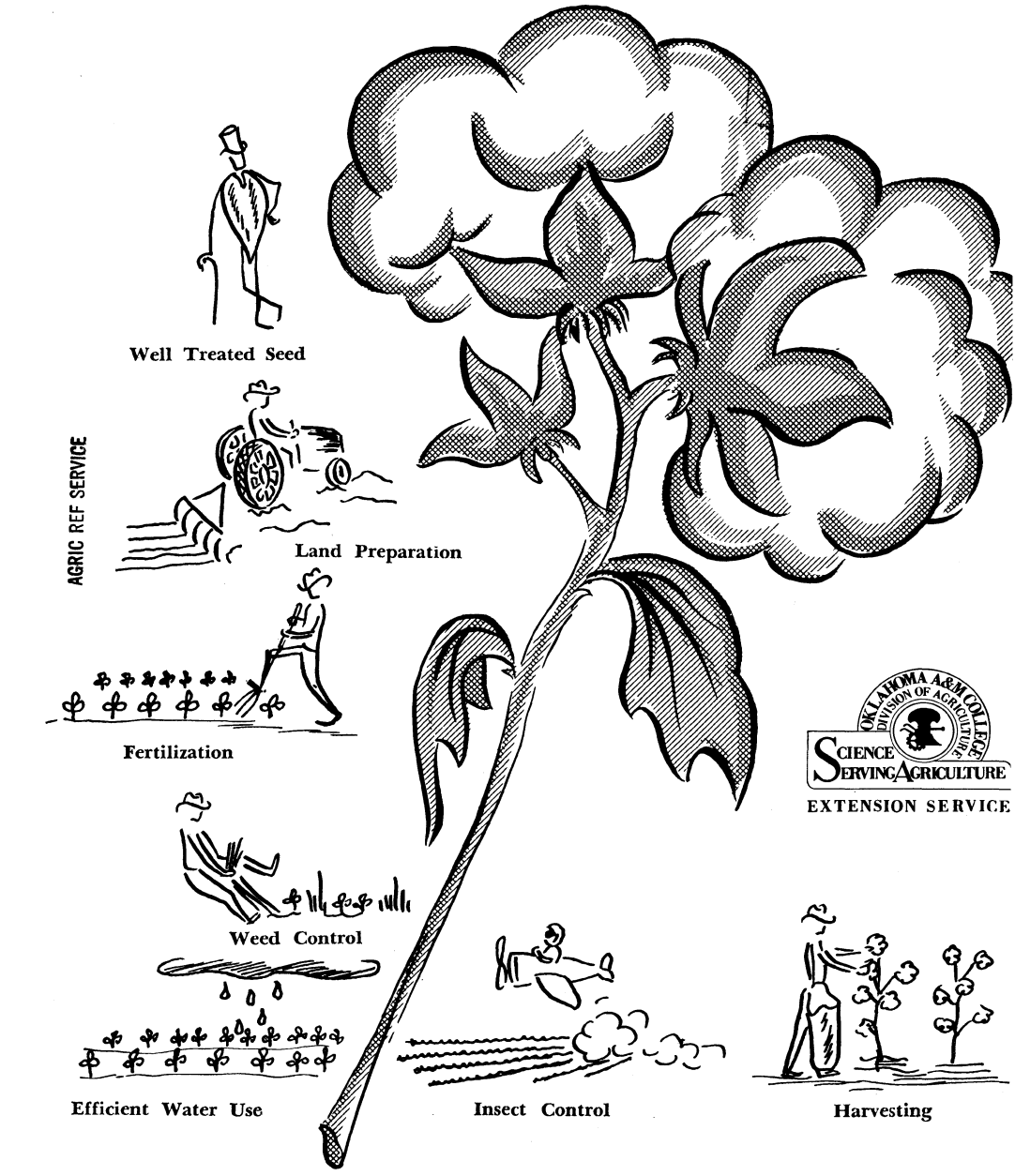
Circular 349

4-H Cotton Improvement



OKLAHOMA A&M COLLEGE
DIVISION OF AGRICULTURE
SCIENCE SERVING AGRICULTURE
EXTENSION SERVICE

Requirements For Cotton Improvement Project

1. The Cotton Improvement project is open to any 4-H Club boy who is regularly enrolled in cotton and who plants a minimum of one (1) acre of cotton. If possible, a larger acreage is desirable.
2. Each member is expected to keep an accurate record of labor (including his own) and other costs involved in land preparation, planting, cultivation, harvesting, and marketing of the crop.
3. It is necessary that the club member have managerial control over the project.
4. For information and guidance concerning the project, members are encouraged to call on such persons as the county agent or assistant county agent, 4-H leader, members of the cotton committee, and ginners.

4-H Club
Cotton Improvement Manual

George E. Stroup
Extension Cotton Specialist,
Production and Marketing

Cotton occupies an important place in Oklahoma's agricultural economy. During the 10-year period 1944-1954, it accounted for approximately one-fourth of the state's farm income from crops.

We have seen vast improvements in the growing and harvesting of cotton during the past 10 years on some farms in Oklahoma. Increased use of machinery has reduced hand labor considerably, thus taking a lot of drudgery out of cotton production.

OBJECTIVES OF 4-H CLUB COTTON IMPROVEMENT PROJECT

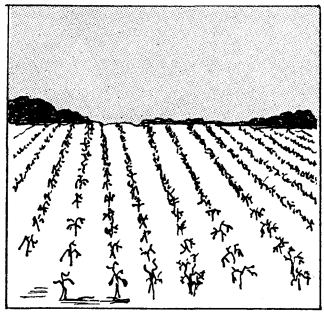
1. **To demonstrate the ability of cotton to provide a high net income per acre when produced with modern methods in a balanced system of farming.**
2. **To emphasize the importance of proper land use, soil management, and moisture conservation in the production, harvesting and marketing of cotton.**
3. **To enable club members to acquire more knowledge and develop skills in efficient and economical production, harvesting, and marketing practices.**
4. **To teach 4-H Club boys the market requirements of Oklahoma cotton and the market value of the various grades and staples.**
5. **To encourage a more extensive use of high quality planting seed of adapted and recommended varieties.**

Increasing cotton yields while preserving desirable natural qualities in the crop is a challenge to all who grow cotton in Oklahoma. Good yield and natural quality, along with reduction in labor costs, have made cotton the most profitable cash crop on many farms in our state.

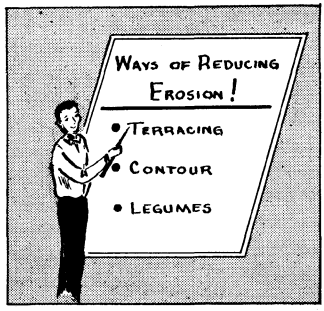
By using the best practices and methods in your 4-H cotton project, you can gain valuable experience and also make your project a more profitable one.

SOIL MANAGEMENT PRACTICES

Wind and water can cause soil erosion.



Continuous cropping reduces plant food, resulting in lower yields.



Terraces, contour tillage and rotation of cotton with legumes help prevent erosion.

Soil erosion both by wind and water has been responsible for lowering the fertility of many of our Oklahoma soils. Soil fertility is also reduced by continuous cropping, crops that remove plant food, and failure to return nutrients to the soil.

Listed below are some improved practices we should follow to reduce erosion and improve soil fertility.

Terracing

Terracing is one of the basic soil-conserving practices for sloping, cultivated lands. Terracing helps control runoff water where it cannot otherwise be stopped.

Contour Tillage

Contour tillage may be sufficient to control runoff on gently sloping lands. When terraces have been constructed, contour tillage is necessary to control interterrace erosion. This in turn prevents silting of terrace channels.

Wind Erosion Control

On sandy soils subject to wind erosion, these control practices may be followed:

(1) Grow a winter cover crop seeded in the cotton rows in early September, before the bolls open if possible. These early plantings may make for a better winter cover.

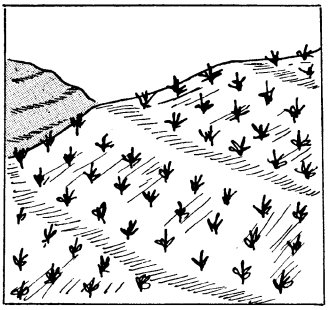
(2) Deep-plow extremely sandy soils to bring clay to the surface layer.

(3) Delay seed bed preparation on sandier soils until the hazard of wind erosion is reduced.

Rotating Cotton With Legumes

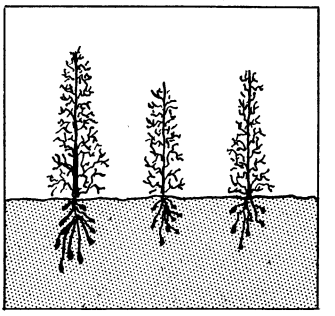
On soils low in organic matter, a legume should be grown in rotation with cotton to improve soil fertility.

Legumes which can be grown in rotation with cotton include biennial sweet clover, alfalfa, vetch, annual sweet clover, lespedeza, cowpeas and mung beans. Biennial sweet clover is the best soil-improving legume grown in Oklahoma. If hairy vetch is used as a winter cover crop, it should be plowed under at least 30 days prior to cotton planting time if moisture is available.



Terracing reduces runoff water on sloping lands.

Most legumes require large amounts of lime, phosphorus and potash for successful growth. Apply lime on acid soils and thoroughly incorporate it in the soil by deep double discing before planting the legumes. Nitrogen, phosphorus and potash may be applied with a fertilizer attachment at the time the legume is planted. Phosphorus is usually applied to establish a stand of vetch and other legumes on many soils. If cotton is grown in rotation with a legume and the soil deficiencies are corrected in connection with growing the legume, it will usually not be necessary to apply as much fertilizer when the cotton is planted.

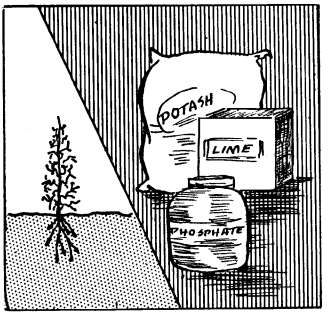


Legumes grown in rotation with cotton improves soil fertility.

Testing Soil And Fertilizer Application

The proper use of fertilizer has been a major factor in contributing to increased cotton yields in Oklahoma. For best results fertilizer should be applied 2 to 3 inches to the side and 2 to 3 inches below the seed.

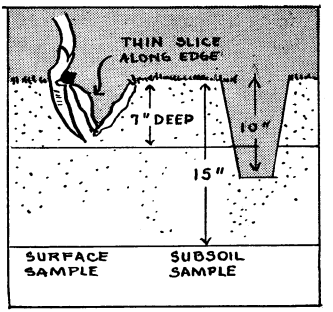
Soil should be tested to determine if any of the essential plant nutrients are lacking.



Legumes require lime, phosphorous and potash.

The county agent's office will give you the necessary information on how to properly take a soil sample and will also analyze your sample. The results of the soil tests will indicate whether or not fertilizers will be needed.

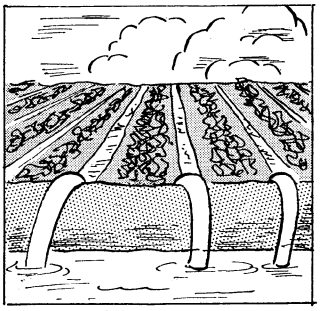
If barnyard manure is available, an application of well-rotted manure (4 to 6 loads per acre) will aid in obtaining increased yields. It is better to apply the manure during the fall and winter months. If it is applied on soils that are low in phosphorus, 100 to 150 lbs. of superphosphate should be applied at planting time.



Proper soil sampling will indicate whether or not fertilizers are needed.

Irrigation

The interest in cotton irrigation has increased considerably the past few years. The changeover from dry-land to irrigation cotton production is a big step and involves different practices and methods. Therefore, when considering irrigation, it is advisable to seek advice from both your county agent and from farmers successfully irrigating cotton in your area. (Refer to mimeographed bulletin "Cotton Irrigation for Oklahoma," which can be obtained at your county agent's office.)



It is wise to seek advice when first starting cotton irrigation.

VARIETIES

Recommended Varieties

Selection of a variety is very important in cotton production. Select a variety which is commonly grown in your community and area.

The following varieties are recommended:

Western Oklahoma	Eastern Oklahoma
*Lankart 57	**Stoneville 62
Lankart 611	**Deltapine 15
Lockett No. 1	Empire

Western Oklahoma	Eastern Oklahoma
Lockett 140	D. & P. L. Fox
*Northern Star	
Marv-L-S-Cluster	
Parrott	
Western Storm Proof	
Paymaster 54 (For irrigation only)	

Lockett No. 1, Lankart 57, Lankart 611, Northern Star, Parrot and Western Storm Proof are recommended for mechanical stripping.

One star (*) means best adapted to tight upland soils. Two stars (**) mean if irrigation water is adequate, these varieties are recommended in preference to others.

Quality Seed

4-H members are urged to plant high quality seed of an adapted variety. One can be more certain of obtaining high quality seed of known germination and purity by purchasing certified or registered seed.

Cotton yields are reduced each year by cotton diseases. Planting treated seed will help reduce cotton diseases, particularly seeding diseases which account for our major losses. Extension Circular 615 "Seed Treatment for Plant Disease Control" gives recommended seed treatment materials and management practices in plant disease control.

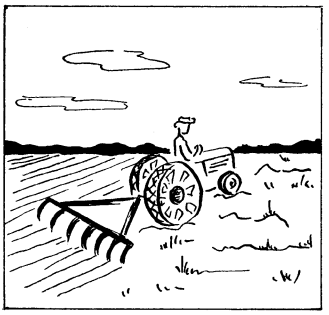
TILLAGE PRACTICES

Seed Bed Preparation

The first step in the preparation of a good seed bed for cotton is the proper handling of the vegetation on the land. If the previous crop was cotton, corn or grain sorghum, a stalk cutter may be used to cut the stalks before the land is plowed or listed. This is particularly important when plowing or listing is delayed until spring. The finely cut stalks are easier to incorporate into the soil and will cause less trouble in cultivating the cotton and may help improve efficiency of mechanical stripping.

Nearly level or gently sloping soils not subject to serious wind or water erosion may be plowed in the fall or early winter. On land subject to severe erosion, plowing should be delayed until late winter, preferably January or February or even later in some instances

After the land has been plowed or listed, surface tillage to control vegetation and conserve moisture may be done with the disc harrow, field cultivator, or the sled "go-devil" with knives on listed land.



A good seed bed means a better cotton crop.

Follow planting dates for your area.

Planting

Cotton should be planted when the soil is warm to insure quick germination and continuous rapid growth of the young plants. Planting too early with cool, moist conditions results in lower germination and losses from seedling diseases. Also the problem of early cultivation to control weeds becomes more difficult if the young plants are in cool soil and making slow growth.

Practically all the cotton crop is planted in May in Oklahoma. In the southern part of the state, cotton is usually planted from May 1 to May 15. In southwestern Oklahoma some farmers plant the latter part of May or early June. In the northern part of the cotton-producing area, the most favorable planting time is usually May 10 to May 25.

Research findings have shown that taking soil temperature is one method of determining when to plant cotton. A soil thermometer is used to get the soil temperature 6 inches below the surface. The 6-inch depth is about where the seed will be planted when the bed has been knocked off for planting. When the reading has been 65° F. at 8:00 a. m. for several days and no cold weather has been forecast, it is time to plant.

The depth of planting depends upon type of soil and weather conditions. Plant the seed deep enough to be in moist soil to insure quick germination. Seeds are usually covered to a depth of ¾ to 1 inch in eastern Oklahoma and 1 to 2 inches in the western part of the state. In the central and eastern section, on sandy soils pack wheels are used satisfactorily to press the soil over the seed; on heavy soils cover plows are used to better advantage. In western Oklahoma a narrow opener or "stinger" at the end of the planter chute will place the seed in a narrow furrow which does not allow the soil to dry out so rapidly. The seed is then covered to a depth of 1 to 2 inches and a chain drag or fish tail is used to pulverize the surface soil.

Fuzzy seed is generally planted at the rate of 15 to 20 pounds per acre. Seed which has been delinted by chemical treatment is planted at the rate of 8 to 12 pounds per acre.

Planting to a stand is already becoming a common practice in Oklahoma, especially in the southern counties. This requires precision planting using acid-delinted seed having a high germination test. Acid-delinted seed may be planted to a stand with a corn plate or a specially made plate.

WEED CONTROL

Early cultivation reduces the labor required in hoeing weeds and grass. Cultivation can begin as soon as the cotton is up to a stand. The first two cultivations can usually be performed with a light harrow. When rains cause a hard crust to form over the soil, hindering emergence of the young seedlings, the rotary hoe is an excellent tool for breaking the crust.

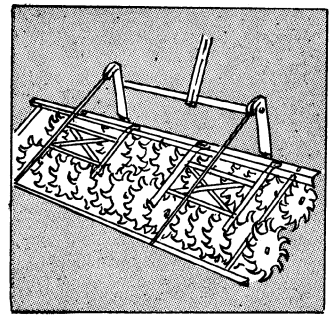
The rotary hoe is also a valuable tool for early weed control. Hand hoeing of weeds and grass can be practically eliminated if weather conditions permit the use of the rotary hoe.

The rotary hoe can be used earlier than a cultivator. For best results, follow these key pointers:

(1) Do not use a rotary hoe when soil is too wet, but do not wait until a thick crust is formed.

(2) Operate at speeds 6-8 miles per hour. Operating too slow will merely poke holes in the ground.

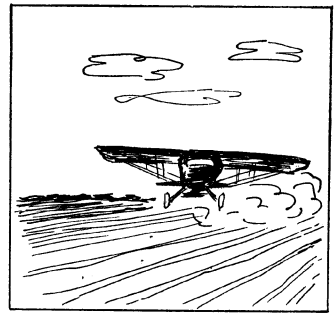
(3) Set hoe just deep enough to pulverize the surface of the soil, usually 1 inch.



Hand hoeing of weeds and grass can be practically eliminated if weather conditions permit the use of the rotary hoe.

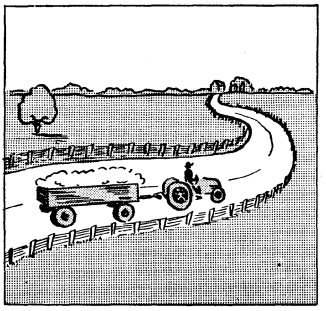
INSECT CONTROL

Failure to control cotton insects can be disastrous in obtaining good yields. After cotton comes up it should be checked every five to seven days for insects. Insecticides should be applied, if needed, according to recommendations. Effective insect control measures are given in Extension Circular 499, "Cotton Insect Control." This circular can be obtained at your county agent's office.



Insecticides should be applied according to recommendations.

HARVESTING AND MARKETING



Haul Cotton to the gin in clean trailers.

Harvesting

(1) Harvest cotton by the method that is most economical on your farm: (a) hand picked, (b) hand snapped, (c) mechanically harvested.

(2) Defoliate cotton if necessary.

(3) Harvest cotton when conditions are favorable and cotton is mature and dry.

(4) Avoid gathering excessive trash in harvesting operations.

(5) Do not tramp rough-harvested cotton.

Keep complete records of your cotton improvement activities.

Marketing

(1) Haul cotton to gin in clean trailers, and cover trailer if weather conditions are adverse.

(2) Haul enough cotton to make a uni- from standard weight bale (500 lbs.).

(3) Have cotton ginned by an operator who has good machinery and is careful in his operations.

(4) Have cotton classed to determine its value (grade and staple).

(5) Make a study of cotton prices: when prices are usually the highest, the best time to sell cotton, and cotton price support program.

KEEPING GOOD RECORDS

Every 4-H member enrolled in the cotton improvement project should keep a complete record of his cotton improvement activities. This would include briefly:

1. Soil improvement and soil management practices.
2. Variety planted, whether seed was certified or registered, etc.
3. Cultural practices used (weed control, cultivation, etc.).

4. Insect control measures (dates field was checked for insects; insecticides applied, when and what and how much was used).

5. Labor record (plowing, listing, preparing seed bed, planting, hoeing and chopping, cultivating, poisoning, irrigating, defoliation, harvesting, etc.).

6. When cotton was harvested, classes of grade and staple, etc.

7. Production, harvesting and ginning costs.

8. Summary of sales and expenses.

Your county or assistant county agent will supply you with a "4-H Cotton Improvement Report" form which lists all the above items in more detail. You may fill out the form and return it to him by December 15.

Suggested Cotton Improvement Activities for Strengthening 4-H Cotton Improvement Record

(1) Exhibit at fairs (20 bolls exhibit) (cotton marketing exhibit).

(2) Attend field days of cotton production and marketing demonstrations.

(3) Read bulletins on various phases of cotton improvement.

(4) Participate in district or county cotton classing schools.

(5) Other activities such as cotton classing contest at State Fair, crops judging, insect exhibits, etc.

Suggested Reading Material

Circulars from Extension Service, Oklahoma A. and M. College, available at the County Agent's office.

(1) No. 472 "Vetch for Soil Improvement"

(2) No. 499 "Cotton Insect Control"

(3) No. 504 "Cotton Varieties and Fertilizer Recommendations"

(4) No. 509 "Know Your Soil"

(5) No. 513 "Taking Soil Samples"

(6) No. 576 "More Dollars From Cotton"

(7) No. 610 "Soil Improvement Crops for Diverted Acres"

(8) No. 613 "Methods of Applying Fertilizers"

(9) No. 615 "Seed Treatment for Plant Disease Control"

(10) No. 625 "Liming Soils for Better Farming"

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