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Control Stem Rot in Peanuts



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Control Stem Rot In Peanuts*

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Recent research has shown that stem rot of peanuts, sometimes called white mold, wilt, or blight, can be reduced. These practices should be followed to reduce stem rot: cover dead plant material deeply, plant on slight ridges, use herbicides, and cultivate without moving soil onto the plants. These are recognized as good practices even where there is no stem rot problem.

Cause of the Disease

Stem rot of peanuts is caused by the fungus *Sclerotium rolfsii*. This disease attacks the plant at or near the soil line and is easily identified by the white, fuzzy, fungal growth that spreads on stems. The fungus overwinters in the soil on organic matter as small, resting bodies, called sclerotia (Figure 1). These sclerotia germinate under fav-

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Figure 1—Stem rot-infected plant showing the white fungal growth and sclerotia.

orable weather conditions and the fungus spreads rapidly on crop debris left on the soil surface. Crop debris on the surface acts as a bridge between the growing fungus and exposed stems. Peanut leaves and young stems covered with soil are rapidly attacked. Injured portions of the plants present an easy avenue to stem rot infection, which can spread rapidly to all parts of the plant. The fungus will attack the leaves, stems, and pegs of the plant.

Leaves which drop as a result of leaf spot infection will accumulate about the base of plants, forming a mat that is ideal for rapid growth of stem rot fungus. A good leaf spot control program is helpful in eliminating environmental conditions where the fungus may become established.

Most of the nuts from stem rot-infected pegs are released from the plant and left in the soil during harvest. In severely infested fields, 50% to 75% of the peanut crop may be lost.

Seedbed Preparation

It is recommended that previous crop residue, such as corn stalks, be chopped, the soil disked, and a winter cover crop seeded in the fall. The cover crop should then be plowed under in the spring, covering all plant material with at least 4" of soil (Figure 2).



Figure 2—A good job of plowing-under the cover crop is important. Cover crop and all dead crop residue should be covered at least 4" deep.

One or more extra plow attachments, such as jointers or modified jointers, trash cover boards, weed hooks (Figure 3), and covering wires, may be required in deep covering.

Wide plow bottoms (16") are preferred to narrow bottoms (12"-14") for turning under crop residue.

Harrow and drag land to a smooth finish and eliminate all ridges.

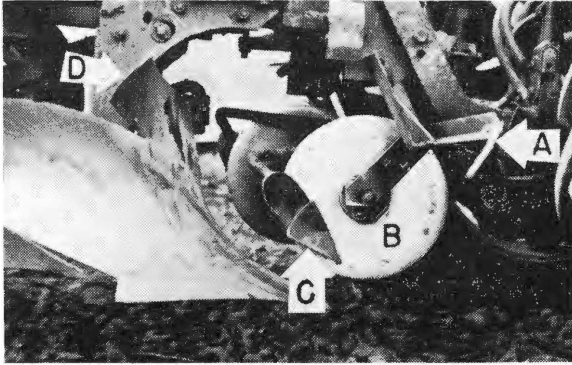


Figure 3—Plow attachments: A—weed hook, B—rolling colter, C—jointer, and D—trash cover boards, are useful to aid in covering trash and crop residue.

Planting Method

Peanut growers in Virginia often plant seed in a furrow (figures 5 & 7) 2" to 3" deep. Since the plants branch just above the soil, branching occurs in the bottom of the furrow when planted by this method. Where this happens, soil moved into the row to cover weeds and grasses also covers the base of the branches. If stem rot is present, a severe outbreak of the disease is likely.

Investigators at the Tidewater Research Station have found it best to plant peanuts on a slightly raised bed (figures 4 & 6) with a small ridge approximately 2" high directly over the seed. In this method, called ridge planting, the branching takes place approximately 4" above the branching point of peanuts planted in a furrow. When planted in this manner and cultivated without movement of soil onto the branches, the peanuts had less stem rot.

Equipment for ridge planting consists of (a) special sweeps (Figure 8) for moving a

small amount of soil from the middle of the rows towards the drill area; (b) special covering knives (Figure 9) to bring in extra soil for forming the peak or ridge; and (c) special wheels (Figure 4) for leveling and

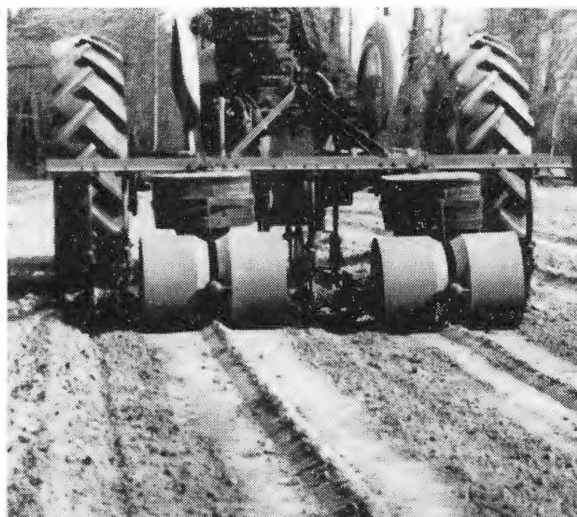


Figure 4—Ridge planting method recommended as an aid for stem rot control. Note wide press wheel attachments on planter.

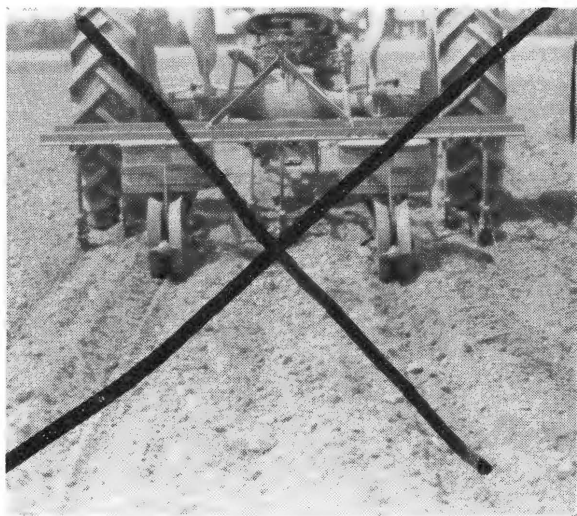


Figure 5—Method of planting in a furrow. Not recommended.

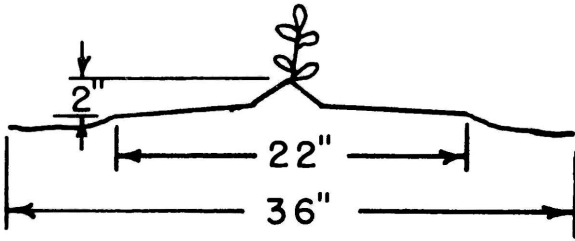


Figure 6—Cross section sketch of ridge planting.

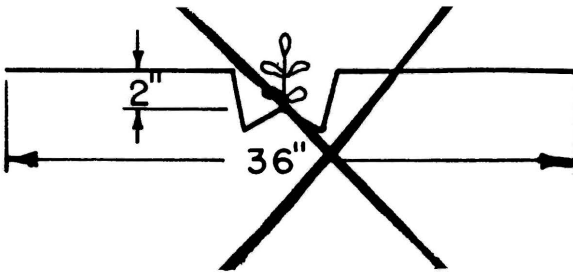


Figure 7—Cross section sketch of furrow planting. Not recommended.

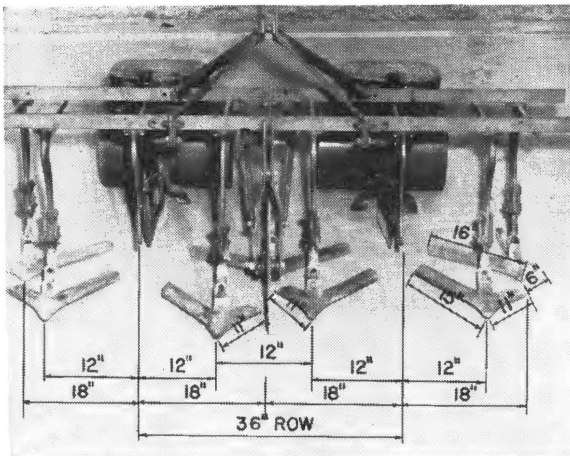


Figure 8—Front view of planter equipped with sweeps for ridge planting — four 18" sweeps in front and three 24" sweeps in rear. Note how the wings of some of the sweeps have been cut off.

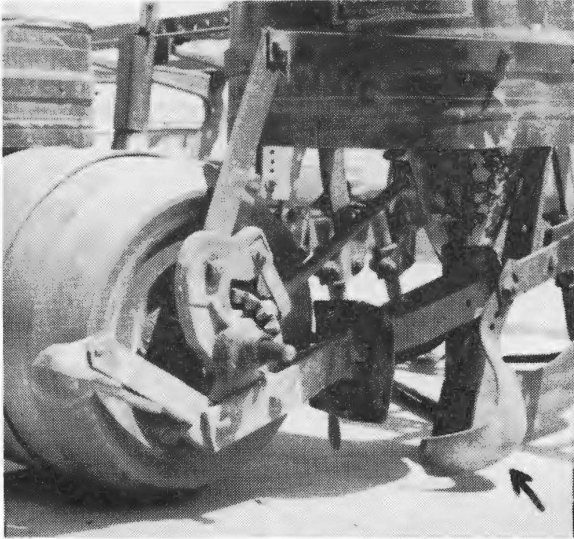


Figure 9—Close-up of planter with right half of the press wheel removed. Arrow points to covering knife.

firming the soil throughout the drill area. The sweeps should be set flat and relatively shallow (approximately 1" to 2") so as not to bring up dead plant material that has been plowed under.

Special items that may be used in assembling a 2-row planter for ridge planting are:

Three-point lift cultivator frame.

Two double-hopper planters, shaft-driven.

Four 8" wide press-wheel attachments.

Three 24" sweeps.

Four 18" sweeps.

Two left-hand covering knives.

Two right-hand covering knives.

For information on these items and their availability, contact your county agent.

Applying Herbicide

The use of herbicides is highly recommended with ridge planting to control weeds and reduce hoeing labor.

Herbicides may be applied by broadcasting or in bands approximately 14" to 18" wide, directly over the drill area.

For broadcast application, the following herbicide treatments are available:

- A. Pre-emergence — Apply immediately after planting and before crop and weeds emerge.
 - 1. DNBP (Dow Premerge or Sinox P.E.) 9 lbs. per acre.
- B. Early Post-emergence — Apply when peanuts are cracking the soil surface.
 - 1. DNBP 6 lbs. per acre.
 - 2. DNBP 1½ lbs. plus NPA (Alanap-3) 3 lbs. per acre.
 - 3. DNBP 1½ lbs. plus 2,4-DEP (Falone) 2 lbs. per acre.

The early post-emergence treatments are cheaper, require less chemical, and have consistently controlled more weeds than have pre-emergence treatments.

For band treatments, reduce the amount of application in proportion to the area treated. Because of the reduced cost, band applications are often used.

If the herbicide is applied as the plants begin pushing through the ground, it may be desirable to cultivate the middles at the same time. This reduces the number of separate operations over the field.

It is essential that the sprayer be properly calibrated. One practical method of calibrating is to treat one acre of peanuts (43,560 sq. ft.) and measure accurately the amount of liquid that was applied at a given pressure and tractor speed. Sprayer pressure should be kept relatively low, not over 40 lbs. per sq. in., to avoid forming a fine mist which might drift to adjacent fields. If the spray drifts, you will get a reduced rate of application. For additional information and the latest herbicide recommendations, refer to V.P.I. Extension publication MR-247, "Chemical Weed Control in Peanuts."

Cultivation

A good herbicide will control weeds for about 3 to 5 weeks. Within this period, the untreated middles will become weedy and

should be cultivated as needed (about twice). Special shields have been developed for use when cultivating the middles (figures 10 & 11). These shields are equipped with half-sweeps and are designed to cut about 2" into the soil.

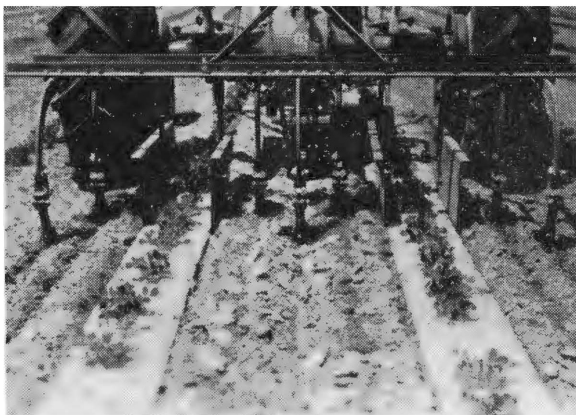


Figure 10—Cultivating middles.

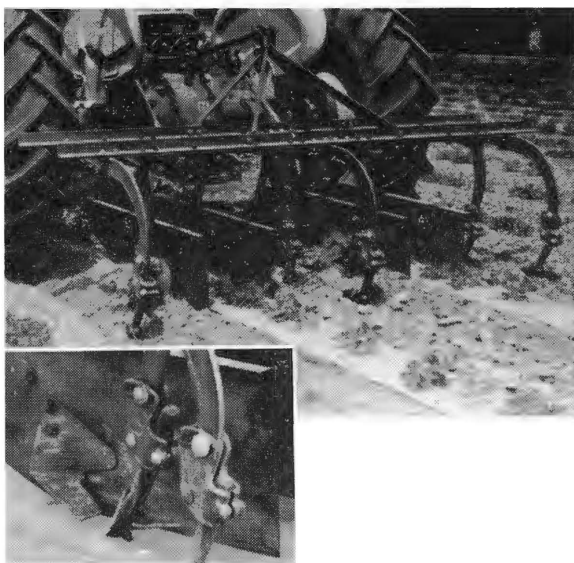


Figure 11—Side view of cultivator cultivating the middles. At left is an enlargement of the area of the shield showing a half-sweep riveted to it.

The half-sweeps are adjusted and operated to prevent soil from being built up against the shields and falling into the herbicide-treated area. Standard cultivator shields may be used instead of the special shields (Figure 12), but it is difficult to adjust them to prevent some soil from falling onto the treated area.

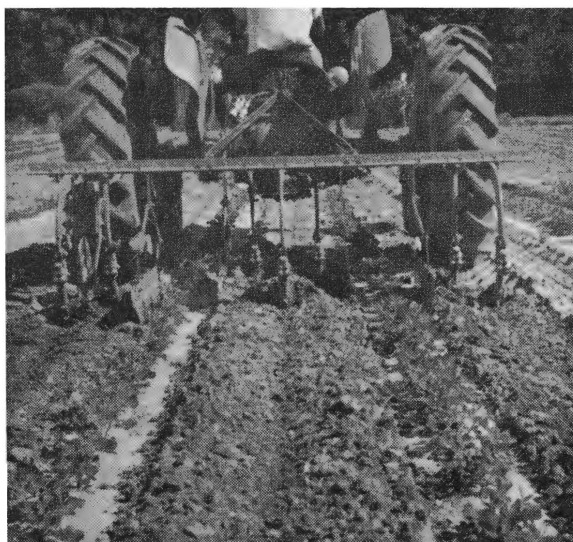


Figure 12—Rear view of cultivator equipped with standard shields.

Some chopping of weeds in the drill area will be required, but weeds in the middles can be controlled by cultivation.

The major problem is how to control weeds without covering some of the peanut plants, especially when cultivating close to the plants after the herbicide has lost its effectiveness (about 3 to 5 weeks after treating). Tidewater Research Station tests of peanuts — that have been flat or ridge planted and treated with herbicides — indicate the most effective equipment and methods of cultivating consist of small sweeps set flat and operated to minimize the build-up of soil around the base of the plants.

To avoid plant and peg damage later in the season, the sweeps should be adjusted further from the row.

Caution: The planting and cultivating equipment described herein will not operate satisfactorily in extremely damp, trashy, or cloddy soil. Deep plowing (covering trash at least 4"), ridge planting, and use of herbicides are essential for good stem rot control; however, **keeping soil off the plant branches during cultivation is most important.**

The basic principles outlined here have proved effective in the control of stem rot. The most practical methods for carrying out these basic principles on a particular farm may vary somewhat from those used in research work or included in this publication.

The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by the Va. Agri. Extension Service is implied.



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