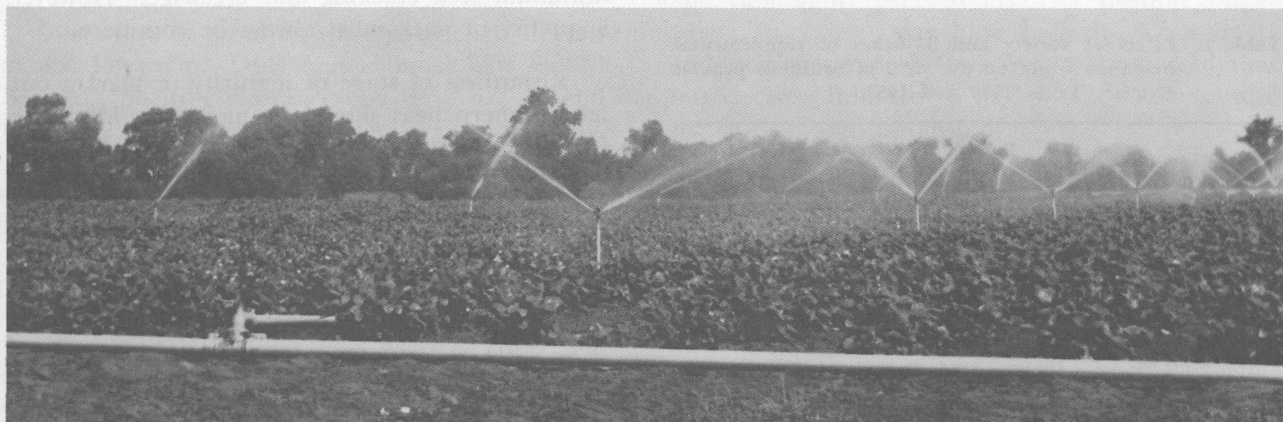
Soils low in organic matter should receive 20 to 40 pounds of nitrogen, and on sandy land, up to 80 pounds of phosphorus.

Fertilizer should be banded in the row 3 or 4 inches deep and 2 inches to the side of the seed.

*Buying seed*—The best advice to Southern pea growers is to plant *only* certified seed. Certification guarantees the variety to be true to name and free of mixtures. Noncertified seed is cheaper and more easily obtained but it can be very expensive in terms of lower yields and quality. The yield and quality can be no better than the inherent qualities of the seed, regardless of how well the cultural practices are followed. You may obtain a listing of growers of certified Southern peas from your county agricultural agent.

*Seeding rate and plant spacing*—Seeding rates may vary from 12 to 40 pounds per acre depending on size of seed, germination percentage and plant spacing desired. A spacing of 4 inches in the row with blackeyes, creams and purple hulls will allow maximum yield.

If dry seed is to be combined, closer spacing will aid in restricting vine growth and make harvesting easier.



*Irrigating Southern peas with a sprinkler system.*

Closer spacing very definitely reduces runner formation. This encourages pods to grow higher on the plant. High pods are more easily harvested by hand and they are necessary for mechanical harvesting.

*Weed control*—Eliminating weeds and maintaining the soil in good condition make possible maximum yields. The beds should be properly prepared and reworked prior to planting. Careful cultivation usually takes care of subsequent weeds without hoe work. Some hand pulling of weeds may be necessary prior to combining to reduce seed contamination.

*Irrigation*—In certain sections of Texas, Southern peas are grown under irrigation. In many areas, they are grown as a dryland crop. It is doubtful that there are any areas where supplemental irrigation would not pay. During most years, there are short drouth periods in May and June when Southern peas suffer from lack of water. They may live and produce a crop, but the loss in yield may exceed 50 percent.

The amount of supplemental irrigation water needed is not great. Southern pea yields may be reduced with excessive moisture due to increased vegetative growth. Timing is important. The critical period is at blooming time. No amount of water previous to or following fruit set will compensate for a shortage at blooming.

As shown in Table 1, at Hearne, Texas, in 1956, 3 inches of supplemental irrigation increased the yield of Purple Hull No. 5 by 38 percent; Cream No. 8 by 121 percent; and Extra Early blackeye by 81 percent.

The same treatment in 1957 increased the yield of Purple Hull No. 5 by 30 percent; Cream

No. 8 by 81 percent; and Extra Early blackeye by 87 percent.

1957 was a high rainfall year with approximately 14 inches of water during the growing season. In contrast, only about 5 inches of rainfall occurred during the growing season of 1956. Seldom is the total rainfall spread evenly over the growing season even in high rainfall years. There is generally a dry period of 10 days or more when supplemental irrigation will boost yields.

*Harvesting and marketing*—At the present time, green shell peas are picked by hand. Maximum plant stand and good cultural practices will give yields that can be harvested profitably by hand. In the near future, mechanical harvesting of green shell pods may be possible.

Pick pods at their best shelling stage. Dry pods are not acceptable. Immature pods will not shell and they interfere with maximum shelling of mature pods in mechanical shellers. The immature pod represents a direct loss to the consumer as well as the processor. The loss is reflected in the price paid to the grower.

Pods of commercial varieties of Southern peas undergo a pronounced color change at optimum green shell stage. This change is evident to alert pickers. The difficulty arises where pickers are paid on a piece-work basis. Under these conditions, they will try to include more immature pods.

The stage of maturity differs with market outlet. The fresh market, in most cases, wants a less mature pod. In addition, there is a limited market for green snaps, or a mixture of shell and snaps. The canner or freezer must use a more mature pod to insure a profitable percentage of shellout with minimum seed cracking and breakage. However, a quality of pack must always be considered.

Regardless of stage of maturity or market outlet, Southern peas should be moved rapidly. Refrigeration is desirable and always there should be free air moving to prevent heating. Prolonged exposure to sun is highly damaging.

A profitable outlet for green Southern peas, especially on the local level, is a shelled and pre-packaged product. Shelling and packaging green peas will pay handsomely, both in increase in price per bushel and consumer acceptance. Relatively inexpensive shellers are available and would pay for the investment in a short time.

Table 1. Effect of variety and 3 inches of supplemental irrigation water on the yield of Southern peas at Hearne, Texas 1956 and 1957.

Variety	Year	Pounds of green shell pods per acre:			
		Non-irrigated	Irrigated	Average	Percent increase
Purple Hull No. 5	1956	1733	2399	2066	38
Cream No. 8	1956	1205	2665	1935	121
Extra Early Blackeye	1956	1818	3305	2561	81
Average		1585	2790	2187	76
Purple Hull No. 5	1957	3284	4271	3778	30
Cream No. 8	1957	2350	4263	3307	81
Extra Early Blackeye	1957	2648	4952	3800	87
Average		2761	4495	3628	62

*Seed production*—Due to disease, insects and adverse weather conditions, few vegetable seed can be produced in Texas. This is not true of Southern peas. High-quality seed can be produced in the State. Proper roguing and selection are more effective under the same environment where the market production will be conducted.

Breeder seed should be of the highest quality as to purity and grade. Obvious rogues or off-types can be pulled out. Many varieties are so similar that accurate separation is difficult. Since seed mixtures are a loss to both seedsman and grower, all mixtures should be avoided. Hereditary changes and some chance mixture will occur but can be held to a minimum by careful inspection. Seed should never be produced on the same land 2 years in succession, unless it is the same variety. When trash is turned under promptly following harvest, volunteers are rare. However, they are a problem with some varieties.

The practice of saving seed from fields that have been picked for green market is not recommended. This late seed is smaller, lower in grade and would aid in selecting toward later maturity.

Seed fields should be cultivated carefully and irrigated as required. Keep the field free of weeds. A careful roguing should be done at least three times during the season. Weak, diseased and off-type plants should be pulled. All rogues should be carried out of the field, especially during the last time over. If plants are left between the rows, they may be picked up accidentally later by the combine.

The peas should be left in the field until dry enough to shell easily. Avoid over-maturity since it results in shattering of pods and excessive seed cracking.

The cylinder speed on the combine should not exceed 450 r.p.m. Only four cylinder bars should be used. Shelling clearance and sieve size depend upon the variety, since seed sizes vary considerably. A cloth sleeve over the discharge pipe will prevent seed striking the sides of the hopper and being injured.

Seed from the combine should be run through the cleaner immediately after harvest to get rid of green material and prevent heating. Allowing seed to set for a time also may cause excessive discoloration of light-colored seed. When seed have dried they should be given an additional cleaning and grading. Remove small or shrivelled seed.

Unless cold storage is used, Southern pea seed must be fumigated to prevent weevil damage. Numerous fumigants on the market are satisfactory. Carbon disulphide is satisfactory, but highly flammable. It must be used in a tight chamber and all possible safety measures observed. The rate should not exceed 7 pounds per 1,000 cubic feet. Under high temperature conditions, 5 pounds are adequate. This fumigant will kill eggs as well as the adult weevils. The moisture content of the seed should not exceed 15 percent at time of treatment. Exposure time must not exceed 24 hours. After this treatment, seed will remain free of weevils indefinitely if stored in weevil-tight containers.

Southern pea seed can be held satisfactorily for 1 year at prevailing air temperatures. Some loss in germination may result, particularly if humidity is high. For proper storage, temperatures should be held at 70 degrees F. and the humidity not greater than 50 percent. Seed stored at air temperatures may give the same germination as those held constantly at 70 degrees F. The vitality and productive potential will be appreciably greater in the 70 degrees F. storage with low humidity. When seed in storage are allowed to fluctuate in moisture content, the germination process proceeds at a very slow rate. Over a period of time, this slow process reduces the vitality of the seed. Seed in bags should be handled carefully to avoid breakage and rupture of seed coat. Dropping a bag of seed 2 feet to a concrete floor endangers the potential germination.

In all operations, take care to prevent mixture. When changing from one variety to another, dismantle the combine and clean it thoroughly with air hose and water. Cleaners should be dismantled and thoroughly checked also, for possible places where stray seed may have lodged. Keep floors and storage compartments free of loose seed that might cause mixture or harbor weevils. Be sure the storage area is ratproof.

*Insects*—A number of insects are troublesome on Southern peas. Many years no control program is necessary to obtain acceptable yields. The fact remains that insects, and grasshoppers in particular, often reduce yields though their numbers are not great. In some areas of the State, grasshoppers have caused a complete crop failure. Sometimes the damage is spotty, though significant. The insect control program must be adequate if full value is to be realized from the other production practices

including fertilization and irrigation. The principal insects attacking Southern peas other than grasshoppers are cowpea curculio, Southern green stink bug, aphids, cabbage loopers, corn earworms, and leaf minors. Follow the recommendations as outlined in L-225, Texas Guide for Controlling Insects on Vegetable Crops, in controlling these insects on Southern peas. This leaflet may be obtained from your local county agricultural agent.

**Diseases**—Southern peas are grown in many parts of Texas with no disease control measures

practiced. However, some diseases, while not completely destroying the crop, cause serious reductions in yield.

Among the more important diseases of Southern peas are: powdery mildew, rust, Cercospora leaf spot, Cladisporium pod spot, bacterial canker, ashy stem blight, southern blight, cotton root rot, bacterial blight and nematodes. The latest information on identity and control of these diseases can be obtained by consulting your local county agricultural agent.