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Southern
TABLE PEAS

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Southern TABLE PEAS

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IMPORTANCE

For Food Purposes

IT IS DOUBTFUL whether any crop has provided more palatable, nourishing food to so many people the year-round with so little effort and at such low cost as the southern table pea.

It has long been an important food and is liked by most people (2,3,8,14,23,25,27,30). Compared with most other green vegetables, southern green peas are relatively high in carbohydrate and protein, fair in calcium, good in phosphorus, and excellent in iron (2).

There are many adapted varieties. They differ enough in flavor, texture, and appearance that one or more varieties are acceptable to most people. Good crops may be produced from plantings made at one or more of several dates or from several varieties planted on the same date.

As a Money Crop

In 1949, farmers of the United States harvested 3,032,000 bushels of dry peas valued at \$10,854,560 (32). Alabama farmers that year harvested 133,313 bushels of dry peas valued at \$484,118 and 301,321 bushels green in hulls valued at \$632,778, or a total value of \$1,116,896 (33).

The southern table pea has become important on markets in the South and elsewhere as fresh, canned, or frozen food (30). The extent and importance of the business in some sections are indicated by the amounts sold for different purposes from the

¹ Retired June 30, 1959.

² The author acknowledges the valued assistance of Lyle Brown, visual aids specialist of the API Agricultural Extension Service, in producing the color photographs for this bulletin.

Ashford and Dothan vicinities of southeastern Alabama in 1953. The total marketings that year amounted to 3,000 tons — 1,200 tons to canners and 1,800 tons to fresh markets. Total annual receipts from peas in these communities in 1953 through 1957 ranged from \$150,000 to \$180,000.

Observations in food stores indicated that frozen Blackeye, Browneye, and Cream southern peas generally sold at a higher price than did frozen English or garden peas. Fresh shelled Blackeye and Cream types in season have retailed at 50 to 70 cents per pound on the Montgomery Farmers' Curb Market for several years and as recent as 1958. During 1957 and 1958 in the vicinity of Montgomery, considerable quantities of Blackeyes in the hull sold at the farm for 7 cents per pound. In 1958, one company in Birmingham processed Blackeye southern peas for the fresh retail market at 35 cents per 12-ounce package at the rate of 1,200 packages a day.

SHIFT IN INTEREST

Years ago several state agricultural experiment stations conducted variety tests with cowpeas for livestock and soil building. Yields of a few table varieties were almost as great as those of the highest yielding field varieties.

Previously field varieties had furnished most of the cowpeas used as food. After experiments proved that cowpeas planted between corn rows resulted in lower grain yields, field varieties became less available for table purposes. Since that time more attention has been given to table varieties. Lorz of Florida reported much greater preference for Creams and Blackeyes than for colored seed varieties (25). By 1958 frozen Cream types were beginning to retail for more than other kinds.

VARIETY PROBLEM

Variety Confusion

There is much confusion in the literature and in the seed trade as to identity and value of varieties. To illustrate, a sample submitted to the Agricultural Experiment Station of The Alabama Polytechnic Institute that was being offered under the variety name "White Crowder with Black Eye" was made up of Extra Early Blackeye, Lady, Conch, California Blackeye, a

few Virginia Blackeye, and a small cream white pea with a black eye.

Another order for less than 5 pounds was filled with a mixture containing 21 different kinds. In October 1953, a grower was selling Dixielee, a Clay type, to processors as an improved Conch. Many inquiries have been received asking about Alabama Crowder, although there is none by that specific name.

In a letter dated January 3, 1959, Lane Wilson, Executive Vice President, Southern Seedmen's Association, indicates the extent of variety confusion: "There has been a lack of varietal purity and availability of southern pea seed for the past number of years. The demand has been good. This has resulted in dealers buying almost anything offered them as the variety in demand. On the whole what they bought and sold has not been what their trade expected and wanted. This has resulted in loss of customers and in some instances crop loss claims."

New Varieties and Information Sought

Increased interest in peas chiefly for human consumption created a need for developing better table varieties and better production methods.

Approximately 50 varieties or kinds have been collected and tested at this Station along with many breeding strains. The tests have dealt with earliness, yield, ease of harvest, and appearance; and with shelling, keeping, canning, freezing, and table qualities. Observations also have been made of the influence of soil type and cultural practices on yields, susceptibility to diseases and insects, and tendency to shatter or spoil when left in the field unharvested after maturity.

This bulletin reports results covering general factors affecting production, and describes the groups and varieties, including favorable and unfavorable qualities and characteristics.

FACTORS INFLUENCING GROWTH, YIELD, AND QUALITY OF SOUTHERN TABLE PEAS

Yield and Yield Possibilities

Results at this Station and at others, involving a large number of varieties, show that yields generally range from 1,000 to as high as 9,000 pounds per acre of green peas in the hull. Under good conditions yields averaged about 3,000 pounds, with a

shell-out of about 50 per cent. The range of dry shelled peas is from 1 to approximately 40 bushels per acre, with a shell-out from dry pods of about 70 to 75 per cent. Dry shelled peas should yield 37 per cent of the weight of green peas in pods; a ton of green peas in pods of good, large seeded varieties should yield 10 to 12 bushels of mature dry peas (9,16,19,25,26,29).

General Factors Affecting Yields

Low yields of peas usually have resulted from use of wrong varieties, incorrect planting dates, unsuitable soils, poor land preparation, unfavorable weather, and interplanting with other crops.

Yield records are often low because they do not include the entire production. In sections where peas are grown primarily for fresh market or for processing, considerable quantities are allowed to mature in fields and are only partly harvested.

Yield is greatly influenced by time and method of planting, and by prevailing weather during most years. When many varieties are tested at several locations the same year, seldom does the same variety yield highest at more than one location. In general, peas make best yields in Alabama when planted in late May or June (9).

Relation of Soil Type to Fruitfulness

Most varieties produce heaviest yields when grown on well-drained sandy loam soils of moderate fertility. Most table varieties produce low yields on poor sandy soils. New ground sites are especially suited to some of the varieties that have a moderately vigorous type of vine growth, but have disease-susceptible root systems.

The yield is often good on well-drained, moderately fertile clay soils. High yields have been observed on the heavier, fertile but well-drained Piedmont soils of Alabama. Occasionally fair to good yields are obtained on the heavier valley soils.

As a rule the large vining types yield less satisfactorily on heavy soils than do bush types, except when plants are grown in thin stands and attain fruiting age when the soil is relatively dry. Hare and Watson report higher yields of the large-vined varieties when grown in thin stand on heavy soils (18). Sometimes fair yields are obtained on some of the acid soils of the Black Belt. Plants fail or produce low yields on poorer drained soils.

Time and Method of Planting and Seed Requirements

Herman reported best yields in North Carolina from plantings made May 15 to June 15 and greatest yield of seed in proportion to vine growth from plantings made about June 1. He obtained much better yields of dry seed from plantings made in the drill as compared with broadcast plantings (19). Best seed yields were obtained by Duggar from plantings made in June (9).

Table 1 presents data on the influence of time of plantings on earliness, duration of harvest, and yield. Morse reported yields of $1\frac{1}{2}$ to 4 times greater when grown in rows (primarily for pea production) than when planted broadcast (27).

Depending on the nature of vine growth and size of seed, 20 to 25 pounds of seed are required to plant an acre in the drill. Bishop and Neale reported that, when the seed were planted in rows 30 inches apart, the yield was about the same from seeding rates of 1, 2, 3, 4, or 5 pecks per acre (7). Broadcast plantings require $1\frac{1}{2}$ to 2 bushels.

The seed are usually planted from 1 to 2 inches deep in rows that are $2\frac{1}{2}$ to $3\frac{1}{2}$ feet apart, with seed spaced 4 to 12 inches apart in the drill. Hare and Watson prefer thick spacing for bunch types and wide spacing for vining types (18). The distance in the drill should be greater for the large vine types for best fruiting. If the stand is thin, especially with the small vine types, weed competition is likely to be serious after discontinuance of cultivation and before the peas are harvested. Some growers get excellent yields by planting two rows of peas between several rows of cotton in complying with acreage reduction program.

Soil Preparation and Cultivation

Peas are usually planted when the weather is warm and when grass and weeds germinate and grow fast. For this reason, the land should be well prepared before planting.

From one to three shallow cultivations are enough. Preferably, the first one should be given as soon as the peas are up and while the grass and weed seed are coming up.

Fertilizer Applications

Varieties apparently differ much in their vine and fruiting responses to the amount and kind of fertilizer used. Duggar reported much better yields from phosphate as compared to no

phosphate (9). Some of the later maturing, heavy vining types tend to make too much vine and comparatively little fruit when large amounts of fertilizer are applied. On soils of medium to low fertility, early and mid-season varieties appear to fruit much better when moderate amounts of a complete fertilizer are used, such as 500 to 800 pounds of 4-12-12 per acre. This is especially true with the more recently developed varieties that tend toward bush types.

Weather Conditions

In general, southern table peas grow and fruit best when the weather ranges from warm to hot. Best yields are obtained when there is plenty of moisture in the soil for good vine growth, heavy bloom, and young pod development; and when the weather is clear and dry for maturing peas.

In Alabama, such periods occur during late spring, summer and early fall. To take advantage of favorable seasons, it is necessary for the grower to know when to expect them. Also, he must know the time required from date of planting to time of fruiting and maturity of the variety or varieties to be grown.

Poor stands result from plantings in spring before the weather is warm. Plants that do come up either die or grow very slowly until the weather is warm. Often plants from very early seeding are damaged by aphids and root diseases. Sometimes plants from early plantings appear injured by mosaic. This condition is often outgrown in hot weather.

Plantings made late in summer usually become so badly damaged by mildew and insects, especially green stink bugs and aphids, that they produce few if any pods. Those produced are short, poorly filled, or poorly developed.

Influence of Plant Type and Time of Planting on Earliness

Bunch varieties tend to be earliest, semi-bunch intermediate, and vining varieties late. Differences in earliness between varieties are greater with plantings made in spring and early summer than with those made later. If, however, abnormal weather conditions especially drought prevail during late spring, summer, or early fall, mid-season and late varieties may fruit about the time or soon after early varieties. A few peas of the earliest varieties may reach the green-shell maturing stage in 45 days from planting. However, one should not expect many peas from even

TABLE 1. INFLUENCE OF RATES OF SEEDING ON YIELD, EARLINESS, AND LENGTH OF HARVEST OF 14 VARIETIES OF SOUTHERN PEAS, AUBURN, ALABAMA, 1933 AND 1932-33 AVERAGE

Variety ¹	Yield per acre (green in hulls) by plantings							Time between planting and first harvest by plantings							Duration of harvest by plantings						
	1st	2nd	3rd	4th	5th	6th	7th	1st	2nd	3rd	4th	5th	6th	7th	1st	2nd	3rd	4th	5th	6th	7th
	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>	<i>Days</i>
Calif. Blackeye.....	4432	2467	3355	2562	2313	1490	673	69	62	58	78	64	62	57	64	57	62	39	25	20	8
	2982	2090	2473	1921	2025	1351		76	69	64	68	65	66		35	53	46	37	21	15	
Conch.....	5002	2677	3497	2316	3789	2428	2467	98	84	72	82	64	67	65	63	62	60	32	35	15	14
	3901	2271	3253	3215	4205	2868		103	87	73	78	61	68		48	32	49	24	24	13	
Cr. Crowder.....	3453	2594	1749	643				²	²	²	²	²	²	²	81	43	48	27		²	²
	3429	2431	2160	1123				86	81	69	69				65	43	45	31			
Dixie Queen.....	4990	4035	4195	2464	3915	2069	1896	90	76	69	78	64	62	65	53	43	51	39	25	20	14
	4625	3379	3597	2278	3880	2448		86	81	72	80	61	66		50	43	44	24	24	15	
Lady.....	2048	1696	2414	1503	1830	414		²	80	73	69	78	64	67	²	53	46	51	27	18	15
	2047	1358	1996	1564	1648			89	79	72	69	65			48	39	44	22	17		²
Spec. Crowder.....	3795	2284	2208	2195	3474	2299	2152	84	80	78	82	64	67	65	49	39	42	32	25	15	14
	3719	2338	2091	2138	2836	2076		88	83	76	82	61	68		49	41	40	21	23	13	
Va. Blackeye.....	4987	1236	1517	1576	1818	1552	952	84	80	69	78	64	67	65	49	39	51	39	18	20	14
	3758	1485	1905	1571	1623	1927		96	85	72	80	65	68		41	26	44	24	17	15	
Wh. Crowder.....	2261	1056	1493	2443	2617	1862	1228	84	104	89	96	64	67	65	77	43	43	21	25	15	14
	2522	1190	1735	1360	1429	1138		96	112	94	94	70	74		55	27	28	11	16	8	
Sumptuous.....	2955	2546	2537	2636	2243	870	487	84	76	69	78	64	62	65	49	46	51	39	18	20	7
Ala. Browneye.....				3096	3558						78	64						39	18		
Black Crowder.....	3299	2491	1918	1653	2695	1340		84	76	83	78	64	67	²	49	43	37	39	18	15	²
Extra Large Cr. Crowder.....	2379	1984	1992	2168	3028	1387	1048	98	98	89	78	64	67	65	34	49	43	39	25	15	14
Purple Hull.....				2592	3090	3131	1889				78	64	62	65				35	25	20	14
Br. Crowder.....	988	3411	3225	1553	2093	1429	756	122	76	69	78	64	62	65	60	43	51	35	25	20	14

¹ First line of each variety is 1933 results; second line, 1932-33 average.² Poor stand, no yields taken.

the earliest varieties before 50 to 60 days. Mid-season varieties usually furnish peas ready for use in 65 to 80 days, and late varieties 85 to 100 days after planting. Late varieties from summer plantings may produce peas about as quickly in the fall as do early varieties, Table 1.

Vine Growth, Fruit Setting, and Leaf Retention

The vines of some varieties tend to set most of the crop over a short period and die soon after fruiting, such as California Black-

eye and several of the Crowders. Some of the Purple Hull, Alalong, Giant Blackeye, and other varieties spread the fruiting season over a longer period.

Foliage of varieties that bear over a long period usually remains green for a long time. There is a decided tendency for such varieties as Conch and Six Weeks to make a second growth from near base of the plant and remain alive until killed by frost, Figure 1.

Bunch types may climb, prolong the fruiting season, and produce larger yields if support is available. Some varieties, such as Butter Pea and Mush, or Eleven O'Clock, tend to fruit well only when support is provided.

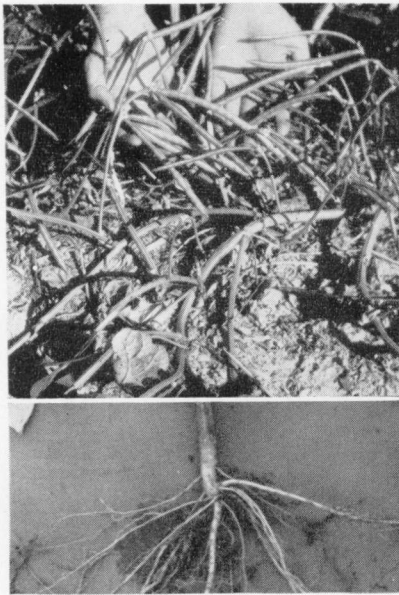


FIG. 1. Six Weeks above shows deep penetrating, disease-free roots with plant fruiting from second growth near ground just before frost.

Effect of Size and Nature of the Root System on Yield and Longevity of Plants

There is a great difference in nature and extent of the root system of different varieties. With some the main roots are small and do not penetrate as deeply as do those of other varieties. Under Alabama conditions the California Blackeye produces a small healthy root system that is usually capable of supporting

only a small crop. Alabunch, most of the Crowders, Dixie Queen, Regular Purple Hull, and Conch produce rather large, deep-penetrating root systems capable of supporting large yields, Figure 2.

The roots of some varieties, Conch for example, are damaged little by root-knot nematodes. Therefore, they usually produce good yields. Other varieties, such as the Virginia Blackeye and Dixie Queen, may become infested, but are usually not seriously damaged. Still others become infested to such an extent that many of the young plants are killed before making much growth, and that those not killed are greatly weakened. Lady and most of the Crowders are examples. Only varieties with large disease-free roots can be depended on to produce large yields (1,3), Figure 3.

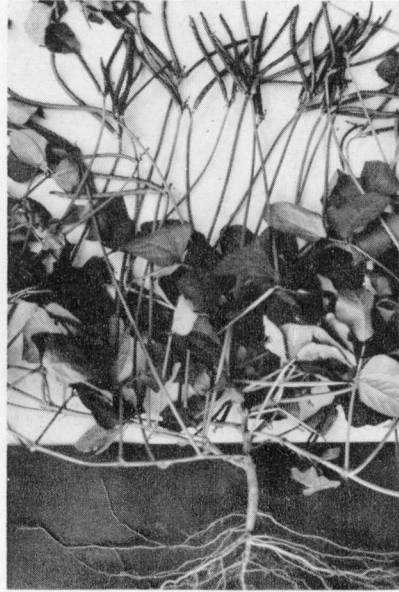


FIG. 2. Young plant of Alabunch above shows large disease-free roots.

Diseases

From observations made at Auburn and other locations in Alabama and from results of experiments and observations in other states (5,12,13,15,17,21,22,28,31,34), southern peas are subject to injury from several diseases. Varieties vary greatly in their ability to survive and fruit under conditions prevailing from year to year.

Fusarium wilt. Bain and Hare reported Fusarium wilt to be the most damaging disease of peas in Mississippi. Control was suggested by rotation of at least 5 years and by the use of resistant varieties. They reported resistance in Alabrowneye, Six Weeks, Alabunch, Alalong, and Alacrowder, with Purple Hull varieties having a lower degree of resistance (4). Hare reported wilt-resistance in Mississippi Crowder (17). Mackie (26), and Erwin and Thompkins (11) found some of the California Blackeyes to be resistant to wilt.

TABLE 2. RELATIVE ROOT-KNOT NEMATODE INJURY TO SOUTHERN PEAS GROWN IN INFESTED SANDY SOIL, AUBURN, ALABAMA, 1932-33

Variety	Planted 4/10/32 exam. 6/24 and 7/30		Planted 8/3/32 exam. 9/10 and 10/15		Planted 5/13/33 exam. 7/22 and 8/10		Planted 7/15/33 exam. 9/15		Summary of results for 1932-33		
	Plants exam.	Infesta- tion	Plants exam.	Infesta- tion	Plants exam.	Infesta- tion	Plants exam.	Infesta- tion	Plants exam.	Infesta- tion	Degree of infestation
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	
Black Crowder.....					30	50.00	19	52.63	49	51.31	Med.
Brown Crowder.....					30	36.66	52	11.50	82	24.08	Med.
Calif. Blackeye.....	60	3.33	50	8.00	30	6.66	19	5.26	159	4.01	Free to v. light
Conch.....	152	1.31	50	.00	30	.00	72	.00	304	.33	Considered free
Cream Crowder.....	60	100.00	30	100.00	17	88.00	12	50.00	119	84.50	Med. to v. heavy ⁴
Cream Crowder ¹	50	72.00	40	95.00	30	80.00	52	100.00	172	86.75	Med. to v. heavy ⁴
Dixie Queen.....	60	40.00	50	72.00	30	66.66	12	75.00	152	63.41	Light to med.
Ex. Early Blackeye...	60	11.66	50	38.00					110	22.43	Free to light
Lady.....	50	100.00	50	94.00	28	68.50	12	100.00	140	90.62	V. heavy ⁴
Lady Crowder.....			30	60.00					30	60.00	Med. to heavy
Leopard (bunch).....	60	100.00	50	100.00					110	100.00	V. heavy ⁴
Leopard (vining purple hull).....			50	96.00					50	96.00	V. heavy ⁴
Purple Hull-white....					30	6.66	62	52.77	92	29.61	Free to v. light
Six Weeks.....	60	25.00	85	11.76 ²	30	.00	72	.00	247	9.19	Free except area ³
Speckled Crowder....	60	78.33	40	67.50	30	53.33	52	100.00	182	74.79	Med. to v. light
Taylor.....	60	81.66	50	92.00					110	86.83	Med. to heavy
Virginia Blackeye....	62	46.77	50	64.00	18	72.22	52	50.00	182	58.24	Light to med.
Virginia Browneye...			30	50.00					30	50.00	Light to med.
Victor.....	60 ³	38.33	50	2.00			47	97.00	157	46.07	Free to heavy
White Crowder.....	60	93.33	45	90.00	50	66.66			135	83.33	Med. to heavy
Woods Sumptuous....	60	53.33	50	80.00	30	76.66	27	81.50	167	72.87	Light to heavy

¹ Large seeded.² From Jefferson County.³ Same local area.⁴ Many plants killed.

Bacterial canker. Hoffmaster of Oklahoma found that varieties of cowpeas varied greatly in their relative resistance or susceptibility to injury caused by bacterial canker, which damages the stem near the surface of the ground (21).

Southern blight. Southern blight damages the plant by girdling it near the surface of the soil. It often causes many plants to die in low wet spots or during wet weather. Some control may result from rotation to avoid areas on which vegetables have been grown recently. Avoiding low areas may also help.

Mosaic. Mosaic, caused by a virus, may be recognized by mottling, crinkling, and twisting of the leaves. Hare and Watson (18) reported that the virus is transmitted by insects. Blackeyes and Creams were reported to be highly susceptible to this disease, while Brown Sugar Crowder, Alacrowder, Alabunch, Speckled Purple Hull, Black Crowder, and Dixielee were found to have some tolerance (4). Mosaic has appeared on Alabrowneye and Early Dixie Queen at the Alabama Station.

Leaf spots. Leaf spot diseases, caused by *Amerosporium* sp. and *Cercospora* sp., occur on cowpeas but are not serious. No control measures are recommended.

Root-knot nematodes. Nematodes are microscopic, worm-like organisms. Root-knot nematodes cause roots to be abnormally knotted. Isbell (23) Table 2, Figure 3, Barrons (5), and Webber and Orton (34) found that varieties of southern peas vary greatly in their susceptibility to injury caused by root-knot nematodes. Farish (12) reported the Dixielee to be tolerant to nematode. This pest may be controlled by use of resistant or less susceptible varieties and by rotation with crotalaria, corn, or other crops less affected by nematodes.

Crumple leaf. This disease is caused by temperatures lower than those required for vigorous growth and may be confused with mosaic. Crumple leaf has been observed at this Station, but disappeared when normal growth took place after arrival of hot weather.

Rust. Rust has been observed on very early spring plantings of California Blackeye and Extra Early Blackeye varieties at this Station. However, it has caused little damage under good growing conditions.

Seedling diseases. Some varieties, especially the Lady, Sump-tuous, and one of the white-seeded brown-eyed Purple Hull va-



FIGURE 3. Southern table peas vary greatly in susceptibility to injury from root-knot nematodes, as shown above: top row, left to right, Virginia Blackeye, Dixie Queen, and Crowder; bottom row, left to right, Conch, Early Six Weeks, and California Blackeye.

rieties are very susceptible to damping-off and root-rot diseases. For planting these varieties, farmers usually seek new ground or rotate to areas not recently in vegetables. Many varieties give poor stands when planted in cool, early springs. Mackie (26) found that seed treatment with Sperguson or other fungicides provided better stands from early plantings. Based on results at this Station, pea seed should be treated with an effective fungicide before planting.

Cankeros stems from early spring plantings. Plants of the Alacrowder variety from early spring plantings in Alabama often have swollen, cankerous stems near or just below the soil surface and noticeable light colored foliage. These effects were gradually overcome as warm weather and better growing conditions arrived.

Powdery mildew. Fennell (13) developed one or more varieties with resistance to mildew, but these have not been tested widely enough to determine resistance in the southern part of the United States.

While resistance varies between varieties, most of the common ones when planted in late summer are damaged by mildew in late cool fall. The damage is sufficient to limit or even prevent normal fruit set and development.

Leaf bronzing. Older leaves with undersides turned to sun during hot weather often become bronzed. This condition has been observed in Alabama, but has not been regarded as serious.

Summary of disease controls. Use of suitable planting dates, disease-free seed of resistant varieties, rotation of crops and planting areas, seed treatment, and control of insects that transmit disease will help materially in reducing diseases.

Insects

Developments in recent years of new and potent insecticides and methods for best use have resulted in much more highly effective controls of insects attacking southern peas than were previously possible. Consequently, growers are giving attention to control measures. Also, processors and consumers are demanding insect-free peas.

Mexican bean beetle and bean leaf beetles. Mexican bean beetles, which skeletonize the leaves from underside, sometimes damage peas. Occasionally the damage is severe.

Though the bean leaf beetle is not generally a pest of the southern pea, at times it causes damage.

Mexican bean beetles and bean leaf beetles may be controlled by use of rotenone or malathion dust or spray.

Aphids, or plant lice. Southern table peas planted in early spring or late summer are often attacked by aphids in sufficient numbers to cause considerable damage to young leaves, branches, and pods. Aphids may be controlled with rotenone, nicotine sulfate, or malathion either as a dust or spray. Instructions on the container should be carefully followed. The application to be effective must come in contact with the aphids.

Gibson of Arizona reported that red spots on cowpea leaves and pods appeared to be from sunburn and associated with aphid infestation. It was his opinion that damage was secondary (15).

Curculio. The curculio damages southern peas by feeding on pods and by laying eggs in the peas that hatch and develop into small white grubs. The damage may be extensive. If peas are infested health authorities may order processors to discontinue

canning or freezing. Often, however, one or more plantings each year are free of curculio damage, or infestation is not sufficient to require control measures.

Decay often starts in curculio-damaged, full-grown peas if they mature during rainy weather. This condition may spread to other peas in the pod.

During the last several years, investigators have experimented with control measures (1,6,10,20). Beckham reported that it is now possible to grow practically worm-free peas (6). He found 20 per cent toxaphene, 10 per cent chlordane, 2.5 per cent aldrin, and 2.5 per cent heptachlor to be equally effective against the adult curculio when applied at the rate of 10 to 15 pounds per acre. Applications were begun at bloom or when first small peas appeared. Three to four applications of dust at about 5-day intervals were adequate for control. Peas had no harmful residues when picked and canned 7 days after the last insecticide application. However, some authorities caution against the use of some of these insecticides if any of the pods are to be used as green snaps.

Some growers claim to be getting control of curculio with 3 per cent DDT dust, but it should not be used on young pods that are to be used as food.

Green stink bug. The green stink bug feeds with sucking mouth parts. It damages the young pods to the extent that they fail to develop normally. In late summer and fall, stink bugs often become very serious. Sabadilla dust will control this insect. Toxaphene used for curculio control may help control stink bugs.

Lesser cornstalk borer. For the last few years, the lesser cornstalk borer has killed a considerable number of pea plants in seedings made between June 15 to July 1 at Auburn and outlying research areas. The damage consisted of partial or entire destruction of the stand as the plants came up. The damage is caused by a velvet-like caterpillar that feeds and develops inside the stem near the surface of the ground. When touched, the caterpillar tends to jump. The adult of the insect is a small moth that the grower is not likely to see.

To date there is no satisfactory control. Growers practice heavy seeding when planting during the season it is likely to do most damage. Some frequently plant different fields at different dates.

Stands in large plantings are not as likely to be as severely damaged as are small plantings.

Wilson and Kelsheimer reported control by use of 5 per cent chlordane dust on the row at the rate of 25 pounds per acre just before peas emerge (35). Good control has resulted at this Station with peas grown for seed by interplanting in the middle of sweet corn rows and dusting the soil surface with 5 per cent chlordane just over the peas the day before they are due to come up. Both corn and peas thereafter are dusted about once a week with 20 per cent toxaphene.

Weevils. In dry peas, weevils may be controlled by placing the well dried seed in an airtight container and applying 1 ounce of carbonbisulphide to each bushel or 6 cubic feet or $\frac{1}{2}$ teaspoonful per gallon. The container is closed airtight for 24 to 48 hours. Treatment is made when the temperature is 70° F or above. Care should be taken not to allow fire near carbonbisulphide.

Weevils may be controlled in small quantities of seed by suspending them in a bag in water and gradually heating to a temperature of 140° F. The seed are then spread out and dried quickly.

Lime dust, 1 part to 1 of seed in small quantities or 1 part to 4 of seed in larger quantities, will prevent weevils from increasing.

Farmers who do not treat seed for weevil control prefer to store in the hull until planting time. Apparently this method limits weevil spread. However, it does not prevent damage. Seed held in cool or cold storage is not as likely to be damaged by weevils. Weevil-infested peas held in closed containers until late spring or early summer may undergo serious spoilage because of heating.

Growers using any of the dusts or sprays that are toxic to people should take necessary precautions to protect the operator or those who use the peas as food.

Harvesting

Degree of maturity for harvesting green. Pods intended as green snaps either for immediate use or for canning or freezing should be harvested before they have produced enough fiber to show stringiness or huskiness when snapped. The range in size of pods for snaps will vary somewhat with varieties. However, in most instances the pods should have attained practically full

length but not more than one-half their full diameter. The peas should be less than one-half their normal size.

Pods of peas that are harvested for immediate home use as green peas have usually changed from deep green to light straw or from light to a deep purple with peas almost maximum size. They shell best at this degree of maturity. However, for greater tenderness a few consumers are willing to shell the peas when they are smaller. Joiner of Florida reported that tests with southern table peas show they should be harvested about 16 days after flowering to maintain top market quality (24).

Pods harvested for sale as fresh market peas should have reached their full size, with the peas practically full grown. However, the pods should not have turned light or straw color for the light varieties or deepest purple for the purple varieties.

Peas harvested for fresh market are usually too immature for canning purposes. Canners who attempt to use them often allow the peas to remain on the platform for a day or so. During this time pods undergo a change that makes shelling somewhat easier. Peas so handled undergo heating that results in a tendency toward a slick product, often approaching a semi- or fully spoiled condition. For this reason canners who hold green peas in bulk often prefer purple podded varieties because they do not appear to change as rapidly. This is also true of stores that keep peas on sales counters. However, peas in pods of any color continue to mature and lose freshness fast after harvest unless they are kept quite cool.

A few people roast green peas somewhat like peanuts. For this purpose the pods are harvested just as they begin to take on a mature color, with peas full size and ready to start maturity.

Degree of maturity for dry peas or seed. For use as dry peas or for seed purposes, the peas should be fully mature. If maturity is reached when there is normally dry open weather, the peas should be left unharvested for a few days while they dry thoroughly. Varieties that shatter badly when mature may not tolerate delayed harvest without much loss. If maturity occurs during rainy weather, the peas should be harvested immediately and spread thinly in a well ventilated place where they may dry or be artificially dried to prevent spoilage by decay or sprouting.

Mature peas and pods of different varieties vary in the amount of adverse weather they will withstand without spoiling. Under



UPPER LEFT: Alabunch—blackeye (gray); plant, tall bunch; root, large deep; pod, medium size, green with purple tip changing to red. UPPER RIGHT: California Blackeye—blackeye; plant, tall bunch; root, small healthy; pod, medium to large, green turning to straw. CENTER LEFT: Ramshorn (Rams Horn)—blackeye; plant, tall bunch; root, medium; pod, medium, green with purple tip changing to straw. CENTER RIGHT: Alacrowder—blackeye crowder; plant, medium, semi-bunch; root, medium; pod large, green purple tip changing to straw. LOWER LEFT: Giant Blackeye—blackeye; plant, large semi-vining bunch; root, large to very large; pod, large, green purple tip changing to straw. LOWER RIGHT: Alalong X Texas Cream—blackeye crowder; plant, medium tall bunch; root, medium to large; pod, large, green with purple tip.



UPPER LEFT: Alabrowneye (Alabrown Eye)—browneye; plant, semi-bunch medium to large; root, large deep; pod, medium, green with purple tip changing to straw. UPPER RIGHT: Purple Hull Browneye (commercial strain)—browneye; plant, semi-vining; root, weak, disease susceptible; pod, medium, green changing to deep purple. CENTER LEFT: Purple Hull (local strain)—browneye; plant, medium to large; root, large; pod, medium to large, green changing to purple. CENTER RIGHT: Alalong—browneye; plant, tall bunch vining; root, large to very large; pod, large, green changing to straw. LOWER LEFT: Tall Late Browneye Sugar Crowder—browneye crowder; plant, large tall bunch; root, large to very large; pod, medium, green changing to straw. LOWER RIGHT: Blue Goose X Alabunch—browneye; plant, very tall bunch; root, medium to large; pod, large, green changing to purple to straw.



UPPER LEFT: Large Knuckle Purple Hull—brown crowder; plant, large semi-bunch; root, large to very large; pod, large, green changing to purple. UPPER RIGHT: Mississippi Crowder—brown crowder; plant, medium to large semi-bunch; root, medium to large; pod, large, green changing to straw. CENTER LEFT: Brown Sugar Crowder—brown crowder; plant, large semi-vining; root, medium to large; pod, large, green changing to straw. CENTER RIGHT: Tall Large Late Long Purple Hull—brown crowder; plant, large semi-bunch; root, large; pod, long, green changing to red. LOWER LEFT: Dixielee—clay; plant, medium bunch; root, medium, healthy; pod, medium, green changing to straw. LOWER RIGHT: Purple Whipoorwill—mottled speckle; plant, medium to large vining; root, medium; pod, medium to long, green changing to reddish purple.



UPPER LEFT: White Acre or Cabbage—cream; plant, medium bunch; root, small to medium; pod, small to medium, erect, white.

UPPER RIGHT: Texas Cream 8 (Cream 8)—cream; plant tall, medium bunch; root, small to medium; pod, small to medium, green changing to straw.

CENTER LEFT: Texas Purple Hull 12 (Purple Hull 12)—cream; plant, medium tall bunch; root medium; pod, medium, green changing to deep purple.

CENTER RIGHT: Early Six Weeks X Lady—brown-eye; plant, medium bunch; root, strong; pod, medium, green changing to straw.

LOWER LEFT: Bunch Purple Hull X Conch—cream; plant, medium semi-vining; root, large; pod, green changing to mottled.

LOWER RIGHT: Cream Crowder X CONCH—brown-eye; plant, medium semi-vining; root, medium to large; pod, green changing to red.

adverse weather conditions, greater spoilage occurs among varieties with pods that shrink closely about the peas and with starchy seed than among varieties that tend to have hard seed and are not tightly held in the hulls.

Methods of harvesting for green use. Peas for use as green snaps, fresh market, canning, freezing, or roasting are usually harvested by hand labor. An experienced picker may harvest as much as 200 pounds per hour of large well developed pods, provided the stand is good, the crop is heavy, and the variety is one that tends to bunch and hold the peas well above the plant on high stems.

The average person would perhaps harvest 40 to 50 pounds per hour of well developed green pods. The general practice when harvesting considerable quantities is for the labor to harvest for only a few hours each day, after which the peas are delivered to packing sheds. The price for harvesting is on a pound basis. This varies from year to year, depending on the sale price. Usually, it is about one-third the sale price of peas in pod.

There is much interest in the possibilities of mechanically harvesting peas for freezing or canning. One or more large companies find that this method may be used for harvesting tall bunch varieties that develop most of the fruit at about the same time. With this method there is a considerable loss of peas, the

TABLE 3. RESULTS FROM MECHANICAL HARVEST TRIALS WITH SOUTHERN PEAS IN COOPERATION WITH SEABROOK FARM, BRIDGETOWN, N. J., 1951

Variety ¹	Yields of green shelled peas per acre				
	Sept. 24	Harvest dates			Sept. 28
	Pounds	Sept. 26			Pounds
Alalong.....	2	2			2
Alabunch.....		627			975
Alacrowder.....		571			800
Alabrowneye.....	2	2			2
Early Dixie Queen ³	966	900			1,450
Variety (Source: Asgrow)	Sept. 6	Sept. 17	Sept. 19	Sept. 21	Sept. 24
Puffy Pod.....	500	929	948	867	
Cream Lady.....		755	800	943	
Black Eye.....		577	568	686	
Brown Crowder.....	850	1,538	1,137	1,414	
Purple Hull.....		888	942	987	
Calif. Blackeye #5.....		230		333	400

¹ Planting date, July 9.

² Too late to harvest because of freeze.

³ Attractive peas, no black eye.

TABLE 4. RESULTS FROM MECHANICAL HARVEST TRIALS WITH SOUTHERN PEAS IN COOPERATION WITH SEABROOK FARM, BRIDGETOWN, N. J., 1952

Variety	Yields per acre, one picking, green shelled peas		
	Hand picked	F. M. Corp. pea combine	Pilot planting Mixner Div.
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Early Dixie Queen ¹	2,600	1,600	525
Alabunch ²	2,600	1,720	1,114
Texas Cream No. 40 ³	2,500	1,320
Calif. Blackeye ⁴	1,800	1,240	786

¹ Later in maturity than 1951 stock; too many runners for machine harvest.

² Earliest in trials; concentrated, upright growth; feathered eye.

³ Concentrated, upright growth.

⁴ Upright growth; pods not concentrated; short runners.

percentage saved being about 50 to 75 per cent of the amount that might be harvested by hand, Tables 3 and 4.

Method of harvesting for use as dry peas. Most farmers harvest dry peas with family labor. Usually the harvest is made between other farm operations and often small quantities are harvested at a time. Sacks, baskets, aprons, and sheets are used as containers. An adult can pick 200 or more pounds of dry peas in the hull per day, the amount depending on skill of the person and conditions of the pods.

A few farmers use combines for harvesting dry peas. Combines perform well with tall upright bunch varieties that ripen most of the pods about the same time. They also do fairly well in harvesting the more vining types, provided the planting date is timed so that practically all pods mature during dry weather.

To harvest with a combine, the operator should know the proper speed at which to operate and how to make adjustments to prevent seed cracking. These require careful judgment and considerable experience. Peas for combine harvest should be thoroughly dry. Usually they require screening and cleaning after harvest.

Handling from harvest until used, processed, or sold. If peas are to be used for immediate processing, either frozen or canned, they are shelled immediately after harvest and cooked or frozen. If for any reason a delay is necessary, the pods or peas should be kept cool. Peas stored overnight will lose some quality if the storage is as cool as the average household refrigerator.

Green peas intended for home use are more often hand shelled before they are cooked or otherwise processed. They may be

shelled by small hand shellers or by large shellers. Although any type of shelling other than by hand will crush or otherwise damage some peas, the loss is not serious as compared with the time gained by machine shelling. Green peas shelled by machine should be immediately blanched and cooled.

Green peas that are to be sold on curb markets are harvested early the morning they are to be marketed or the late afternoon before. Sometimes they are shelled before they are taken to the market. More often they are shelled as they are sold on the market. The buyer observing them being shelled is convinced of their freshness. Since there is a considerable difference in the price of shelled and unshelled peas, a few consumers prefer to buy and shell them. Some produce companies are shelling green peas and placing them in attractive packages for sale by retail stores. This method appears to have considerable promise.

Green peas to be sold on the fresh market in the pods usually are carried immediately from the field to some nearby grading, packing, and market shed. They are spread thinly over some simple grading table or belt, so that graders can remove pods that are ill shaped, too short, overmature, seriously injured by insects, or otherwise damaged.

The bulk of the pods move and concentrate into a V-shaped chute from which they drop into ventilated onion sacks or seven-eighths bushel hampers. The hampers are gently shaken to make the pods lie close together. The amount per hamper is adjusted to a net weight of 25 pounds of peas, and the top is then wired on the hamper.

If intended for distant markets, the hampers are packed immediately in refrigerated trucks or cars and moved to destinations. If they go to nearby markets, they are usually moved in sacks or hampers by trucks without refrigeration. However, if they are expected to retain good quality for some time, they must be kept cool in transit and on the open market or on retail counters.

Green peas intended for canning are hauled from fields to the cannery. There they are weighed, and generally are piled in bulk on floor of the canning plant. If they are for distant canneries, they are carried first to market sheds. There they are weighed, loaded in bulk, and trucked during the night to the cannery. They are shelled and processed within the next several days.

Unshelled green peas piled in bulk are likely to undergo heating. Although this results in easier shelling, it causes lower quality of the canned products. The delay between delivery and processing may often be caused by a surplus of green peas harvested for the fresh market moving to the canneries.

Since fresh market peas are harvested a little too immature for use by canneries, they are partially prepared for easy shelling by natural heating and maturing during delay before processing.

The best methods for handling green peas for freezing have not been fully developed. Those who wish to cater to a quality trade might want to hand shell. This would mean getting the peas as immature as practicable and retaining as much of the green color as possible.

Frozen southern peas will perhaps have to be of the highest quality. This means that peas as immature as can be handled will have to be used. The shortest possible time between harvest and processing will be required.

Companies that wish to shell and freeze on a large scale are looking for a variety or varieties that concentrate the pods on tall stems and that shell well.

Handling peas for seed purposes. Many of the peas grown in Alabama for sale as dry peas are used for seed purposes, most of them being used in the communities where they are produced. Seldom is there an adequate amount of good seed of known varieties available in trade channels.

After harvesting and drying, peas should be thrashed, treated for weevils, and stored in a cool dry place until needed. Seed treated with carbonbisulphide for weevil control before they are thoroughly cured may not germinate when planted. Unless stored in insect-proof containers after treatment, they are likely to be damaged by weevils before planting time the following year.

Because mixed seed do not sell well, special care must be taken to avoid mixing while they are being thrashed or while in storage.

Usually local growers prefer not to buy seed until just before time to plant. Those who sell to local retailers find that there is a great difference in price between that received at harvest and that at planting time.

Those wishing to sell seed to large companies for resale should get the seed in good condition, properly labeled, and advertised well in advance of the time they will be needed for planting.

INFLUENCE OF VARIETY ON SUCCESS

From 1930 through 1958, the behavior of a number of varieties from one or more plantings annually has been compared at Auburn and for some years at outlying areas. Results of these tests and other observations have shown that no other single factor influences the degree of success or failure with southern peas as much as the variety. The information obtained from these planned experiments and from observations made on farms, curb markets, and marketing sheds is summarized in Table 5.

In presenting the information, similar varieties are classified in five groups. Varieties of some of these are used usually for table purposes while others are only sometimes used. A brief general description of the characteristics of each group is given and individual characteristics of each variety are presented in Table 5. Representatives of varieties of each group are illustrated in color, pages 19 to 22.

Blackeye and Purpleeye Group

Plants of varieties in this group vary from small to large and from bunch to semi-bunch to vining. The root system ranges from small to quite large. Some varieties are early, some mid-season, and some late. The period of production ranges from short to long and the yield from low to relatively high. From early spring plantings, the first leaves of young plants of some of the Blackeye (California and Ramshorn) varieties are noticeably large as compared with those of other varieties. This may partially account for their popularity for early spring plantings. Plants, pods, peas, and roots vary in their susceptibilities to injury from diseases and pests.

Color of plants ranges from green in some varieties to purple in others. Color of blooms tends to be light to medium lavender. In immature pods the color ranges from green, to varying amounts of purple to deep purple. The pod color of the green-podded varieties at green-shell age changes and pods appear to mature much faster than do those with purple pods. For this reason purple-podded varieties of this group as well as some of the other groups may be preferred by retail distributors.

The green peas shell easily because of pliable hull and tendency of the individual peas to come out of the pod clean or free of the paper-like cover that surrounds them. The shelled peas are attractive in appearance, and when cooked they are waxy

TABLE 5. PLANT AND FRUITING CHARACTERISTICS BASED ON MISCELLANEOUS DATA AND OBSERVATIONS OVER SEVERAL YEARS^{1,2}

Variety and Group ²	Type Growth		Color			Pods — Green			Peas — Green				Possibilities			Table Quality				
	Plant	Root	Blo.	Pod	Seed	Shape	Lgth in.	No. per lb.	Days to harvest	No. per pod	Per lb.	Shells	Pct. shell-out	Yield	Fall crop	Fruit season	Weatherers	Color	Texture	Flavor
Alabrowneye (b)	M-L semi-v	L dp.	Lt. lav.	green p. tip	Br. eye	St.-sl. cu.	7.0	68	70-75	13.7	1523	Ex.	65.5	Low -H	F	M	F	M. lt.	waxy	G
Alabunch (a)	Tall bunch	L dp.	Lt. lav.	green p. tip	Gray eye	St.-sl. cu.	7.6	59	45-55	13.3	1207	Well	69.5	H	G	Short	P	M. lt.	waxy	G
Alacrowder (a)	M-bunch	M-L	Lt. lav.	green p. tip	Blk. eye	St.	6.5	51	48-58	15.7	1028	Well	63.5	M-H	G	Short	F	M. lt.	waxy	Ex.
Alalong (Cow-horn) (Long-horn) (b)	L-tall vin.	L-VL	Lt. lav.	green p. tip	Br. eye	St.-sl. cu.	9.5	39	65-75	16.4	831	Ex.	75.8	H	P	Long	M	M. lt.	tender	Ex.
Black Crowder Early (c)	M low bunch	M-L	Dk. lav.	green to p.	Blk.	St.	6.5	40	65	15.4	1020	Well	67.0	H	---	Short	G	Blk.	waxy	G
Black Crowder Late (c)	L vin.	L	Lt. lav.	green to p.	Blk.	St.-cu.	6.3	51	77	16.8	1162	Well	67.0	M	P	Short	---	Blk.	waxy	G
Blackeye (a) White Crowder	L tall	L dp.	Lt. lav.	green p. tip	Blk. eye	St.-cu.	6.8	45	60-80	12.0	904	Well	59.4	M-G	P	Long	G	M. lt.	waxy	G-Ex.
Blue Goose Taylor (e)	L-vin.	L	Dk. lav.	green p. tip	Mot. sp.	St.-sl. cu.	7.1	59	65-75	12.0	1169	Well	64.0	M-H	G	M	G	Dk. gran.	Sg.	
Green Pod Crowder (c)	M-bunch	M-L	Dk. lav.	green	Br. eye	St.	6.4	48	60-70	15.2	917	Well	79.8	M-H	G	M	F	Dk. gran.	Sg.	
Br. Crowder (c) P. Hull, Late	L-bunch	L dp.	Dk. lav.	p.	Br. mot.	St.-sl. cu.	8.0	52	75-85	12.2	1223	Fair	56.3	M-L	F	Long	F	Dk. gran.	Sg.	
Br. Crowder (c) P. Hull Early	L low semi-v	L	Lt. lav.	p.	Br. mot.	St.-sl. cu.	7.5	49	60-65	13.5	1107	Well	59.4	Low -H	P	Short	F	Dk. gran.	Sg.	
Browneye Lady (b)	Small semi-v	Sm.	---	---	Br. eye	St.-sl. cu.	6.0	---	50-60	---	---	Well	---	Low -H	G	Short	P	M. lt.	tender	G

^{1,2} See footnotes, page 32.

Continued

TABLE 5 (CONT'D.). PLANT AND FRUITING CHARACTERISTICS BASED ON MISCELLANEOUS DATA AND OBSERVATIONS OVER SEVERAL YEARS^{1,2}

Variety and Group ²	Type Growth		Color			Pods — Green				Peas — Green				Possibilities			Table Quality			
	Plant	Root	Blo.	Pod	Seed	Shape	Lgth in.	No. per lb.	Days to harvest	No. per pod	Per lb.	Shells	Pct. shell-out	Yield	Fall crop	Fruit season	Weathers	Color	Texture	Flavor
Butter Pea (e)	L vin.	L	white	green	Br. mot.	St.-sl. cu.	8.8	51	75-90	12.9	1781	Well	57.5	Low-H	P	Long F	Dk.	gran.	Buttery	
Clapproved Blackeye (a)	SIMILAR TO RAMSHORN BLACKEYE																			
Calhoun-Crowder (e)	Tall bunch	L	Dk. lav.	P	Spec. mot.	St.-sl. cu.	5.5	69	65-75	13.6	1248	Well	75.0	H	P	M	G	Dk. gran.	Sg.	
California Blackeye (a)	Tall bunch	Sm.	Lt. lav.	green	Blk. eye	St.-cu.	6.5	67	57	10.2	1057	Well	58.4	Low	F	Short P	M.	waxy	G	
California (a) Blackeye #5	Tall bunch	L	Lt. lav.	green	Blk. eye	St.-cu.	6.0	---	57	---	---	---	---	---	F	Short P	M.	waxy	G	
Chinese Red (e)	Tall bunch	Sm.	Dk. p.	green	Red	St.-cu.	6.0	84	50	11.1	2459	Well	50.0	Low	F	Short G	Dk.	waxy	G	
Conch (d)	L bunch	L dp.	white	green	Wht.	St.-cu.	5.8	84	78	11.1	1834	Poor	51.6	G	P	Long G	Lt.	soft	Ex.	
Dixielee (e)	M bunch	L	Dk. lav.	green	Clay	St.-cu.	7.8	52	50-60	15.0	1140	Well	68.8	G	G	Short G	Dk.	waxy	G	
Dixie Queen Cal. Br. eye (b)	M-L semi-v	L	Lt. lav.	green	Br. eye	Cu.	7.5	45	70	10.7	802	Ex.	47.0	M	P	M	F	Dk. ten-der	G	
Early Dixie Queen (b)	M low bunch	L dp.	Lt. lav.	green	Br. eye	Cu.	6.0	70	50	13.0	1295	Ex.	71.0	Low-H	G	Short P	M.	Soft	Ex.	
Extra Early Blackeye (a)	M bunch	Sm.	Lt. lav.	green	Blk. eye	St.	5.3	135	57	9.0	1554	Well	56.0	M	---	Short F	M.	waxy	G	
Early Purple Hull Bunch (a)	Bunch	M	Lt. lav.	P	P. eye	Cu.-st.	6.8	58	50	14.0	1367	Well	60.0	M	G	M	G	M. ten-der	Ex.	

^{1,2} See footnotes, page 32.

Continued

TABLE 5 (CONT'D.). PLANT AND FRUITING CHARACTERISTICS BASED ON MISCELLANEOUS DATA AND OBSERVATIONS OVER SEVERAL YEARS^{1,2}

Variety and Group ²	Type Growth		Color			Pods — Green			Peas — Green				Possibilities			Table Quality				
	Plant	Root	Blo.	Pod	Seed	Shape	Lgth in.	No. per lb.	Days to harvest	No. per pod	Per lb.	Shells	Pct. shell-out	Yield	Fall crop	Fruit season	Weathers	Color	Texture	Flavor
Early P. Hull Crowder (c)	M-bunch	L	Dk. lav.	P	Br.	St.-cu.	5.5	56	50	14.8	1200	Well	55.0	M-G	G	M	G	Dk.	gran.	Sg.
Early Six Browneye (b)	Wk. M-bunch	L	Lt. lav.	green	Br. eye	St.	5.3	64	50-60	15.0	1738	Well	68.8	G	G	Short	G	M. lt.	tender	G
Early Wilt Res. Ramshorn (a)	Tall bunch	M dp.	Lt. lav.	green	Blk. eye	Cu.	6.9	63	57	11.7	1027	Well	71.8	M	F	Short	F	M. lt.	waxy	G
Giant Black-eye (a)	L semi-v	L dp.	Lt. lav.	green	Blk. eye	Cu.	9.0	36	75	14.9	893	Well	65.6	H	F	M	F	M. lt.	waxy	G
Jackson 21 (e)	Tall bunch	L	Dk. lav.	green	Clay	St.-cu.	7.8	48	50-60	15.4	1025	Well	71.8	G	G	Short	G	Dk.	waxy	G
Knuckle P. Hull Crowder (c)	L-semi-bunch	L dp.	M. lav.	P	Br.	St.-cu.	8.0	31	60	14.5	975	F	50.0	G	G	M	F	Dk.	gran.	Sg.
Lady Rice (d) (Ladyfinger)	Low semi-bu.	M-sm.	white	green	Wht.	St.-cu.	4.6	133	70-80	13.5	2215	Tedious	55.0	F	P	Short	P	Lt.	soft	Ex.
Lady Crowder Br. Seeded (c)	M bunch	Sm.	---	green	Br.	---	---	---	50	---	---	Tedious	---	H	G	Short	---	Dk.	---	G
Mississippi Crowder (c)	VERY SIMILAR TO GREEN CROWDER																			
Mush (Eleven O'Clock Wash) (d)	L vin.	L	Lt.	green	Wht.	St.-cu.	6.2	---	80	12.1	---	Well	---	Low-H	P	Long	P	Lt.	soft	Ex.

1,2 See footnotes, page 32.

Continued

TABLE 5 (CONT'D.). PLANT AND FRUITING CHARACTERISTICS BASED ON MISCELLANEOUS DATA AND OBSERVATIONS OVER SEVERAL YEARS^{1,2}

Variety and Group ^a	Type Growth		Color			Pods — Green			Peas — Green				Possibilities			Table Quality				
	Plant	Root	Blo.	Pod	Seed	Shape	Lgth in.	No. per lb.	Days to harvest	No. per pod	Per lb.	Shells	Pct. shell-out	Yield	Fall crop	Fruit season	Weathers	Color	Texture	Flavor
New Era (e)	Tall bunch	L	Dk. lav.	green	Br. spec.	Cu.	6.0	57	75-80	16.8	1503	Well	59.4	G	P	M	G	Dk.	Sg.
Polecat Early (c) (e)	Bunch	---	Lt. lav.	green	Red Wht.	---	---	---	---	---	---	Well	---	P	P	Short	P	Dk.	tender	G
Polecat Late (c) (e)	Vin.	L dp.	Lt. lav.	green	Red Wht.	Cu.	5.0	42	75-80	13.5	958	Well	59.3	M	G	Long	M	Dk.	tender	G
Puffy Pod (e)	L vin.	VL dp.	M. lav.	green	Clay	Cu.	8.5	38	80	9.0	912	Well	37.5	Low	P	M	G	Dk.	F
Purple Hull Long Pod (c)	Vin.	L	Lt. lav.	P	P eye	Cu.	9.3	36	75	12.8	864	Well	53.1	M	P	Long	P	M.	tender	G
Purple Hull Regular (b)	Vin.	L	Lt. lav.	P	Br. eye	Cu.	6.8	60	70	10.5	1180	Well	53.1	G	P	Long	M	M.	tender	Ex.
Purple Hull (b) Commercial	Semi-v	L	Lt. lav.	P	Br. eye	Cu.	7.0	60	75	10.5	---	Well	53.1	P	P	Short	P	M.	tender	G
Red Spec. Crowder (c)	L vin.	L dp.	Lav.	green	Red Wht.	Cu.	6.0	42	76	13.2	854	Well	54.0	L-H	P	Long	G	Dk.	gran.	Sg.
Silverskin Crowder (c)	Semi-v	L	M. lav.	Silv.	Br.	Cu.	5.9	47	60-75	14.0	1313	Well	60.9	H	P	M	G	Dk.	gran.	Sg.
Six Weeks (e)	Tall bunch	VL dp.	Dk. lav.	green	Clay rough	St.-cu.	7.0	57	60-70	16.0	1492	Well	62.5	H	P	Long	Ex.	Dk.	firm	Sg.
Sugar Crowder (c)	Semi-v	M	Dk. lav.	green	Clay	Cu.	5.3	51	78	13.3	999	Well	59.4	H	M-G	M	G	Dk.	gran.	Sg.
Sugar (c) Crowder-Late	Tall semi-v	L	Dk. lav.	green	Clay	St.-cu.	7.5	51	85-90	13.3	1139	Well	59.4	M-H	P	Long	G	Dk.	gran.	Sg.

^{1,2} See footnotes, page 32.

Continued

TABLE 5 (CONT'D.). PLANT AND FRUITING CHARACTERISTICS BASED ON MISCELLANEOUS DATA AND OBSERVATIONS OVER SEVERAL YEARS^{1,2}

Variety and Group ³	Type Growth		Color			Pods — Green			Peas — Green				Possibilities			Table Quality				
	Plant	Root	Blo.	Pod	Seed	Shape	Lgth in.	No. per lb.	Days to harvest	No. per pod	Per lb.	Shells	Pct. shell-out	Yield	Fall crop	Fruit season	Weathers	Color	Texture	Flavor
Sumptuous (d)	M bunch	Wk.	white	green	Wht.	St.-cu.	6.5	77	71	12.1	1546	Well	59.0	Low -H	P	Short P	Lt.	soft	Ex.	
Texas Cream #10 (d)	Tall bunch	Sm.-m	Crm. white	green	Wht.	St.-cu.	6.5	70	50-60	12.2	1318	Ex.	67.2	Low -H	P	Short P	Lt.	soft	G	
Texas Cream #14 (d)	Tall bunch	Sm.-m	Crm. white	green	Wht.	St.	5.5	84	50-55	13.3	1704	Well	65.6	Low	P	Short P	Lt.	soft	G	
Texas Cream #40 (d)	Tall bunch	Sm.-m	Crm. white	green	Wht.	Cu.	5.5	80	50-55	13.2	1615	Well	65.6	Low -M	P	Short P	Lt.	soft	G	
Texas Purple #49 (d)	Tall bunch	Sm.-m	Lt. lav.	P	Br. cream	St.-cu.	7.5	48	Early	10.5	1075	Well	46.9	Low -M	P	Short P	Lt.	soft	G	
Virginia Blackeye (a)	Tall vin.	L dp.	Lt. lav.	green	Blk. eye	St.-cu.	6.6	74	75	12.7	1446	Well	58.5	M-H	P	M	G	M. lt.	waxy	G
Whippoorwill (e)	Vin.	M	Dk. lav.	green	Br. spec.	Cu.	6.8	51	70-	13.1	1043	Fair	71.8	G	P	M	G	Dk.	gran.	Sg.
Whippoorwill Reddish Pod (e)	Vin.	L	Dk. lav.	green red			SIMILAR TO OTHER WHIPPOORWILL													
White Browney Crowder (b) (d)	Tall bunch -v	L dp.	Lt. lav.	green	Br. eye	St.-cu.	5.7	46	70-80			Well		H	G	Long F	M. lt.	tender	Ex.	
White Crowder (d)	L vin.	L dp.	Lt. lav.	green	Cr. wht.	St.-cu.	5.8	47	85	13.4	975	Well	59.0	Low -H	G	Long M	Lt.	tender	Ex.	

¹ Sm = small; M = medium; L = large; H = high; G = good; F = fair; P = poor; Lt. = light; Dk. = dark; Lav. = lavender; Br. = brown; Blk. = black; Cu. = curved; St. = straight; Sg. = strong; P = purple under all color columns; gran. = granular; vin. = vining.

² (a) Black or Purpleeye varieties, (b) Browney varieties, (c) Colored Crowder varieties, (d) Cream varieties, (e) Miscellaneous varieties.

to the taste, and have a pleasant mild flavor. In the immature stage, the peas are well suited to canning or freezing.

At maturity pods vary in degree of pigmentation, shrivelling, tendency to shatter, and ability to weather without spoiling. The mature peas also vary in degree of shrivelling, or ability to weather. The mature peas lend themselves well to boiling or soaking and to canning.

There are many varieties of the Blackeye and Purpleeye group. Characteristics of the different varieties are given in Table 5. Appearance of foliage and pods of some at different stages of maturity are shown in color on pages 19 to 22.

Browneye Group

Varieties of this group differ widely in size, growth of plants, root distribution, fruiting characteristics, earliness, shape, and size of pods and peas. They vary in their ability to grow and make satisfactory yields under various conditions.

A few of the varieties are early, but most of them are mid-season with some late. The plants and roots of most of the varieties are usually free enough of diseases to permit fair to good yields. However, varieties differ widely in this respect. For example, the Early Six Weeks Browneye has a very good root system capable of growing in most soils; this is also true for the Regular Purple Hull. However, the catalogued Purple Hull Browneye (commercially Purple Hull) is so susceptible to root troubles that frequently most of the plants die before or by the time they reach fruiting age.

Color of blooms ranges from almost white to medium lavender. Young pods and those with peas old enough for use vary in color from green to light purple to deep purple. Pods range from small, short, and almost straight to large, long, and considerably curved.

Both well developed green peas and mature peas shell well. The cooked product is somewhat muddy or dark in appearance, which is true of all varieties with colored eyes. The quality of the peas is characterized by tenderness and associated with delicate high quality flavor.

For tenderness and delicate flavor, this group would perhaps be the table choice of most people. Green peas are excellent for use fresh, canned, or frozen. Mature peas are well suited to boiling or soaking and to canning.

There are several Browneye varieties. For appearance, see color pictures; and for detailed description see Table 5 (b).

Crowder Group

The term Crowder peas refers to a group of varieties that produce peas closely crowded in the pods.

Although plants of most varieties in this group are medium in size, the range is from small to quite large. The root systems of most of the varieties range from large to quite large. Plants of most of these contain purple pigment that is quite pronounced in some varieties. Plants and roots tend to be free or tolerant enough of diseases and pests to usually produce medium to heavy yields. However, many of the varieties often show damage from root-knot nematodes, with some it is serious.

Color of blooms of the varieties ranges from light to quite deep lavender, with Late Browneye and White Crowder varieties having lighter colored blooms. Pods of most varieties contain noticeable amounts of purple pigment, especially on the blossom end of pods when young. Color of pods at the green shell stage ranges from green to deep purple. In case of Silver Skin Crowder, the pods are light silver. Mature pods are from bright straw to purple. Pods of most varieties range from large to quite large, short to quite long, and from almost straight to considerably curved.

Peas at the green shell stage of most of the varieties are green. However, a few are speckled, with some almost black. Usually they are large. They do not shell as easily as the Blackeye and Browneye groups. Size and crowding in the pod often result in distorted or irregular shape of the peas.

With few exceptions including Late Browneye and White Crowders, the cooked peas are quite dark in color with dark liquor. The cooked peas have a granular feel, with a strong (or astringent) flavor. Varieties of this group are often used for canning. Because they appear to age on the retail counters more slowly than others, they are widely used for fresh market. This is especially true of the Purple Hull types. Varieties of this group are not considered by most consumers to have as good table qualities as the other three table groups. For appearance, see color pictures; and for details, see Table 5 (c).

Cream Group (Inconspicuous Eyes)

Varieties with cream or white seed that have little or no noticeable eye color fall in this group.

Plants of this group vary more widely in some respects than do those of other groups. They range from quite small (Lady) to quite tall (Texas Creams) bunch types, from quite long low prostrate vines (Conch) to long vining types (Mush) that do best only when support is provided. The root system of some (Lady) are small and so susceptible to injury from soil-borne diseases and nematodes that they produce satisfactory yields only on soils comparatively free of such troubles. Root systems of others (Conch or Ground Runner) are quite large and are resistant or tolerant enough to most diseases and pests to produce plants that grow and yield over relatively long periods.

Color of blooms in this group is very light or almost white. Most of the pods are small to medium in size; some are very small, and a few varieties produce large pods. Shape of the pods ranges from almost straight to somewhat curved. With most varieties in this group, the young pods are green. Some have splotches or purple stripes and a few have purple hulls. Mature pods are straw or purple depending on the variety. The peas vary in ease of shelling. In general those with small pods and small seed are tedious to shell because of size and in some instances because of pod characteristics. Those with large pods and peas shell easily. Peas in mature pods of some varieties shatter readily in dry weather. Others weather well.

The peas tend to cook quickly, and with some varieties they tend to be soft or mushy in texture. The liquor is light or more amber than in other groups. The flavor is different from that of other varieties. In some it is somewhat similar to that of butter beans.

The Creams have long been popular with consumers and with those who grow or sell them fresh on curb markets. Processors and retail stores who retail fresh shelled peas receive better prices for Creams than for most other groups. Recent experiments indicate that much improvement in plant, pod, and peas may be possible with this group. For appearance of the Cream group, see color pictures; and for detailed description, see Table 5 (d).

Miscellaneous Colored Group

There are several varieties and local strains of colored seeded peas that are popular with some growers and to a limited extent on certain markets. Because of large plants and roots, most of these are capable of good yields under a wide range of conditions. Plants range from early bunch to midseason semi-bunch to late large vining types. Among the older varieties are Clays, Whippoorwill, and Bluegoose (Taylor). Dixielee and Jackson 21 are newer important Clay varieties.

Color of blooms is light to deeper lavender. Peas tend to bloom and set well. Blooms of Bluegoose attract noticeably large numbers of different kinds of insects. Immature pods tend to be marked with different degrees of purple pigment and some with reddish pigment. Mature pods may be bright straw color or contain purple pigment. The pods are medium to very large and are almost straight to curved. The peas, medium to very large in size, usually shell well at both green and mature stages. Mature peas range from light clay to speckles, with varying degrees of mottling.

The cooked product of fresh or mature peas of this group is dark in color. The flavor of most of the varieties is rather pronounced with a somewhat strong taste. Some of these varieties lend themselves to canning, and, since many consumers accept colored varieties, these are sometimes produced for canning as well as for home use and for market. For appearance, see color illustrations; for detailed description, see Table 5 (e).

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