Chapter 9

Cultural Practices

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Considerable research effort has been expended in the past few years on cultural practices in peanuts. Many experiment stations have conducted spacing, fertility, time-of-planting, seed treatment, variety and weed control studies in peanuts. However, data on soil preparation, planting depths, cultivation, irrigation, and perhaps other phases of this subject are either extremely meager or nonexistent. Station publications on many of these subjects carry only the authors' opinions. The authors of this chapter are in accord with most of these views, and where data are not available, they have included such opinions as the best information obtainable on the subject.

PLANTING

Preparing the Soil

There are few data from controlled experiments with different methods of preparing soil for peanuts. However, there is practically unanimous agreement among research and extension agronomists that the soil should be thoroughly and completely prepared before planting. Plowing is done early when there is no winter cover crop on the land. It is difficult to prepare land properly for peanuts if a large growth of residue from the preceding crop is turned under just prior to planting. For this reason, plowing in the late fall or early winter is practiced frequently in order to permit decomposition of residues before planting.

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The residue from the previous crop is thoroughly shredded well in advance of time of planting. When there is a winter cover crop on the soil or when there is considerable residue from the previous crop, the soil is turned to a depth to allow thorough coverage of the organic matter about 30 days prior to planting. About one week prior to planting the soil is disked and leveled to destroy any weeds. This land-preparation step is often combined with the application of a preplant herbicide treatment such as benefin or vernolate. A final disking or dragging just prior to planting completes preparation. The rows may be laid off and bedded to help assure adequate moisture at planting.

There are few data on depth of soil preparation in regard to peanut production. It is best to avoid excessively deep preparation. Turn most soils to a depth of 6 to 8 inches. In the event acid subsoil is brought to the surface, action should be taken to adjust soil pH. Recently there is much interest in the so called "Deep-Turning; No-Dirting" method of peanut culture. Boyle (6, 7) developed an integrated scheme of culture to reduce losses because of southern blight *(Schlerotium rolfsii* Sacc.) and root rot *(Rhizoctonia* L.) on peanuts. The basic requirements in this scheme of culture were first to plow the soil in such a way that all organic litter was buried at a depth of at least four inches; and second, to plant in the level and maintain a dearth of organic litter about the base of the plant by not pushing soil to the plants during cultivation. Shepherd (42) describes machinery equipment and procedures for doing this.

Boyle and Hammond (8), Table 1, showed that plots turned with a moldboard plow produced a higher yield and less loss of pods from rots than did plots prepared with a disk harrow. Later, Boyle (9) compared two methods of tillage, two amounts of organic litter and four different crops or kinds of organic litter in the soil. On the Greenville soil at Plains, Georgia, no significant difference was observed because of the different methods of tillage, Table 2. At Tifton, Georgia, on a Tifton loamy sand soil, tillage with a moldboard plow was superior to tillage with a disk. The amount of organic litter obtained by returning the entire crop or just the stubble from the previous crop did not significantly affect the yield.

Garren (15) and Garren and Duke (16) in experiments at Holland, Virginia, reported a marked increase in yield and reduction in percentage of diseased plants as a result of deep turning of plant residues and not pushing soil or plant residues to the plants during cultivation. Both practices were important but a larger increase in yield came from non-dirting than from deep turning of the plant residues as evidenced by data in Tables 3 and 4.

Mixon (35) in experiments at Headland, Alabama, Table 5, found no increase in yield from different tillage methods in three years (1957-59) but in 1960 there was a marked increase in yield from deep turning also from non-dirting in cultivation. The largest increase in yield was from deep turning.

The results of the experiments reported indicate that the "Boyle" method is valuable for control or reducing attacks by certain diseases, particularly root rot and southern blight, and results in increased yields when these are prevalent. In the absence of these diseases it has no effect on the yield of peanuts. Because the prevalence of root and stem-rot organisms cannot be predicted and because of the small additional expense involved, the deep turning and clean cultural techniques should be included in improved cultural practices of peanuts. Deep turning also helps in breaking up or preventing the formation of hardpans.

Fertilizer Applications

Although the subject of peanut fertilization has already been discussed in Chapter 8, brief comments are included here.

Many research workers have found that peanuts following a crop that was well fertilized with mineral fertilizers do not give increased yields from direct applications. However, many growers still apply some fertilizer at time of planting and, in few instances, side-dressing applications are also made. Broadcast application of fertilizer ahead of turning the soil is recommended and is rapidly becoming a general practice.

Use of gypsum on the foliage of large-seeded peanuts at blooming time has given increased yields. Experiments have indicated benefits from this practice when Spanish or the small runner-type peanut is grown. Studies have shown that gypsum is most beneficial if applied when the peanuts begin blooming. In general, response to applications of gypsum is greatest when peanuts are grown on soil "low" in calcium. It is best to plant peanuts on land that has been adequately limed by previous broadcast applications.

Time of Planting

Throughout the greater part of the commercial peanut area, planting of the main crop is done between April 10 and May 10. Peanuts are planted from early March in parts of Texas and Florida to as late as June 15 in Virginia, North Carolina, and Oklahoma. The young peanut plant is a vigorous seedling and is capable of withstanding considerable cold. Therefore, peanuts may be planted earlier than cotton. The recommendations made by most agronomists are for planting at a reasonably early date. The best planting date is probably about 2 weeks after the average date of the last killing frost. Results of time-of-planting experiments show that farmers could probably increase their yields by planting earlier than customary. In the Gulf Coast region, a fair yield may be expected from Spanish peanuts planted as late as July 1. Runner-peanut yields decline rapidly as the date of planting is delayed.

Results from experiments by West (48) on dates of planting Spanish peanuts in Mississippi show that yields from peanuts planted early are definitely higher than from peanuts planted at later dates.

Gregory (18) reported that peanuts planted in April, May and June at Rocky Mount, North Carolina produced average yields of 1,215 pounds, 1,151 pounds, and 710 pounds of nuts per acre, respectively. Results of 10-year experiments reported by King (25) at Tifton, Georgia, Table 6, also indicate an advantage of early planting of both Spanish and runner peanuts.

Yields from experiments conducted with Spanish peanuts at various Alabama locations are given in Table 7. Except at Fairhope, where early plantings were damaged by rodents, these results also show a very definite advantage for early seeding. Planting at or about the last killing frost date resulted in a good yield of peanuts. Slightly higher yields were obtained by delaying the planting 2 weeks after the last killing frost. Delaying the planting an additional 2 weeks, however, resulted in marked reduction in the yield.

In a date-of-planting experiment with runner peanuts at Auburn, Alabama, the highest yield was obtained from the April 5 planting. In a "Time-of-planting" experiment conducted at Prattville, Alabama, the highest yield of runner peanuts was obtained from planting made from April 5 to 25.

Jumbo runner peanuts were planted by Shear and Miller (40) at 10-day intervals from April 22 to May 22, 1952-55, inclusive, in a test at Holland, Virginia. They were harvested at approximately 10-day intervals in the fall. The yields, Table 8, were highest for the early May planting. The May 22 planting resulted in somewhat lower yields. Tests by Allison (2) in Virginia in 1968 at two locations with 5 varieties of peanuts showed little differences in yield or quality from plantings made April 22, May 6, and May 20.

Tests by Matlock, *et al.* (33) in Oklahoma showed best yields and highest grade when Spanish peanuts were planted after May 10 and before June 10, Table 9.

With all varieties tested at all states reporting best yields have been obtained by earlier plantings. Late plantings always produced low yields.

Method of Planting

Peanuts are usually planted to a depth of 1½ to 3 inches on light soils and 1 to 2 inches on heavier soils. Under dry conditions, still deeper covering is recommended to ensure uniform germination. In some instances the soil is bedded before planting to help assure adequate moisture in the seedbed. At the time of planting, the bed is opened with an implement to clean the beds and level the top. After planting, allow the row to be slightly below or about even with the middle and with a slight ridge in between. If the land is freshly turned, usually no bed is formed. In this case, planting is made in a small open furrow and the seed are covered sufficiently to level the surface of the furrow slightly below the middle surface. Planting preparation in any case should leave the ground in proper shape for early cultivation or for the application of preemergence or cracking-time herbicides.

Studies by Harrison (20) showed planting on a bed 5-6 inches high has proved to be superior to level planting under irrigation in Texas. The 5-6 inch height produced larger yields than smaller heights, Table 10. Two or three rows per bed (38-40-inch bed) were preferable to single rows.

The practice of planting on beds is recommended in the irrigation area of the Southwest. The use of beds has not been reported in irrigation studies in the humid eastern area of the peanut belt.

Spacing of Peanuts

Spacing tests to determine distances between rows and spacing of hills in the row have been conducted by most of the experiment stations in the peanut-growing states. These tests have been made with both bunch- and runner-type peanuts. Considerable interest in narrow rows by research was evidenced as early at 1919 (29). However, lack of means of adequate weed control prevented exploitation of these ideas. Availability of satisfactory chemical weed control methods since the mid 1950's has greatly stimulated a recent interest in row spacing research in peanuts. In general, the results show that narrow rows and thick spacing in the row produced the largest yields.

Alabama Agricultural Experiment Station Results. In spacing experiments with runner-type peanuts, under fairly low production levels at the Wiregrass Substation, Headland, Alabama, the highest yields were obtained from the closest planting (7-inch drill spacing) in the 42-inch rows.

Later, studies by Mixon (36), in a test of 3 medium to large seed varieties at Headland in 1961-63, found no advantage or disadvantage in yield, shelling percentage or seed size in spacing of rows closer than 36 inch or plants closer than 6 inches.

In an experiment conducted at Auburn, Alabama, Funchess and Tisdale (13) found that Spanish peanuts must be planted thick for large yields. They obtained highest yields of 1,785 pounds of nuts per acre from 4-inch spacing in 18-inch rows and 813 pounds per acre from 12-inch hills in 36-inch rows.

Arkansas Agricultural Experiment Station Results. Using Spanish peanuts, McClelland (29) reported that rows as narrow as 12 to 18 inches apart were conducted in 1919. However, these tests were not continued because of the difficulties encountered in cultivating these narrow rows. The yields of peanuts and of hay from the narrow rows were larger than when the peanuts were planted in wider rows. In later experiments, highest yields of both nuts and hay were obtained from the Spanish variety when grown in 30-inch rows and spaced 6, 8, or 9 inches apart in the drill. The Valencia variety produced highest yield in either 30- or 36-inch rows with 6, 8 or 9 inches between the hills.

In another series of experiments with Valencia variety, highest yields were obtained when spaced 8 inches apart in 30-inch rows (30). The Spanish strains produced best from a 36-by-8 inch spacing. There was little difference in the yield of either variety between rows of 30 and 36 inches. Spacings of less than 8 inches in the row were not included in the tests. Highest yields of hay from both varieties were obtained from 30-by-8 inch spacing, Table 11.

Florida Agricultural Experiment Station Results. In spacing studies Killinger, *et al.* (24) reported highest yields were obtained from runner peanuts spaced 6 inches and Spanish spaced 3 inches in the drill. Lipscomb, *et al.* (27) later reported that nut and hay yields of Dixie Spanish peanuts increased as row spacing was decreased. In the case of early runner, there was no effect on peanut yields from row spacing. Hay yields of early runner were increased by close spacing, Table 12. Harris, *et al.* (19) reported a large increase in yield of runner peanuts with 12 2/3-inch rows as compared with 38-inch rows.

Georgia Coastal Plain Station Results. Parham (39) reported that highest yields of Spanish peanuts were obtained with spacing of 6 inches in the drill and 18-inch rows. Results of these experiments are summarized in Table 13.

North Carolina Agricultural Experiment Station Results. The results reported by Gregory (18) from spacing tests with various varieties of peanuts conducted at the Rocky Mount Station are reported in Tables 14 and 15, inclusive. Data were obtained on both Virginia Bunch and Jumbo Runner Peanuts planted in 3-foot rows in hills 4, 8, 12, and 16 inches apart with one and two plants per hill. Highest yields were obtained where the Virginia Bunch variety was spaced 4 inches apart in the drill with one plant per hill. Two plants per hill with hills either 8 inches or 12 inches apart produced only slightly less peanuts than the 4-inch spacing of this variety. Jumbo Runners produced highest yields when spaced 12 inches apart in the drill with two plants per hill.

In other experiments at the same location, Table 14, approximately equal results were obtained from spacing of two plants per hill 8 inches apart, one plant per hill 4 inches apart, and two plants per hill spaced 12 inches apart. Wider spacing produced lower yields.

Best yields were produced with thick spacing of Both North Carolina 31 and Spanish 2B varieties, in later experiments, Table 15. Both varieties yielded most when

spaced 4 inches apart in the row with rows 18 inches wide. In an experiment conducted in 1947 the highest yields from no potash were obtained from hills 4.5 inches apart in rows 18 inches wide. In the case of the potash treatment spacing 4.5 and 9 inches between hills in 18-inch rows and 4.5 inches between hills in 27-inch rows produced approximately the same yields.

Oklahoma Agricultural Experiment Station Results. Tests by Foraker, *et al.* (12) with Spanish type peanuts in 1967 showed at Fort Cobb an advantage of 15-30-inch rows when compared with 36-inch rows. At a second location, higher yields were obtained with 30 or 40-inch spacing when compared with 15-inch rows.

South Carolina Agricultural Experiment Station Results. Spacing-test results at the Pee Dee Station, Florence (4) showed that the highest yields were produced where Spanish peanuts were spaced very close in the row, the best yields of nuts being obtained from the plants spaced 3 inches apart in 2.5-foot rows.

Texas Agricultural Experiment Station Results. Spacing tests with peanuts have been reported from several Texas locations. At Nacogdoches (32), Spanish peanuts were planted for normal stand in 18- and 36-inch rows. The average yields for the 3-year period were 900 pounds of nuts in 36-inch rows and 960 pounds in 18-inch rows.

Average yields from experiments located at Lubbock (32), are given in Table 16. With Spanish peanuts, which were used in these tests, highest yields of both nuts and forage were obtained from the 6-inch spacing between hills.

Results from spacing experiments conducted at Angleton were similar to those from other locations (44). Highest yields were obtained from the 6-inch spacing, Table 17.

Virginia Agricultural Experiment Station Results. Batten (3) recommends spacing Jumbo and Virginia Runner varieties 10 to 16 inches apart in the row with rows 30 to 40 inches apart; and Spanish from 6 to 12 inches apart in the drill with rows 24 to 30 inches apart. Although specific spacing recommendations are not made, it is suggested that rows be spaced at least 32 to 38 inches apart for best yields of runners.

Experiments by Shear and Miller (41) showed that spacing as close as six inches between plants resulted in higher yields as the space between rows decreased. In tests at Holland, Virginia, for 3 years Duke and Alexander (11) found, Table 18, with Virginia 56-R Runner peanuts no difference in yield with row spacing of 12, 18, or 36 inches and plant spacings of 6, 9, or 12 inches. With Virginia Bunch 46-2 spacing rows as wide as 36 inches produced slightly less yields than spacing 12 or 18 inches, Table 18.

A large percentage of the spacing experiments with peanuts have been conducted with the Spanish variety. Most of the experiments show that this variety yields most in rows 18 to 24 inches apart with plants 4 to 6 inches apart in the row. Tests in which the larger bunch types or the runner types were used show that they should be planted in 30- to 36-inch rows with plants 6 to 8 inches in the row.

Seed Per Acre

Poor stands resulting from planting an insufficient quantity of seed are one of the causes of low yields of peanuts. It is difficult to recommend accurately the quantity of peanuts needed per acre because of the extreme variations found in the size of seed even within a variety. Parham (39) made counts and calculated the approximate seeding rate shown in Table 19.

Killenger, *et al.* (24) suggest that 30 to 35 pounds of runner seed are sufficient for planting an acre in 30- to 36-inch rows where peanuts are to be 6 to 8 inches

apart in the drill. They suggest 50 pounds of Spanish peanuts for spacings of 3 to 5 inches apart in 24-inch rows.

Sturkie (46) recommends 50 to 75 pounds of seed per acre for spacings of 3 to 4 inches in 2-foot rows. In 3-foot rows, 25 to 40 pounds of seed are needed for spacings of 6 to 8 inches between plants. Poor germination, covering either too shallow or too deep, low vitality, and other factors affect emergence and early growth of peanuts. It is usually necessary to plant 20 to 25 percent more peanuts than the theoretical quantity necessary to obtain a stand.

Seed Preparation and Treatment

High-yielding strains and varieties of peanuts are being developed. It is important that stock from these improved strains be obtained by the grower. When the crop is mature, harvest peanuts for seed during dry weather and carefully cure. After picking the seed peanuts, either sack or store in bulk in a dry place where there is free circulation of air. Store peanuts in sufficient bulk to prevent heating. When they are spread rather than piled in one large heap, there is less danger of heating. Stored peanuts should be protected from mice, rats, insects and other pests.

Shelled vs. Unshelled Seed

Seed are always shelled before planting with modern precision planters but in the past both shelled and unshelled seed were used.

Experiments by the Alabama Agricultural Experiment Station show that unshelled Spanish peanuts planted at heavy rates produced good stands and satisfactory yields as compared with an equal quantity of seed that were shelled and planted. These results based on eight locations are given in Table 20. In the tests 90 pounds of seed per acre planted either in the hull or after shelling produced a stand of plants averaging aproximately 4 inches between hills. In 14 of the 23 tests, 60 pounds of unshelled seed per acre produced a stand averaging 5.15 inches between hills. It may be seen that unshelled peanuts gave a slightly decreased stand and yield when planted late. These decreases are believed to be a result of a shortage of soil moisture at the time of the late planting, which reduced germination of the unshelled seed.

In other tests conducted at Auburn (49) in which low-vitality Spanish seed were used, low emergence was obtained from unshelled, hand-shelled and machine-shelled seed. In these experiments unshelled seed germinated only 58 percent and hand-shelled seed 72 percent.

In tests by the Georgia Coastal Plain Experiment Station (25), No. 1 hand-shelled Spanish peanut seed germinated better and yielded more nuts than either unshelled or small shriveled seed—often called "pegs." Emergence results from various seed types are presented in Table 21. In a later study Mixon (37) showed an advantage of sound mature seed over "pegs." He concluded that small immature seed resulted in small, less vigorous plants early in the season and lower pod yields than No. 1 seed. He also noted a reduction in yield of approximately 10 percent from the use of "pegs."

Method and Time of Shelling

One of the first studies on time of shelling peanuts was by Beattie and others (4). Hand-shelled seed of seven varieties of peanuts—Jumbo, Virginia Bunch, Virginia

Runner, African, Valencia, Spanish and Improved Spanish were planted at the Pee Dee Station, Florence, South Carolina, 1922-1924. Shelling was done about February 10, March 10, April 10 and May 10. All seed were planted soon after the last shelling. All peanuts were spaced 6 inches apart in rows 32 inches apart. Results showed there was no consistent decrease in the germination of peanuts from seed shelled 3 months before planting time and that shelled shortly before planting.

Wilson (49) at the Alabama Station found that hand-shelled runner peanuts gave the same percentage germination whether shelled 6 weeks, 3 weeks, or 1 day before planting, and gave practically the same percentage when shelled 9 weeks before planting. Similar results were obtained by the Georgia Coastal Plain Experiment Station (26). Seed shelled in January and planted in April produced stands equally as good as those shelled and planted in April.

Prior to World War II nearly all peanuts for planting were shelled by hand. At present in the United States practically all seed peanuts are machine shelled and treated with a fungicide.

Machine shelling sometimes breaks the skin of nuts and sometimes damages the seed by crushing or breaking the nuts in half. This is especially true if ungraded peanuts of uneven sizes are being shelled. It is also true with graded nuts, if the machine is not properly adjusted. When the seedcoat is broken, seed-rot fungi have easy access to the kernel and cause decreased germination. Using medium-vitality peanuts shelled and treated, Wilson (49) obtained equally good results from hand- and machine-shelled peanuts. These results are reported in Table 22.

Seed Treatment

Seed treatment with proper seed disinfectants has been found to improve the germination of both hand-shelled and machine-shelled peanuts for seed. Hand-shelled seed and unshelled seed respond less to seed treatment than do machine-shelled seed. In fact, good stands can often be obtained from planting the recommended quantities from either hand-shelled or unshelled seed without treatment. Treating of hand-shelled seed usually results in 5 to 10 percent increase in emergence. Treatment of machine-shelled seed, however, often increases the stands by 30 to 50 percent.

Inoculation

Inoculation of peanuts with strains of nitrogen-fixing bacteria has given varied and inconsistent results. Consequently, many stations do not recommend use of artificial inoculation. Apparently, many soils carry the necessary nodule bacteria for this crop. Hence, artificial inoculation rarely has much effect on yield.

Small increases were obtained by Albrecht (1) in Alabama from the use of inoculation the first year that peanuts were grown in localities where the crop was not generally grown. The average results of tests conducted on Norfolk soil at different locations are given in Table 23. The data show that the effect of inoculation on Spanish peanuts was much accentuated by the use of mineral fertilizers applied in the drill before planting. Also, fertilizers were more effective on this soil in the presence of inoculation. It was observed that the plants that grew on the fertilized plots carried substantially more nodules than the plants on the unfertilized plots.

In other Alabama experiments conducted on the Coosa Valley soils of the Decatur, Etowah and Fullerton series on the Alexandria Experiment Field, peanuts were planted

with and without inoculation. The soil used had not grown peanuts prior to that year. Both Spanish and runner were planted on six different areas. The yields of both nuts and hay of each variety were increased by inoculation.

Most of the chemical treatments used to prevent diseases also kill inoculating bacteria, thus rendering artificial inoculation useless. Albrecht found that Spergon seemed to be an exception to this rule. In tests conducted in 1943 with machine-shelled peanuts, inoculation of Spergon-treated seed produced approximately 14 percent better stands than uninoculated seed treated with Spergon. The per-acre yields in favor of inoculation in the presence of Spergon treatment are:

Spergon-treated, inoculted,	2,161 pounds of hay 1,303 pounds of nuts
Spergon-treated, uninoculated,	1,825 pounds of hay 1,170 pounds of nuts
Increase from inoculation,	336 pounds of hay 133 pounds of nuts

Cultivation

When a herbicide is not used the first cultivation of peanuts consists of running a weeder, rotary hoe, or cultivator with small sweeps in the same direction as the rows. Later cultivation consists of cultivating shallow with sweeps or other shallow cultivation implements run in the same direction as the rows. Little or no soil is turned toward the plants except at the first cultivation. Pegs (pins or young pods) should not be torn loose. Keep the middle clean until vines cover sufficiently to give some competition with weeds.

When a herbicide is used, all cultivations are with sweeps or other shallow cultivation implements run in the same direction as the rows. With band application of herbicide, care should be taken to not push soil onto the herbicide treated band or break the band with cultivator implement or with the tractor wheel. The object is to keep the middle clean and not disturb the herbicide band. Currently, the use of preplant incorporated herbicides makes cultivation easier since these herbicides are applied broadcast. However, it is a common practice to apply a cracking-time treatment as a band over the preplant treatment. Care should be taken not to injure the vines as they grow out into the middle. Shallow, frequent cultivation is necessary in controlling weeds and grasses and reducing hand labor for hoeing. Many modern peanut growers use no hand labor for weeding peanuts. Particular herbicides and their application are discussed in Chapter 10.

The principal object in cultivation is to prevent growth of weeds and grasses, which are especially harmful because they reduce yield and greatly increase labor in harvesting. Boswell (5) found a 50 percent reduction in yield from weeds in peanuts at Yoakum, Texas, Table 24. In fact, very weedy peanuts are nearly impossible to harvest. Another object of cultivation is to keep the soil loose so that the ovary of the seed stem can pierce the soil readily and thus allow the nuts to form.

The practice of covering the young pegs with soil to insure their pegging down is unnecessary and often is harmful, since it destroys some of the foliage.

Peanuts are usually cultivated so as to leave the land flat. When peanuts are grown on a bed they are cultivated in such a way as to leave the plants on a bed at the time of laying-by.

Hoeing is necessary in some instances. In favorable years, rapid and frequent cultivation will destroy all weeds and make hoeing unnecessary. If peanuts become weedy or grassy, because of poor herbicide performance or other reasons, the weeds or grasses should be removed immediately. Removal of weeds or grasses after pods begin to form is difficult and frequently injures the peanuts. In general, grasses are adequately controlled with currently available herbicides. The large-seeded broadleaf weeds such as sicklepod, morningglory, cocklebur, and Florida beggarweed are now the most troublesome late-season weeds in peanuts. These weeds are usually removed by hand pulling. Some success has been achieved with a "directed-and-recovery" technique of spraying "tall" broadleaf weeds in peanuts.[2] Paraquat applied in this method successfully killed cocklebur and bristly starbrush in 1967 and 1968. The possible injury to peanuts resulting from scattered droplets of herbicidal spray has not been fully evaluated. These techniques are still under investigation.

Irrigation of Peanuts

Irrigation of peanuts is a common practice in the semi-arid area of the Southwest. Matlock, *et al.* (34) report results of irrigation studies in Oklahoma, Table 25, in which increased yields of nearly 100 percent were obtained from irrigation. Where three levels of water were used, the highest yields were obtained with the medium or high level of moisture. They concluded if the water supply is limited 2 to 3 irrigations of about 3 inches each will produce the highest returns per acre inch of water. If the water supply is not limited 3 to 6 irrigations of 3 inches each will give the greatest return.

Keese (23) in tests at Pearsall, Texas, found increases of approximately 2,400 pounds of peanuts per acre from irrigation. In one test, Table 26, in which he used 2, 3, and 6 inches of water applied in each of 11 applications at intervals of 7 to 14 days, the largest increase was from the 2-inch application. Larger amounts reduced the yields; this was probably because of diseases and rotting of the nuts.

In another study Keese studied rates of 2.4, 3.0, and 4.2 inches at intervals of 7, 10, and 13 days. The largest yield, Table 27, was from the 3-inch rate applied at 7-day intervals.

Keese makes the following recommendation for irrigation of peanuts:

1. Preplant irrigate if the top 3 feet of soil is not at field capacity of moisture at planting time.
2. When moisture is depleted to 50 percent of field capacity, apply water up to field capacity in the root zone. Usually 2 to 2.5 inches is sufficient.
3. Timing of application is important. Maintaining a high moisture level before the bloom stage is not important. When blooming begins irrigate every 8 to 10 days, if no rain occurs, up to the time the nuts begin to mature.
4. Time the last irrigation so that just enough moisture remains in the soil for easy harvesting. The soil must not be wet at harvest.

Hsi (22) in New Mexico makes approximately the same recommendation for irrigation of Valencia peanuts as Keese does for Spanish peanuts in Texas.

[2]Unpublished data. G. A. Buchanan. Ala. Agr. Expt. Sta., Auburn, Ala.

In the humid area of the Southeast only a few tests with irrigation have been reported. The effect on yields has not been nearly as marked as in the semi-arid area. This is to be expected because of the difference in rainfall in the two areas. Tests in 1956 at Tifton, Georgia by Sparrow, *et al.* (43) show an increase in yield of approximately 20 percent for irrigation of 4 varieties of peanuts, Table 28.

Stansell and Carter (45) in tests in 1961-1963, at Tifton, Georgia, show an average increase of 25 percent in yield of pods harvested and an increase of 60 percent in yields of pods produced due to irrigation, Tables 29 and 30. Only 8 percent of the peanuts that were not irrigated were left in the soil at harvest time. Thus, a much larger percentage of the peanuts produced under irrigation were left in the soil than when no irrigation was used. The increase in yield harvested gave a large profit for irrigation. The four varieties tested responded approximately the same to irrigation.

McGill and Sample (31) give recommendations for various practices in peanut production in Georgia. Included are recommendations for irrigation. They state "For most years normal rainfall has been sufficient to prevent severe crop loss . . . Irrigation has been profitable in some years . . . Higher plant populations along with other recommended practices should be used if irrigation is to be justified." Thorough wetting of the root zone at each irrigation is recommended. Water may be applied at the time of pegging to encourage a set of pods. Irrigation after this is recommended when needed, to insure pod development and filling. Irrigate at the rate of 1½ to 2 inches per application as needed. Irrigation should cease about 10 days before digging.

Lipscomb (28) at Marianna, Florida, found an increase in yield for 1 inch of water at 3½ to 10½ day intervals. The results are reported in Table 31. More frequent irrigation reduced the yield. The increases in yields were approximately 30 percent.

Mixon (38) in a 4-year study at Headland, Alabama, had an increase in yield in only one year out of four from irrigation, Table 32. In three years out of the four there was a small decrease in yield.

Often there are undesirable responses associated with irrigation in the humid belt. Weeds are often more abundant and more difficult to control. Diseases are also more prevalent and it is more difficult to keep fungicides and insecticides on the plants. Often a rain will follow soon after irrigation and you have too much water resulting in a wet condition of the soil. This delays cultivation or application of fungicides and insecticides.

If irrigation is to be used it should be done only after peanuts are blooming as needed. Determine the need by the amount of soil moisture present. Never use wilting of plants as a measure for irrigation of peanuts. Apparently some wilting of the plants is beneficial. Peanuts can withstand more drouth than corn and some other plants.

Growth Regulators

The most recent idea in increasing yields of agronomic crops through improving cultural practices has been use of growth regulating chemicals. The key idea in use of growth regulating chemicals is the regulation of some aspect of growth which in the final analysis results in a greater amount (or improved quality) of the desired product. Use of a growth regulator in no way can atone or make up for the lack of other sound cultural practices. The maximum effect a growth regulator on crop yield would probably be expressed when all other factors contributing to crop production were at maximum.

Early research by Zimmerman and Hitchcock (50), Galston (14) and others revealed the growth regulating properties of chemicals such as 2,3,5-triiodobenzoic acid (TIBA). Several groups of workers have demonstrated the relative merits of growth regulators such as TIBA in soybeans (17, 21, 47). Wax and Pendleton (47) reported that yields of soybeans were increased 6.5 percent by TIBA treatment when grown in 20-inch rows.

Considerable effort has been directed toward growth regulator research in soybeans. As of the present relatively little effort has been directed towards peanuts. Brittain (10) reported that succinic acid-1,1-dimethyhydrazide applied to peanuts as a 2,500 ppm spray caused an increase in yield of peanuts when plants were spaced 18″ x 6″. Yields were not affected by the growth regulator treatments when plant spacings were 24″ x 12″ or 36″ x 36″. This response was noted in varieties NC-2, NC-5, Va 56-R and Va 61-R.

In peanuts, as in soybeans, the favorable response from a growth regulator will undoubtedly be coupled with particular cultural practices. Since succinic acid-1,1-dimethyhydrazide as well as TIBA cause a shorter or more compact plant the maximum effect will probably occur under conditions of closer row spacing. The influence of fertility, moisture, and other cultural practices on response to growth regulators have hardly received the emphasis that they deserve.

Harvesting

The peanut plant has a fruiting period covering about 2 months. All pods do not set or ripen at the same time. Thus, it is difficult to tell just when the crop should be dug. If digging is done in time to save the earlier formed pods, then the later ones will be immature. On the other hand, if digging is delayed, many of the early-formed pods of Spanish peanuts will sprout and those of runners and Virginia Bunch are pulled off and left in the soil. The principal object is to dig the crop at a stage when the largest number of mature pods can be saved and when the weather is suitable for curing. If the weather is unsuited for curing, the peanuts cannot be harvested regardless of the stage of growth. Frequently, insects destroy the foliage and make digging immediately necessary in order to save the crop.

The usual method of determining when to dig is to examine the crop frequently as digging time approaches. At intervals of a few days plants should be pulled and the stems and pods carefully examined. If many of the stems have started to decay, digging should be started at once. An examination of the pods will show whether or not the pods are ripe. When a peanut is ripe, the veins of the hulls are prominent and the inside of the hull has turned dark. If the inside of the hull is white, the pod is immature. Another indication of time to dig is that of slight yellowing of the foliage. The leaves become spotted and some of the leaves begin to drop.

Usually it is more difficult to determine when to harvest runner peanuts than is the case with Spanish. The runner peanut may set a crop of fruit and if conditions become favorable, a new crop of fruit is set on the ends of the vines. When such a condition occurs, it is necessary to decide whether to harvest in order to save the first crop of fruit or to delay harvest and save the second crop. If the second crop appears to be the larger, it is usually better to delay harvest and save the later crop. The pods that were formed early will be left in the soil, but these can be utilized by hogs, and therefore are not lost.

Harvesting practices are discussed in more detail in Chapter 14.

Peanut hay, once a valuable by-product of the peanut crop, is seldom saved. When hay is saved its quality depends on proper harvesting date and method, and also on proper curing and picking. The hay should be baled immediately after threshing.

Hay left in the field after threshing is exposed to the weather and rapidly deteriorates. Usually hay from vines treated with sulfur to control leaf spot is higher in quality than that from untreated plants. The amount of hay varies with the variety and general conditions. Spanish peanuts usually yield from 1 to 1½ tons of hay per ton of nuts, and runner peanuts 1½ to 2 tons per ton of nuts.

Hogging Peanuts

In past years many peanuts were harvested by hogging. The practice has declined rapidly in the United States. At present, most hogging consists of using hogs to glean fields after combining. In most cases the runner-type peanut is used for hogging. The Spanish is earlier than the runner and is used for early hogging, usually from the middle of August to the first of October. Runner peanuts remain in good condition in the ground much longer than Spanish. They are usually hogged from October through January or February. The yield of pork per acre varies with the time of harvesting. Early in the season from 2½ to 3 pounds of peanuts are consumed per pound of pork. As the season advances the pounds of increased growth per pound of peanuts decreases until in February the figure may become as low as from 5 to 6 pounds of peanuts per pound of pork.

Hogs should not be turned on the peanuts until the majority of the nuts are ripe. Hogs do not like immature peanuts and usually will not eat them. Therefore, if the hogs are turned on when the peanuts are too green, they root up many of the vines and waste the immature nuts. Hogs do not like decayed nuts and will not eat them if other food is available.

Hogs eating peanuts produce soft pork and sometimes bring a lower price than hogs fed corn. The soft pork condition can be corrected by feeding other feeds a few weeks before the hogs are marketed.

CULTURAL PRACTICES

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Table 1. The effect of method of land preparation on yield and loss from rots in peanuts, Tifton, Georgia, 1956

Land Preparation	Moldboard		Disk	
Weed Control	Herbicide	Cultivated	Herbicide	Cultivated
Yield, Lb./A	2,188	2,064	1,851	1,657
Size of seed, no./Lb.	1,135	1,180	1,151	1,223
Loss Lb./A because of peg and pod rots	68	85	110	109

Table 2. The effect of method of land preparation, amount of organic litter, and previous crop on yield of peanuts

	Four-year (1959, 1961, 1963, 1965) average yield pods per acre		
	Tifton	Plains	Weighted average
	Lb.	Lb.	Lb.
Tillage			
Moldboard	1,718	1,351	1,508
Disk	1,308	1,363	1,339
Organic Matter			
Residue	1,543	1,376	1,448
Stubble	1,483	1,337	1,400
Previous Crop			
Rye	1,510	1,449	1,475
Corn	1,604	1,325	1,444
Cotton	1,440	1,334	1,380
Soybean	1,498	1,318	1,395

Table 3. Effect of cultural practices on yield and percentage of diseased plants of Virginia Bunch (46-2) peanuts at Holland, Virginia

	Yield per acre — pods							
	1955	1956	1957	1958	1959	1960	1961	Mean
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	
Deep covering, dirting	2,694	3.247	1,632	2,846	2,875	1,818	2,649	2,537
Deep covering, non-dirting	2,924	4,142	2,173	3,787	3,688	2,149	2,903	3,109
Mean	2,790	3,695	1,904	3,317	3,282	1,984	2,776	2,821
Surface mulching, dirting	2,729	2,322	1,094	2,584	2,119	1,379	2,119	2,049
Surface mulching, non-dirting	3,134	3,698	1,717	3,364	3,107	1,942	2,617	2,797
Mean	2,931	3,010	1,405	2,974	2,613	1,661	2,368	2,423
Mean, dirting	2,712	2,785	1,363	2,715	2,497	1,599	2,384	2,293
Mean, non-dirting	3,029	3,920	1,945	3,576	3,398	2,046	2,760	2,953
	Percent of stand infected							
Deep covering, dirting	5.1	20.0	46.4	25.6	26.2	15.4	40.3	25.6
Deep covering, non-dirting	0.8	4.8	4.7	3.4	10.3	0.5	2.8	3.9
Mean	3.0	12.4	25.5	14.5	18.3	8.0	21.6	14.8
Surface mulching, dirting	7.8	39.2	75.8	26.7	48.3	18.3	45.3	37.3
Surface mulching, non-dirting	0.8	10.1	16.2	3.4	16.4	0.5	9.4	8.1
Mean	4.3	24.6	48.0	15.1	32.4	9.4	27.4	23.0
Mean, dirting	6.5	29.6	61.1	26.2	37.2	16.9	42.8	31.5
Mean, non-dirting	0.8	7.5	10.5	3.4	13.4	0.5	6.1	6.0

Table 4. Effect of cultural practices on yield and percentage of diseased plants of Virginia Runner (56-R) peanuts at Holland, Virginia

	1958	1959	1960	1961	Mean
	Yield per acre — pods				
	Lb.	Lb.	Lb.	Lb.	
Deep covering, dirting	2,929	2,468	1,514	2,282	2,298
Deep covering, non-dirting	3,684	2,817	2,044	2,848	2,848
Mean	3,307	2,643	1,779	2,565	2,573
Surface mulching, dirting	2,747	2,033	1,172	2,066	2,005
Surface mulching, non-dirting	3,511	2,497	1,706	2,436	2,538
Mean	3,129	2,265	1,439	2,251	2,271
Mean, dirting	2,838	2,251	1,343	2,174	2,152
Mean, non-dirting	3,598	2,657	1,875	2,642	2,693
	Percent of stand infected				
Deep covering, dirting	14.5	27.6	15.3	49.7	26.8
Deep covering, non-dirting	3.9	12.8	2.5	8.1	6.8
Mean	9.2	20.2	8.9	28.9	16.8
Surface mulching, dirting	14.8	39.3	12.4	45.0	27.9
Surface mulching, non-dirting	4.4	23.8	2.5	12.8	10.9
Mean	9.6	31.6	7.5	28.9	19.4
Mean, dirting	14.7	33.5	13.9	47.4	27.4
Mean, non-dirting	4.2	18.3	2.5	10.5	8.9

Table 5. Effects of method of land preparation and dirting on yield of Virginia 67 Bunch peanuts and Early Runner peanuts, Headland, Alabama

	Deep covering		Surface mulching	
	3-year average 1957-59	1960	3-year average 1957-59	1960
	Yield per acre — pods			
	Lb.	Lb.	Lb.	Lb.
	Virginia Bunch 67			
Dirting	1,202	1,839	1,286	1,488
Non-dirting	1,200	1,960	1,312	1,597
Average	1,201	1,900	1,300	1,543
	Early Runner			
Dirting	1,143	2,093	1,104	1,531
Non-dirting	1,122	2,275	1,142	1,839
Average	1,133	2,184	1,123	1,685

Table 6. Average yields of unfertilized peanuts planted at different dates, Georgia Coastal Plains Experiment Station, Tifton, 1934-1943[a]

Planting date	Yield of unshelled nuts per acre	
	Spanish	North Carolina Runner
	Lb.	Lb.
March 15	1,388[b]	1,925[c]
April 1	1,338	1,860
April 15	1,335	1,804[c]
May 1	1,244	1,590
May 15	1,062	1,313
June 1	645	866

[a]No fertilizer used. Tests followed a general rotation of field crops.
[b]8-year average, no data for 1934 and 1935.
[c]9-year average, no data on March 15 planting in 1934 or on April 15 planting in 1943.

Table 7. Average yields of Spanish peanuts planted at different dates at various locations in Alabama, 1943-1946

Location	Years	Average yield pods per acre[a]		
		1st planting[b]	2nd planting	3rd planting
	Number	Lb.	Lb.	Lb.
Fairhope	2	1,657	2,264	2,109
Prattville	3	1,096	981	840
Auburn	4	1,016	1,154	983
Alexandria	2	1,706	1,345	1,091
Crossville	4	1,699	1,729	1,562
Belle Mina	1	1,940	1,941	1,781
Average		1,426	1,477	1,305

[a]Yields are average of four plots; planting rate per acre 90 pounds of hand-shelled, and 60, 90 and 135 pounds of unshelled seed, respectively.
[b]Plantings made at approximately 15-day intervals, first planting at about the average date of last killing frost at each location and varied from March 9 at Fairhope to April 17 at Crossville.

Table 8. Effect of time of planting and digging Jumbo Runner peanuts on yield of fruit, Holland, Virginia

Planting date	Digging date	Pod yield in various years, lb./A				
		1952	1953	1954	1955	Mean
April 22	September 26	3,660	2,684	4,233	2,928	3,376 b*
	October 5	4,444	2,905	4,668	3,196	3,803 ab
	October 15	4,189	3,254	4,429	3,450	3,831 ab
May 2	September 30	4,599	3,219	4,919	3,721	4,115 a
	October 10	4,451	3,664	4,631	3,449	4,048 a
	October 21	3,849	4,354	4,735	3,071	4,002 a
May 12	October 5	3,912	3,265	4,271	3,057	3,626 ab
	October 15	4,239	3,240	4,695	3,234	3,852 ab
	October 25	4,251	4,073	4,417	3,032	3,943 ab
May 22	October 10	4,011	2,916	4,483	2,948	3,589 ab
	October 21	3,887	2,976	4,759	3,080	3,675 ab
	October 30	3,687	3,023	4,817	3,378	3,726 ab

*Mean yields followed by the same letter are not significantly different at the 5 percent level.

Table 9. Mean yields and percentage SMK of Spanish peanuts in the time of planting studies, Stratford, Oklahoma, 1960-1962

Treat. No.	Approximate time planted	Pod yield — pounds/acre				Percentage SMK			
		1960	1961	1962	Mean	1960	1961	1962	Mean
1	April 20	1,812	1,779	1,257	1,616	75.0	64.7	58.7	66.1
2	May 1	1,690	1,540	1,332	1,521	75.0	64.0	59.3	66.1
3	May 10	1,804	1,690	1,892	1,795	75.0	61.0	61.7	65.9
4	May 20	1,559	1,485	1,892	1,645	74.0	58.3	65.3	65.9
5	June 1	2,047	1,322	1,590	1,653	77.0	64.6	72.0	71.2
6	June 10	1,063	926	2,316	1,435	61.0	64.3	68.0	64.4
7	June 20	899	954	2,316	1,390	61.0	62.3	66.7	63.3
8	July 1	798	763	1,196	919	61.0	59.3	66.3	62.2
9	July 10	670	381	1,090	714	70.0	51.0	59.7	60.2

Table 10. Effect of bed heights on peanut yield, Yoakum, Texas

Year	Average pounds pods per acre			
	Type of bed			
	Furrow	Beds Low 0-2"	Beds Medium 3-4"	Beds High 5-6"
1963	1,304	1,883	2,126	1,983
1964	2,136	2,281	2,472	2,746
1965	3,059	3,041	3,241	3,570
Mean	2,166	2,402	2,613	2,766

The peanuts were irrigated.

Table 11. Average acre yields of peanuts and peanut hay, Arkansas Agricultural Experiment Station, Fayetteville, 1931-1934 and 1937-1941[a]

Variety and spacings	Average acre yield 1931-34		Average acre yield 1931-1934 and 1937-1941	
	Nuts	Hay	Nuts	Hay
Inches	Lb.	Tons	Lb.	Tons
Valencia[b]				
36 x 8	1,494	2.34	1,316	2.03
36 x 12	1,442	2.25	1,249	1.98
30 x 16	1,284	2.08	—	—
30 x 8	1,394	2.58	1,395	2.25
30 x 12	1,286	2.54	1,260	2.19
30 x 16	1,230	2.28	—	—
White Spanish[c]				
36 x 8	2,520	2.98	2,160	2.60
36 x 12	2,412	2.98	1,873	2.39
36 x 16	2,277	2.94	—	—
30 x 8	2,425	3.20	2,101	2.75
30 x 12	2,331	3.17	2,037	2.69
30 x 16	2,213	3.31	—	—

[a]Crop failures in 1935 and 1936 not included.
[b]Tennessee Red substituted for Valencia in 1941.
[c]Improved Spanish used in tests, 1937-1940.

Table 12. Effect of spacing on yields of Dixie Spanish and Early Runner peanuts and hay for three years, Marianna, Florida

Row spacing	Yield of peanuts and hay							
	Lb. of unshelled nuts/acre				Lb. of hay/acre			
	1960	1961	1962	Avg.	1960	1961	1962	Avg.
				Dixie Spanish				
12″	4,110	3,730	4,410	4,080	7,250	6,600	7,960	7,270
18″	3,950	3,550	3,930	3,810	6,020	6,120	6,580	6,240
24″	4,040	3,790	3,540	3,790	5,690	4,820	5,900	5,470
36″	3,530	3,580	3,240	3,450	4,700	3,910	5,790	4,800
				Early Runner				
12″	3,830	3,920	3,880	3,870	7,140	5,150	6,720	6,340
18″	3,880	3,990	3,660	3,840	7,090	4,560	5,720	5,790
24″	3,800	3,990	3,660	3,810	6,390	4,420	5,950	5,590
36″	3,560	3,950	3,670	3,660	5,260	3,170	4,900	4,440

Table 13. Average yields of Spanish peanuts in spacing test at the Georgia Coastal Plain Experiment Station, Tifton, 1930-1936

Spacing		Yield of unshelled nuts per acre
Between row	In row	
Inches	Inches	Lb.
36	3	1,393
36	6	1,360
36	12	1,212
36	18	1,131
36	24	932
6	6	1,509
18	6	1,561
24	6	1,503
30	6	1,356
36	6	1,139

Table 14. Results of peanut spacing tests, Upper Coastal Plain Station, Rocky Mount, North Carolina[a]

Distance between Hills	Plant per Hill	Yield per acre	Grade and Class	Unshelled nuts			Shelled nuts			Total Shelling Percentage
				Jumbo	Fancy	Total Hand-picks	Large	Medium	Total large and medium	
Inches	Number	Lb.		Percent	Percent	Percent	Percent	Percent	Percent	Percent
4	1	1,544	3B	18.4	24.7	43.1	14.0	44.6	58.6	64.1
8	1	1,389	3B	20.0	31.1	51.1	16.1	40.5	56.6	61.4
12	1	1,311	3B	20.9	30.6	51.5	13.3	40.6	53.9	60.4
16	1	1,206	2C	22.7	27.7	50.4	13.0	40.3	53.3	59.6
8	2	1,583	3B	19.5	29.1	48.6	14.9	41.3	56.2	60.9
12	2	1,532	2B	23.7	28.2	51.9	14.0	41.6	55.6	61.0
16	2	1,430	2B	21.8	27.1	48.9	14.7	40.4	55.1	60.5

[a]Conducted during seasons of 1929-1931 and 1936-1937 with Virginia Bunch and Jumbo Runner varieties.

Table 15. Average yields of peanuts at different spacings in tests at Upper Coastal Plain Station, Rocky Mount, North Carolina, 1943 and 1944

Distance between hills	Average yields per acre, variety and row width							
	North Carolina 31				Spanish 2B			
	18"	24"	30"	36"	18"	24"	30"	36"
Inches	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
4	1,974	1,876	1,470	1,358	1,862	1,610	1,106	1,330
8	1,732	1,616	1,377	1,435	1,519	1,439	1,175	1,320
12	1,503	1,506	1,280	1,160	1,339	1,328	1,213	1,093
16	1,353	1,351	1,288	1,069	1,162	920	924	998

Table 16. Average yields per acre of nuts and forage from Spanish peanuts planted on Lake Charles clay and clay loam at different spacings, Texas Substation No. 8, Lubbock, Texas, 1919-1923 and 1925[a]

Spacing between plants[b]	6-year avg.	
	Nuts	Forage
Inches	Lb.	Tons
6	1,488	1.78
9	1,362	1.62
12	1,260	1.51
15	1,194	1.20
18	1,053	1.34

[a]No yield shown for 1924.
[b]36-inch rows.

Table 17. Average yields per acre of Spanish peanuts from different spacings of plants, Texas Substation No. 3, Angleton, Texas, 1916-1918

Spacing of plants in row	Average yield of pods
Inches	Lb.
6	2,754
9	2,470
12	2,493
18	2,373
24	1,840

Table 18. Yield per acre of Virginia 56-R Runner and Virginia Bunch 46-2 peanuts planted with various spacings, Holland, Virginia, 1957-1959

Row spacing on 72" bed			Yield of pods per acre			
			Year			
No. rows	Distance between rows	Space between plants	1957	1958	1959	3-year avg.
	Inches	Inches	Lb.	Lb.	Lb.	Lb.
Virginia 56-R Runner						
2	36	6	2,849	3,230	2,762	2,946
3	18	6	3,076	3,316	2,414	2,935
3	18	9	3,010	3,196	2,508	2,904
4	12	6	3,124	3,212	2,274	2,869
4	12	12	3,185	3,189	2,526	2,966
Virginia Bunch 46-2						
2	36	6	3,083	3,253	2,862	3,065
3	18	6	3,264	3,768	2,600	3,211
3	18	9	3,364	3,654	2,574	3,197
4	12	6	3,636	3,523	2,571	3,243
4	12	12	3,326	3,600	2,658	3,194

Table 19. Approximate quantities of peanuts needed to plant one-acre at different spacings

Variety	Hill spacing	Amount of seed needed at five different row widths									
		18-inch row		24-inch row		30-inch row		36-inch row		42-inch row	
		Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	Inches	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Spanish	3	89	215	67	161	55	129	45	108	—	—
Spanish	6	45	107	34	81	27	65	22	54	—	—
Spanish	8	34	81	25	61	20	48	17	40	—	—
Spanish	10	27	65	20	48	16	39	13	32	—	—
Spanish	12	22	54	17	40	13	32	11	27	—	—
N. C. Runner	6	—	—	47	118	37	94	31	78	27	67
N. C. Runner	8	—	—	35	88	28	71	23	59	20	50
N. C. Runner	10	—	—	28	71	22	57	19	47	16	40
N. C. Runner	12	—	—	23	59	19	47	16	39	13	34
N. C. Runner	14	—	—	20	50	16	34	13	33	11	29

Table 20. Average number of plants per 100 feet of row and average yield of Spanish peanuts when planted at different dates, using different rates and conditions of seed: Various locations, Alabama, 1943-1946[a]

Weight of seed in shell — pounds per acre	Conditions of seed when planted	Average number of plants per 100 feet of row[b]			
		First planting	Second planting	Third planting	Average all dates of planting
90	Hand shelled	298	351	320	323
90	Unshelled	319	319	277	306
135	Unshelled	422	406	364	397
Average by plantings		346	359	320	342
		Average yield in pounds per acre[c]			
90	Hand shelled	1,406	1,513	1,236	1,385
90	Unshelled	1,473	1,471	1,291	1,412
135	Unshelled	1,425	1,405	1,275	1,368
Average by plantings		1,435	1,463	1,267	1,388

[a]First planting was about the date of the last killing frost and varied from March 9 in extreme southern Alabama to April 17 in northern Alabama. The other plantings were made at 2-week intervals following the first planting.

[b]Average of 23 tests at the eight following locations: Fairhope, Brewton, Headland, Prattville, Auburn, Alexandria, Crossville and Belle Mina.

[c]Yield data from 14 tests at six following locations: Fairhope, Prattville, Auburn, Alexandria, Crossville and Belle Mina.

Table 21. Field emergence of Spanish peanut seed types, Georgia Coastal Plain Experiment Station, Tifton, Georgia, 1942-1944

Year	Seed type				
	No. 1 hand shelled	No. 1 machine shelled	Unshelled	Medium pegs	Small pegs
	Percent	Percent	Percent	Percent	Percent
1942	87	83	64	66	53
1943	76	62	39	51	40
1944	88	82	61	83	78

Table 22. Effect of time of shelling and seed treatments on the emergence of hand-shelled and machine-shelled runner peanuts, Main Station, Auburn, 1946

Method of shelling	Seed treatment	Percentage of emergence of plants from seed shelled at four different periods prior to planting			
		9 weeks	6 weeks	3 weeks	1 day
		Percent	Percent	Percent	Percent
Hand	None	71	80	80	80
Hand	2 Percent Ceresan	85	86	82	86
Machine	None	64	64	51	44
Machine	2 Percent Ceresan	80	79	83	80

Table 23. Influence of inoculation and of fertilizers on hay and nut yields of Spanish peanuts, Main Station, Auburn, Alabama, 1940-1941

Fertilizers per acre[a]		Inoculation	Yields per acre	
			Hay	Nuts
	Lb.		Lb.	Lb.
None		—	1,504	1,102
None		+	1,493	1,117
Superphosphate	320			
Muriate of potash	50	—	1,408	1,097
Superphosphate	320			
Muriate of potash	50	+	1,702	1,281

[a]Fertilizers applied in row before planting 70 pounds of shelled nuts per acre.

Table 24. Weed control tests, Yoakum, Texas

Treatment[1]	Yield pods per acre		Mean
	1963	1964	
	Lb.	Lb.	Lb.
Check weeds allowed to grow	1,153	1,154	1,154
Check hand weeded	1,581	2,036	1,808
Herbicide	1,935	2,668	2,302
Herbicide and hand weed	2,079	2,777	2,428

[1]The peanuts were irrigated as needed.

Table 25. Results obtained in peanut irrigation studies in Oklahoma

Moisture level when irrigated	Yield pods per acre				
	1956	1957	1958	1959	Mean
	Lb.	Lb.	Lb.	Lb.	Lb.
Not irrigated	213	1,220	2,657	1,014	1,276
Irrigated at 6 atmospheres	892	1,624	2,821	2,257	1.899
Irrigated at 2 atmospheres	1,379	2,396	2,919	2,207	2,225
Irrigated at 1 atmosphere	2,121	2,148	2,951	2,306	2,382

Table 26. Results of rate of irrigation of peanut tests, Pearsall, Texas, 1964

Irrigation Rate[1] Inches	Yield pods Lb./A
6	3,385
3	3,708
2	4,159
0	896

[1]A total of 11 applications were made. The interval of application was 7 to 14 days.

Table 27. Results of frequency and rate of irrigation of peanuts test, Pearsall, Texas, 1967

Irrigation Rate	7 day	10 day	13 day	Mean
Inches	Yield pods Lb./A			
2.4	3,394	2,844	2,207	2,815
3.0	3,991	3,478	3,350	3,607
4.2	3,492	3,219	3,685	3,504
Mean	3,626	3,219	3,081	3,309

Table 28. Effect of irrigation on different varieties of peanuts, Tifton, Georgia, 1956

Test and treatment	Yield per acre	
	pods	SMK
	Lb.	Percent
Not irrigated[1]	1,681	58
Irrigated at 0.8 Atm.	2,355	70
Irrigated at 0.3 Atm.	2,460	73
Irrigated on Plant appearance	2,413	73
PEANUT VARIETY TEST		
SE Runner 56-15		
Not irrigated	1,787	65
Irrigated at 0.3 Atm.	2,195	75
Dixie Spanish		
Not irrigated	1,684	70
Irrigated at 0.3 Atm.	2,151	75
Va. Bunch 67		
Not irrigated	1,633	69
Irrigated at 0.3 Atm.	1,953	72
Va. Bunch G-2		
Not irrigated	1,872	54
Irrigated at 0.3 Atm.	2,147	69

[1]Southeastern Runner 56-15 variety.

Table 29. Effect of irrigation levels on yield and quality of Early Runner peanuts at Tifton, Georgia

Year	Irrigation treatment			Plant appearance
	None	0.8 atmos.	0.3 atmos.	
	Pods recovered by conventinoal harvest methods (Lb/A)			
1961	2,809	3,282	3,214	3,368
1962	1,563	2,767	2,463	2,759
1963	3,238	3,805	3,805	3,680
Mean	2,537	3,285	3,161	3,269
	Total pods produced (pods harvested plus pods left in the soil)			
1961	3,257	4,272	4,557	4,361
1962	1,748	4,442	4,918	4,281
1963	3,238	3,805	3,805	3,680
Mean	2,748	4,173	4,427	4,107
	Percent SMK from conventional harvest			
1961	63.9	74.5	76.2	72.6
1962	62.0	73.2	70.9	72.8
1963	77.6	76.6	78.1	77.8
Mean	67.8	74.8	75.0	74.4

	Water available to plants (inches)							
	Rain-fall	Irrig.	Rain-fall	Irrig.	Rain-fall	Irrig.	Rain-fall	Irrig.
1961	18.50	0	18.50	3.15	18.50	5.54	18.50	2.13
1962	11.82	0	11.82	3.85	11.82	5.35	11.82	2.85
1963	19.66	0	19.66	3.50	19.66	3.50	19.66	3.50

Table 30. Response of peanut varieties to irrigation, Tifton, Georgia

Year	Variety and irrigation treatment pods recovered by conventional harvest methods (Lb./A) Argentine Spanish		Early Runner		Virginia Bunch		N. C. 2		Mean	
	Irrig.	No irrig.	Irrig.	No irrig.	Irrig.	No irrig.	Irrig.	No irrig.	Irrig.	No irrig.
1961	3,407	2,826	2,822	2,200	2,803	2,347	2,841	2,313	2,968	2,422
1962	3,423	1,991	2,578	1,491	2,298	1,491	2,020	1,598	2,580	1,643
1963	2,360	2,344	3,131	2,480	3,080	2,676	3,042	2,484	2,903	2,496
Mean	3,063	2,387	2,844	2,057	2,727	2,171	2,634	2,132	2,817	2,187
	Total pods produced (pods harvested plus pods left in the soil)									
1961	3,407	2,826	3,190	2,538	3,281	3,422	3,548	2,729	3,356	2,879
1962	3,423	1,991	4,415	1,621	4,572	2,002	4,409	1,945	4,205	1,890
1963	2,601	2,378	3,829	2,587	4,339	2,960	4,138	3,100	3,727	2,756
Mean	3,143	2,398	3,812	2,249	4,064	2,794	4,031	2,592	3,763	2,508
	Percent SMK from conventional harvest									
1961	73.5	70.8	74.3	60.5	69.0	62.5	70.5	49.1	71.8	60.7
1962	74.7	72.5	72.1	64.0	72.3	57.8	75.4	51.7	73.6	61.5
1963	77.1	77.2	79.0	77.0	76.2	74.9	77.4	76.1	77.4	76.3
Mean	75.1	73.5	75.1	67.2	72.5	65.1	74.4	58.9	74.3	66.2

Table 31. Effect of frequency of irrigation on peanut[1] yields, Marianna, Florida, 1966

Irrigation Intervals	Pods Pounds per Acre
Check	1,779
1″ water at 10½ day intervals	2,388
1″ water at 7 day intervals	2,468
1″ water at 3½ day intervals	2,381
Water often enough to prevent wilting	1,583

[1]Early Runner variety in 36″ rows.

Table 32. Effect of irrigation[1] on peanuts, Headland, Alabama

	Pods per acre				
	1959	1960	1961	1962	Avg.
	Lb.	Lb.	Lb.	Lb.	Lb.
Irrigated	1,607	1,669	1,742	2,086	1,776
Non-irrigated	1,229	1,724	1,887	2,115	1,739

[1]Irrigation was applied as surface water at the rate of 2″ each time the water level in an evaporation pan dropped 1½″.