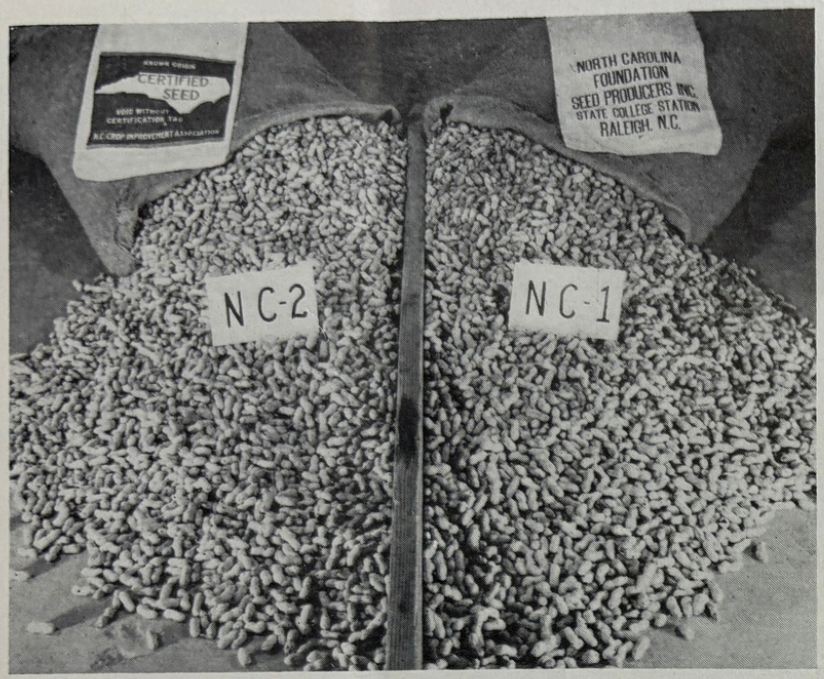
Bailey

Peanut Production Guide

For North Carolina Farmers

A N. C. STATE COLLEGE PUBLICATION



Research is aiding the peanut grower. Two new varieties of Virginia Bunch peanuts (above) were released by the N. C. Agricultural Experiment Station in January, 1953. Certified seed should be available to farmers for the 1954 planting season. Both varieties have shown up well in comparison to farmers stock peanuts. (See page 4.)

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PEANUT PRODUCTION GUIDE

FOR NORTH CAROLINA FARMERS

Peanut production in North Carolina has a long history dating back to pre-Civil War days. Although only 18 counties located in the Northern Coastal Plains area produce peanuts commercially. it is still the third ranking cash crop in North Carolina.

In 1953 North Carolina peanut growers planted over 175,000 acres of peanuts that should sell for over $20,000,000. This represents over 65 per cent of the nation's Virginia Bunch type and 10 per cent of all peanuts produced in this country. In addition, peanut hay is a valuable by-product of the crop and most farm stock in the peanut section are wintered on this type of feed.

Most of the peanuts grown in North Carolina are the large seeded bunch and runner varieties. Most of the runners are produced east of the Chowan River in the counties of Chowan, Perquimans and Gates. Virginia Bunch peanuts rank first in all other major peanut producing counties.

Despite the commercial importance of the peanut crop, many production problems have not been brought under control by the farmer. In fact, the average yield of peanuts are no higher than several decades ago which is in marked contrast to other common field crops. There has been, however, many improvements made in production methods, and where all of these have been employed, the yield has been doubled and even tripled.

An extensive research program has been under way in recent years at the North Carolina Experiment Station in order to clear up many of the problems connected with the production of peanuts. From these tests many new ideas have arisen and improvements have been recommended for all production practices. The following pages will summarize these practices.

While it is recognized that these practices are not the final word in peanut production, it is felt that by adopting these practices most farms will show a considerable increase in yields. This is the best known way to increase yields and improve the quality of the crop. The way is now open for North Carolina to put peanut production on a level with the other cash crops.

Varieties

In recent years work has been stepped up to improve the varieties of peanuts being grown. The North Carolina Agricultural Experiment Station released two new varieties, NC-1 and NC-2, in 1953, the first certified peanuts ever to be released by the North Carolina station. The release of new varieties from a well organized breeding program should prove a great aid to North Carolina peanut production.

Variety tests conducted by county agents in the principal peanut counties in 1952 show the marketing quality and return per acre of the two new varieties, NC-1 and NC-2, in comparison with farm stock peanuts (Table 1).

There is considerable interest among peanut growers in good seed peanuts. Two ways in which growers can get these seeds are: (1) Produce or buy seed peanuts that have been developed through a careful program of hill selecting and testing; (2) Buy certified seed that have been bred and tested for high yield and quality. These seed can be kept pure by preventing mixing when the peanuts are dug, threshed and shelled.

The peanut is a self pollinated plant. Most of the mixing is mechanical (digging, threshing, shelling) rather than by cross pollination in the field. A peanut variety should stay almost pure unless there is some mechanical mixing. This characteristic makes it fairly simple for a careful peanut grower to maintain the quality of his seed for several years.

The two new varieties just released produce good yields of high quality peanuts, but peanut breeders are continuing their search for new, improved varieties. Higher yielding, better quality varieties can be expected within the next few years.

TABLE 1. MARKETING QUALITY COMPARISON OF NC-1 AND NC-2 WITH FARM STOCK PEANUTS

Variety	Sound Mature Kernels (%)	Damaged Kernels (%)	Hulls (%)	Fancy Size (%)	Extra Large Kernels (%)	Support Price (100 lbs.)	Yield (Lbs. Per Acre)	Value (Per Acre)
NC-1	65	1	29	79	34	$12.51	2627	$328.64
NC-2	68	2	27	69	37	$12.87	2657	$341.96
Farm Stock	64	1	30	65	28	$12.01	2411	$289.56

Soils

An ideal soil for peanuts is a well-drained, light-colored, loose, friable sandy loam.

Probably not more than 50 per cent of the peanuts grown are planted on what would be classified as an ideal soil. Soils high in organic matter or clay content may stain the pods to such an extent as to lower the market value of the crop—even though such soils may produce satisfactory yields. Peanuts may also be more difficult to harvest in soils with high clay content.

Peanuts have a long tap root very much like alfalfa. They must be grown on well aerated soils with good drainage. Even under favorable conditions it is difficult at times to secure good stands of peanuts. In wet, poorly-drained soils, it is almost impossible to get satisfactory stands.

Soils with desirable physical properties are generally low in organic matter and reserves of plant nutrients. The fact that peanuts are grown on soils of low native fertility serves to emphasize the need for an extremely careful program of fertilization and management in order to maintain a high level of production.

Fertilization

The main fertilization problem with peanuts is supplying enough potash and calcium. Other fertilizer material seldom increase yields on soils where peanuts are grown in rotation with well fertilized crops such as corn and cotton.

The first step is to have the soil tested and to follow the recomendations. A discussion of the plant nutrients and their effect on peanuts is given below.

POTASH

Peanuts have long had a reputation for being "hard on the land." Recent studies at the North Carolina Experiment Station have indicated that where diseases and nematodes are not problems the harmful effect of peanuts on soil productivity is due primarily to the removal of large amounts of potash.

The generally low level of potash in peanut fields is indicated in a recent summary of soil analyses by the Soil Testing Division of the North Carolina Department of Agriculture. This summary shows that almost 2/3 of all the soil samples from the 9 principal peanut producing counties were "low" or "very low" in potash (Table 2).

TABLE 2. POTASH LEVELS OF SOIL SAMPLES FROM NINE PRINCIPAL PEANUT COUNTIES

County	No. Samples	Potash — % of Soils Testing				
		Very Low	Low	Med.	High	Very High
Bertie	332	9	57	24	6	4
Chowan	105	6	58	26	6	3
Edgecombe	121	6	59	29	4	2
Gates	157	14	48	24	7	7
Halifax	141	6	52	35	4	3
Hertford	106	6	51	26	2	5
Martin	78	5	50	23	12	9
Northampton	342	8	54	27	5	6
Perquimans	142	7	51	28	8	6
Total	1524	8	54	27	6	5

On soils very low in potash, peanuts may respond to direct applications of potash fertilizers. On such soils it is desirable to apply 150 pounds muriate of potash (75 lbs. K_2O) either as a broadcast application before planting, or in bands 2 to 3 inches to the side and 1 to 2 inches below the seed at planting. The same amount of K_2O is supplied by 535 pounds of 0-14-14 or 375 pounds 0-10-20. It is obvious that the latter materials would be more expensive and show little advantage over 50-60 per cent muriate of potash.

Adequate levels of potash can be maintained for peanuts, and better yields of all the crops are produced, if larger than normal rates of potash are applied to the other crops in the rotation. For example, in a 2-year rotation of cotton and peanuts, it is better to apply 80 pounds of potash (K_2O) to the cotton and none to the peanuts than to apply 40 pounds to each crop. (80 lbs. potash is equivalent to 160 lbs. 50% muriate of potash, or the potash in 800 lbs. 5-10-10 fertilizer.)

CALCIUM

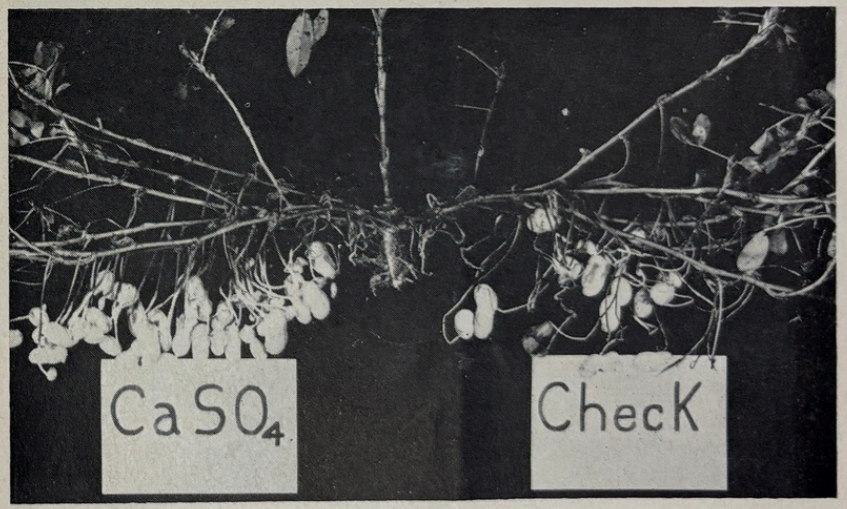
Growers have long followed the practice of applying lime or land plaster (gypsum) to peanuts. Both materials supply calcium, which promotes kernel development and reduces the number of "pops" or unfilled pods. The preference for lime or land plaster depends on the acidity of the soil. Lime neutralizes soil acidity and would be preferred on soils which have not been adequately limed. Land plaster is neutral and would be preferred where additional soluble calcium is needed on a soil which has

been adequately limed. Continued use of lime on adequately limed soils results in manganese deficiency, characterized by yellow foliage and reduced yields.

Calcium is absorbed by the developing fruit or pods as well as by the roots. It is relatively immobile in the plant and does not move in sufficient quantities from the roots to produce well filled nuts. To be most effective, calcium must be in the vicinity of the developing pods.

Best results have been obtained with land plaster when it is applied as a topdressing when the plants begin to bloom. This is usually around the first week in July. The material falls around the base of the plant and is worked and leached into the area where the fruit is formed. An application of 400 to 600 pounds per acre is considered to be sufficient. It is important to apply this early (around July 1) so the calcium will be available when pegs begin forming.

Liming materials are most effective when applied broadcast 3 months, or preferably longer, before planting in order to neutralize soil acids before the peanuts are planted. Ideally the soil should be limed to approximately pH 6.1-6.2. Where this is done, sufficient calcium is usually available to meet the needs of the developing fruit. On the sandier soils it may be necessary to add a neutral soluble calcium material like land plaster. The low



Calcium applied to the pegging zone on one side of the peanut plant in tests had very little effect on pod development on the other side of the plant. Peanuts on the left received land plaster ($CaSO_4$); those on the right received no calcium.

level of magnesium in many of the soils on which peanuts are grown makes it desirable to use a dolomitic liming material. Oyster shell lime or potash lime does not supply magnesium needed by other crops in the rotation.

When soils are limed enough to make the soil pH above 6.2-6.3, peanuts commonly show manganese deficiency symptoms and yields may be greatly reduced (see picture). Because of the likelihood of over-liming injury when too much lime is used, soils tests should be made to determine the exact amount needed. Once the desired soil pH has been attained, applications of 1,000 to 1,500 pounds of lime every 3 to 4 years is usually enough to maintain the proper pH and a satisfactory calcium level. Annual applications of such materials as potash lime may bring about an over-limed condition.

Where peanut soils are over-limed, the use of acid forming fertilizer and nitrogen topdressing materials will help reduce the over-limed condition. For example, 80 pounds N applied to corn in the rotation, such as 400 pounds sulfate of ammonia (20.5%N), will reduce the over-liming by 456 pounds of lime per acre. Sulfate of ammonia is available from most fertilizer manufacturers.

Mechanical equipment is now available that will do a good job of applying land plaster to the rows. In the photo land plaster is being applied to 24-inch rows.

Care should be taken to avoid over-liming peanut soils. The stunted, yellow plants in the center were due to manganese deficiency caused by the use of too much lime.

NITROGEN

The peanut is a legume. When properly inoculated it will respond little, if any, to nitrogen fertilizers. When peanuts are grown on the same soil every 2 to 4 years, the seed need not be inoculated before planting. Inadequate inoculation may result in soils on which peanuts have not been grown for 5 years or longer. Under such conditions, seed should be inoculated before planting.

Seed treated with Arasan can be successfully inoculated if the inoculum is applied just before planting.

Nitrogen deficiencies may also occur when peanuts are grown on very acid soils, even though the seed and soil are inoculated. This situation may be corrected by liming the soil to a desirable level (pH 6.1-6.2).

Many growers apply small quantities of nitrogen in mixed fertilizers at planting. A response to this nitrogen may often be observed in early season. By mid-season it is usually difficult to detect any difference in the fertilized and unfertilized plants.

PHOSPHORUS

The peanut has a low phosphorus requirement. Young seedlings may sometimes develop phosphorus toxicity symptoms when as much as 70 to 100 pounds of phosphate per acre is applied at planting (equivalent to the phosphate in 750-1,000 lbs. 0-10-20). Little response to phosphatic fertilizers has been observed with

peanuts except on soils which were extremely deficient in this element. When other crops grown in rotation with peanuts are fertilized adequately, phosphorus fertilizers give little if any increase in yields.

OTHER NUTRIENTS

Rather widespread deficiency of manganese has been observed with peanuts in fields which have been over-limed. This condition may be overcome by applying sulfur to reduce the pH and to increase the solubility of the manganese. Satisfactory results have been obtained by spraying a solution of manganese sulfate on the leaves or by mixing the material with land plaster.

Numerous experiments have failed to show any general respouse of peanuts to any of the other essential elements. In view of the low fertility of many of the soils on which peanuts are grown, growers should at all times be on the alert for deficiencies of some of the so-called "secondary" and "trace elements." Deficiencies of boron, zinc, copper and other trace elements have been observed with other crops on soils in the peanut area. Until a specific need for fertilizers supplying these elements has been demonstrated, general use of such fertilizers is not rcommended. Additions of these elements, where not needed, may be detrimental.

Spacing

One of the principal factors limiting peanut yields in many areas is the low plant population. The failure of peanuts to respond to many fertilization and management practices may result from plant populations which are only 40-60 per cent adequate because of poor stands or wide rows (see chart on back cover).

Despite the fact that the major portion of the fruit is produced in a circle with a radius of only 4 to 6 inches from the tap root, the large seeded bunch peanuts are normally grown in 34 to 36 inch rows. In peanut spacing studies, yield increase of 600 to 1,200 pounds per acre have been realized by reducing the row width of the Virginia Bunch type peanuts from 36 inches to 24 and 18 inches. Higher yields have also been obtained with the Jumbo Runner variety grown in 36 inch rows instead of 40 to 42 inch rows.

Experiments with the large seeded type have shown little effect of varying the spacing of plants within the row from 4 to 12

inches. To help compensate, however, for poor germination and provide an adequate stand after the loss of plants from insect damage, diseases and cultivation, it is recommended that seed be planted 6 to 8 inches apart in the drill.

Row spacing should be such that you can use the equipment now on the farm. This presents a problem since there are both four-wheel and tricycle type tractors used quite generally on peanut farms.

For the four-wheel tractor, the recommended row spacing is 24 inches. With this spacing, 3 rows can be planted and cultivated at one time using a wheel spacing of 72 inches (see picture). This spacing would also be suitable for cultivating other crops planted in 36 inch rows.

The close-row spacing has been more difficult with the tricycle type tractor. Alternate rows of 17 and 23 inches were used in test work in 1951 and 12 and 28 inches in 1952. The 12 and 28 inch rows were more satisfactory because they gave more room for the large wheels.

Close-row spacing is used primarily to increase yields. However, close planting also aids in weed control and reduces the amount of cultivation.

Rotations

A good rotation is the foundation of a peanut production program. Although there is no single superior peanut rotation, there are several factors which should be considered in the planning of rotations including peanuts.

Grow peanuts in rotation with crops receiving relatively heavy potash fertilization. Supplying enough potash is a major problem in North Carolina because of low native potash reserves.

Grow peanuts in a 3 to 5 year rotation. This helps maintain adequate plant nutrient levels as well as to afford better insect and disease control. Use nematode resistant crops. Cotton, corn and small grains are some of the most desirable crops to use.

There are many indications that insects and diseases, particularly nematodes, are more serious problems with a particular crop when that crop is grown frequently in a rotation. Where nematodes are present, at least a 3 year rotation is desirable. Including less adapted land for peanuts in the rotation may be more profitable than a short rotation on the best adapted soils.

Small grains (for grain) fit in well after peanuts since the crop is harvested early enough to permit seeding the small grain on time. In addition, essentially no crop residues are left on the land following the peanut crop, and fall planted small grain provides some protection over the winter.

Corn fits in well just before peanuts since the large amounts of stover may serve to maintain a better physical condition, particularly in the fine textured soils. Cotton is also a desirable crop to use just before peanuts, since it is resistant to the peanut nematode. Lespedeza, tobacco or soybeans should not be grown just before peanuts, since these crops increase the nematode population.

Weed Control

The control of weeds is a major factor in peanut production. The primary purpose in cultivating and hoeing is for weed control because of the following factors:

1. Weeds compete with peanuts for light, moisture and fertilizer. The fewer weeds, the more peanuts.
2. Weeds may harbor diseases and insects. A healthy plant is needed for best production.
3. Weeds seriously interfere with harvesting. Since harvesting is the most expensive operation in peanut production, a clean crop means more money in your pocket.

METHODS OF CONTROL

There are many methods to control weeds but in every case the time these methods are employed is very important. For best results these suggestions should be followed:

1. Start early. Many weeds can be killed just before and just after the peanuts come up.
2. Cultivate shallow at all times. Most weeds germinate in the top ½ inch of soil.
3. *Do not* cover the peanut plants. Covering the vines will increase loss from Southern Stem rot.

EQUIPMENT

In recent years the rotary hoe has been employed with good results, but the weeder is still used by the majority of growers. A short discussion on the use of these implements is given below.

1. WEEDERS. Long used as an effective tool in controlling weeds. Use just before and just after the peanuts come up.

2. ROTARY HOE. Very effective for early cultivation. Cuts cultivating time at least ¼ and hand hoeing time ½. The following methods and precautions should be followed when using the rotary hoe:

(1) Start early and repeat at 4 to 5 day intervals. The first cultivation should come before the peanuts emerge and the last when blooming begins.

(2) Do not use the rotary hoe just as peanuts are coming up. Excessive damage may occur at this time.

(3) Operate the rotary hoe at a speed of at least 5 miles per hour. This completely pulverizes the soil and kills the small weeds.

(4) Use with sweeps where possible. The gang unit does a good job, but the use of sweeps does a better job.

The picture below shows the equipment for cultivating three 24-inch rows using the rotary hoe attachment and sweep arrangement. The hoe is placed to run over the row and by its rotating action pulverizes the soil. This kills the weeds—most of which germinate in the top layer of the soil—without damage to the peanuts which have deep taproots. The sweeps are set to shed soil to the outside wheels of the rotary hoe attachment. The

The rotary hoe is very effective for early cultivation. Three 24-inch rows are being cultivated using the rotary hoe attachment and sweep arrangement in the photo above.

rotating action of the hoe breaks the soil up and allows the fine particles to sift around the plants.

CHEMICAL WEED CONTROL

Two chemicals show promise in controlling weeds when applied as premergence treatment slightly before or at the time the peanuts begin to crack the ground. Their use at the present time should be limited to trial plots. The kind of weed control obtained will depend upon soil moisture and soil temperature. A light rain before treatment is desirable.

Low volatile esters of 2,4-D when used at 1½ pounds 2,4-D acid per acre should give good weed control for 5 to 7 weeks. This amount may have some effect on growth of leaves when plants first come up.

Dinitro gives good weed control for about the same length of time when used at the rate of 9 pounds active DNOSBP per acre.

At the end of the 4 to 7 week period it is necessary to cultivate to control the weeds which grow after the effects of the chemicals are gone.

Peanut Disease Control

Peanut diseases include seed decay, leafspot, and various stem, root, peg and pod rots.

SEED TREATMENTS

Seed treatment is an inexpensive insurance to prevent seed decay, to insure better stands, and higher yields of nuts. Peanut seed can safely be treated anytime from 90 days before planting up to just before being placed in the planter.

MATERIALS. The recommended peanut seed protectants are listed in Table 3.

TABLE 3. MATERIALS AND RATE OF APPLICATION

Treating Materials (dust)	Rate of Application (Per 100 Lbs. of Seed)
Arasan	3 ozs.
2% Ceresan	4 ozs.
Yellow Cuprocide	4 ozs.
Spergon	4 ozs.

Caution—(1) Do not treat seed with more than one material.
(2) Treated seed not to be consumed by humans, animals, or sold to oil mills.

EQUIPMENT. The barrel treater, commonly used for treating cotton seed, may be used for peanuts if it is turned slowly. A barrel or lard stand with close fitting lid can be used. Most commercial firms which shell peanuts are also equipped to treat seed. When this service is available, it is probably more practical for the grower to have seed peanuts treated at the time they are shelled.

TREATING THE SEED. The steps in the successful application of seed protectants on the farm are:

(1) Fill the container about half full with a known weight of peanut seed.
(2) Carefully measure and add the required amount of treating material.
(3) Tightly close the lid of the container.
(4) Rotate slowly until every seed is uniformly coated.

To be most effective, each peanut seed should be completely covered with a layer of dust.

LEAF-SPOT CONTROL

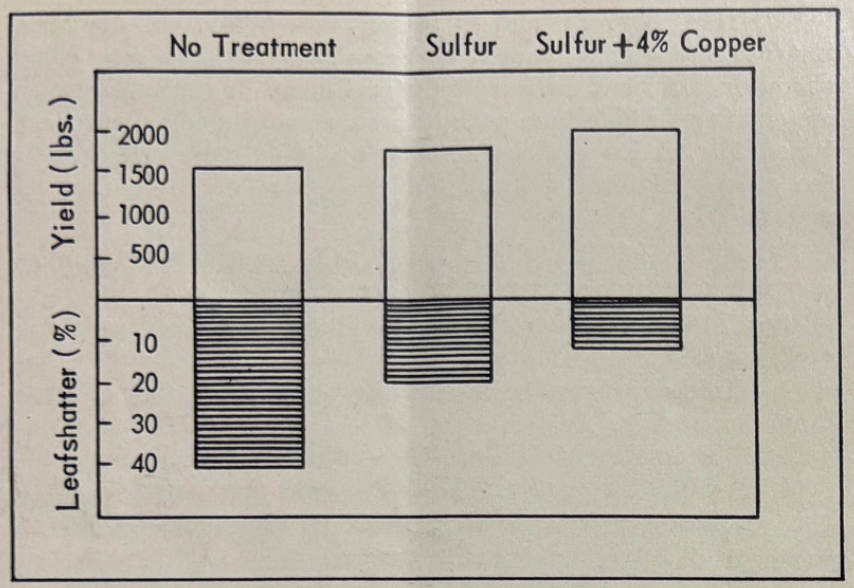
DUSTING PAYS OFF. Leafspot diseases cost North Carolina peanut growers about $7,000,000 each year, or an average of $32 an acre. These diseases can be effectively controlled by dusting with sulfur plus 4 per cent copper at an average cost of $3.50 an acre, or with plain dusting sulfur at an average cost of $1.75 an acre. The increased net value due to either of these treatments is worth over 12 times the cost of the dusts (average 1949-51 prices).

Table 4 is a summary of 37 demonstrations with county agents in major peanut producing counties in northeastern North Carolina, 1949-1951.

With peanuts at 11¾ cents per pound, the average extra income to the grower amounted to $43.73 an acre for sulfur plus 4 per cent copper and $22.92 an acre for plain dusting sulfur.

TABLE 4. SUMMARY OF 37 LEAF-SPOT CONTROL DEMONSTRATIONS, 1949-1951.

Treatment	Leafshatter (%)	Nut Yields Per Acre (Lbs.)	Increase Per Acre Due to Treatment (Lbs.)	($)
Sulfur plus 4% copper	13.3	1986	402	43.73
Sulfur	21.4	1794	210	22.92
No treatment	40.8	1584	-----	------



Dusting pays off in leaf-spot control. Tests show (as charted above) that sulfur alone or sulfur plus 4 per cent copper increases yields and reduces leaf shatter.

In order to receive the greatest profit from your dusted peanuts, delay digging 1 week to 10 days longer than for undusted nuts. Allow the vines to cure for ½ day before stacking.

MATERIALS. The most effective and practical dust for peanut leafspot control is sulfur plus 4 per cent copper dust of 325 mesh or finer.

Plain dusting sulfur of 325 mesh or finer is somewhat less expensive than the copper-sulfur mixture. It gives fair control, but is not as effective as the dust containing copper.

WHEN TO DUST. The first application on bunch and runner type should be made between July 1-10. This application may be made a week or 10 days later on peanuts which were planted very late, or about 2 weeks earlier for Spanish type peanuts. Applications should be made at 14-day intervals until a total of 3 or 4 have been made. This first application should be 15 to 18 pounds per acre and the following applications at approximately 20 pounds per acre. Dusts washed off by rain within 24 hours after application should be repeated as soon as possible.

Apparently the time of day the dust is applied does not greatly influence the effectiveness of the material. Drifting is reduced if dusting is confined to early morning and late afternoon.

EQUIPMENT. Ordinary dusting equipment may be used. The basic requirement is a duster with a strong air blast so the dust will be forced throughout the plant, covering all the leaves.

SOIL-BORNE DISEASES

Diseases caused by organisms which live in the soil and attack that part of the plant under or in contact with the soil are included in the group of soil-borne diseases. They are caused by fungi, bacteria and nematodes. Some of these are wide spread and cause severe losses to peanut growers.

SOUTHERN STEM ROT (*SCLEROTIUM ROLFSII*). This disease is also known as "southern blight," "wilt" and "white mold." It may cause the sudden death of part or all of the plant. A white mold growth or brown sclerotia (seed-like bodies) can be observed about the base of the infected plant (see picture). The disease also attacks many other crops and weed plants.

The disease is nearly always present to some extent in North Carolina peanut fields. At times it is very severe. The factors which cause these outbreaks are not all understood. The cropping history, weather and cultivation of the peanut crop appear to have some effect on the disease. Severe outbreaks are often observed with hilling or bedding of the peanut rows during the late cultivations.

Covering green leaves and stems makes them more susceptible to attack by the disease. The accumulation of dead leaves about the base of the plants due to defoliation by peanut leafspot causes

Southern stem rot, showing the white mold growing about the base of infected plants.

the disease to spread from plant to plant more readily. The mold grows on these dead leaves during damp weather.

Dusting for leafspot control and flat cultivation throughout the growing season will reduce the losses due to southern stem rot.

PEANUT ROOT-KNOT. This disease of peanuts, like root-knot of other crops, is caused by nematodes which feed in the roots of the plant. The peanut root-knot nematode (Meloidogyne hapla) causes the formation of small galls and excessive lateral roots. This results in a matted root system. Peanuts growing in heavily infested soil will make poor and uneven growth and give very low yields. This disease is widespread, occurring in 70 per cent or more of the peanut fields in the peanut producing area of North Carolina.

A 2 year rotation of corn or cotton with peanuts was compared with continuous peanuts in both lightly and heavily nematode infested soil at the Upper Coastal Plain Test Farm, Rocky Mount, N. C. The average yields of peanuts in 1951 are given in Table 5.

In heavily infested soils where peanuts were planted after peanuts, root knot drastically reduced yields. Rotations with corn or cotton greatly reduced the disease and increased the yield of peanuts, even in a 2 year rotation. The root knot was still a limiting factor in the heavily infested soil, indicating the need for a longer rotation in non-susceptible crops. The resistance of all crop plants to this nematode is not known. Certain soybean and lespedeza varieties, tobacco and tomatoes are susceptible, however.

In heavily infested soil it may be necessary to grow non-susceptible crops, such as cotton, corn, small grain and watermelons for at least 2 years between peanut crops. Where the amount of good peanut land is limited and is heavily infested with peanut root-knot nematodes, soil fumigation may be considered. Fumigation may not generally be economical for peanut production, however.

TABLE 5. EFFECT OF ROTATION USING CROPS RESISTANT TO THE PEANUT NEMATODE.

Rotation (Crops)		Peanut Yield (Lbs./A.)	Peanut Yield (Lbs./A.)
1950	*1951*	*Low infestation*	*High infestation*
Cotton	Peanuts	2512	2015
Corn	Peanuts	2634	2038
Peanuts	Peanuts	1382	957

PEG ROTS. The shattering of mature nuts from the vines before and during harvest is usually caused by a decay of pegs. Several organisms cause this condition. Losses due to peg rots are greatly increased by early loss of leaves, inadequate fertilization, and other conditions which lower the general vigor of the plant. Leafspot control and correct timing of digging reduce the losses from peg rots.

OTHER SOIL-BORNE PEANUT DISEASES. Other peanut diseases which occur more locally and are of less importance in North Carolina are bacterial wilt, sting nematode injury, meadow nematode injury, split stem disease, and brown spot of pods.

Peanut Insect Control

The peanut plant is attacked by a number of insect pests. Some of these pests feed on the foliage while others feed on the underground portion of the plant—the pegs, the immature and the mature pods.

SOIL INSECTS

The most important damage to peanuts by insects is on the developing and mature pods. The greatest portion of this damage is caused by the southern corn rootworm. The worm is cream colored with a dark head and tail and may be up to ½ inch long. Rootworms tunnel into the pegs and pods, feeding as they go. Moisture, mold and disease may also enter the tunnels and cause further damage (see picture).

Hard, brown wireworms and white grubs also do considerable damage to pegs and pods. They are usually present in smaller numbers than are the rootworms.

CONTROL. Rootworms may be controlled by the application of one of the following materials to the soil. Applying these insecticides directly to the area around the plants just before the first cultivation with a duster, land plaster or fertilizer applicator has proved both convenient and effective.

1. Aldrin at 2 pounds per acre (40 lbs. 5% dust).
2. Heptachlor at 1½ pounds per acre.
3. Dieldrin at 1 pound per acre.

Toxaphene at 20 pounds per acre has also proven effective. However, it is difficult to apply sufficient insecticides in a single application, and the effects of this application on the taste of a succeeding tobacco crop are not yet known.

A mature plant damaged by rootworms.

These materials should also control wireworms and grubs present in the soil.

Any of these materials may be applied as sprays (liquid) or dusts. Granular (pelleted) materials have given good results. If applied after foliage develops, the pellets will go through and reach the ground. It is the material that reaches the soil that counts.

For this reason granular formulations are preferred over dusts for late applications. If such are unavailable or if the material is to be applied with equipment other than a land plaster applicator or new power duster, dust should be applied more heavily than usual when the air is calm and the foliage is dry.

LEAF-FEEDING INSECTS

Most of the leaf-feeding is done late in the season by corn earworms and fall armyworms. These large worms may completely strip the plant of its leaves. The use of DDT at 1 pound or more per acre (10 lbs. or more of 10% dust) will usually control these pests. Due to the long interval between digging and threshing, the possible residue on the hay is not considered hazardous.

Earlier in the season smaller striped green worms, either the green clover worm or the velvetbean caterpillar, may be found feeding on peanut foliage. These may be controlled by applying ¾ pound DDT per acre (15 lbs. 5% dust). The same means of control may be applied against beetles.

Leafhoppers and plant lice may also attack the stem and leaves by sucking plant juices. This results in a yellowing of the leaves and an unhealthy appearance. Use of DDT, as for the leaf-feeding worms and beetles, will control leafhoppers and certain kinds of plant lice.

THRIPS

Thrips are minute, slender, agile bugs, rarely as long as ⅛ inch. They live in the flowers or on other parts of the plant. These insects may do a great deal of damage late in the summer, although their damage is most severe when plants are young. They may cause a stunting of the plants and a wrinkling of the leaves, often called peanut "pouts." They may be controlled by using ¾ pound DDT in the same way other leaf-feeding insects are controlled.

Harvesting

The fruiting period of a peanut plant is almost as long as the life of the plant itself. However, about 80 per cent of the flowers are produced in the 3-months period following planting. In order to harvest when the maximum number of pods are mature, the fruiting habit of the peanut should be understood. It takes from 65 to 70 days for a peanut flower to develop into a mature pod. When this time is added to the 3-months period given above, it is evident that a period of at least 5 to 5½ months is required for peanut production. For example, peanuts planted on May 10 should normally be ready for harvest by October 10.

Careful examinations should be made frequently near digging time. Pull up some plants and examine the pods. When a peanut is ripe, the veins of the hulls become larger, and the inside of the hull turns dark. The pod is immature if the inside of the hull is white. Since it is impossible to harvest when all the pods are mature, harvest when the majority of pods are ripe. Because of the plant's fruiting habit, this occurs from 5 to 5½ months after planting.

A large amount of labor is needed to dig peanuts. It may take 2 to 3 weeks to dig and stack the entire crop. It may be necessary to dig some before the nuts are ripe and some after the nuts are overripe.

There are many types of machines used in digging peanuts. All work better when peanuts are free of grass and weeds. Some of the implements being used are mold board plow, digging plows with fingers to lift vines from the soil, and digger-shakers that leave vines on top of the ground. Much labor can be saved if shaking attachments are used to shake the dirt from the peanuts. Peanuts should be shaken as free of dirt as possible before stacking.

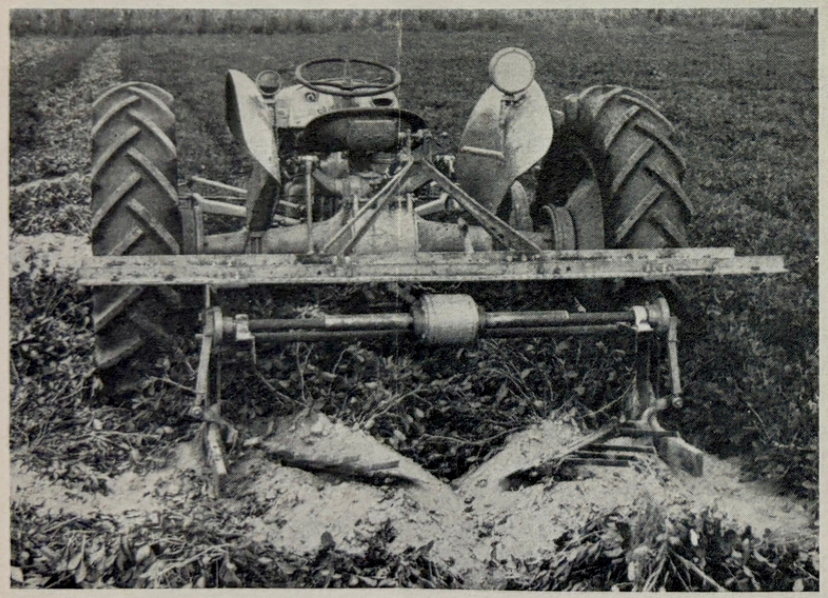
After the peanuts are plowed up, they should be allowed to wilt for 3 to 6 hours before being stacked. Stack the vines around poles which are firmly placed in the ground. Two slats 2 to 3 feet long should be nailed at right angles to the poles 12 to 18 inches

Place poles firmly in ground and nail two slats at right angles to the poles.

above the ground (see picture). The slats form 2 crosspieces on which the first layer of vines is placed. This allows air to circulate under the peanuts and speeds up drying. As the stack is completed, draw it to a point and press a few vines on top of the stack to help shed water. A good job of stacking will mean much brighter, better cured peanuts and hay.

Peanuts are cured in a period of 4 to 6 weeks in the stack, depending on the weather. Peanuts should not be picked until they have dried to a moisture content not to exceed 10 per cent.

Some new harvesting methods are now showing promise in tests. Sixty-five to 75 per cent of the labor in producing a peanut crop is in harvesting. To reduce the cost of production, some of this hand labor must be done by machinery. The present goal of research workers is to completely mechanize peanut harvesting. In 1952 tests, peanuts were dug, shaken and windrowed with machinery. They were allowed to dry in the sun to a moisture content of 20 to 30 per cent. The peanuts were then picked from the windrow using a peanut combine. Additional drying may be necessary using this plan. Harvesting labor requirements were reduced from 36 to 4 man hours per acre by combining peanuts from the windrow.



One of the newest peanut machines on the market is the two-row digger shaker shown above. This machine digs the plants and shakes off most of the soil from the roots.

Peanut Hay

Peanut hay has long been used for winter feeding livestock in North Carolina. In the large commercial peanut producing area of the state, peanut hay makes up the bulk of all hays produced. With the increase in cattle in eastern North Carolina, there will be an increased demand for hay. Peanut hay can help fill this demand. Closer row spacing provides a larger amount of hay than the common row spacing, and may be a factor in production when the crop is utilized both as a nut crop and a hay crop.

Peanut hay properly handled is good feed, but unless properly handled, it can be very poor feed. Good quality peanut hay that will compare favorably with other good legume hays can be produced if the following factors in production of peanut hay are followed:

1. Increase yield and quality by dusting with sulfur to save more leaves.

2. Shake dirt from vines before stacking.

3. Stack carefully so that air will circulate under stack and rain will shed off.

4. Thresh nuts as soon as they are dry. Bale hay as it comes form the thresher—save all the leaves possible.

Closer Spacing Pays

Peanut yields and profits can be increased by closer spacing of the rows. The photo above shows equipment at work planting 24-inch rows. The chart below shows the yield increases you can expect from closer spaced peanut rows. (See pages 10 & 11.)