

# **CORN PROJECT**

**for**

## **4-H Clubs**

**Circular 414**

**UNIVERSITY OF KENTUCKY**  
**College of Agriculture and Home Economics**  
**Agricultural Extension Division**

Thomas P. Cooper, Dean and Director

## Requirements

1. Boys and girls 10 to 20 years old may take this project.
2. Enroll not later than April 1.
3. Members must study the instructions given in this circular.
4. Each member must grow at least 1 acre of corn, following the advice of his county agent and project leader.
5. The crop must be on one piece of ground.
6. Members above 14 years of age will do all the work. Younger members may be helped with heavy work but will keep own records
7. Each member must keep a record on the forms in this circular of all work done. The record must be approved and signed by the county agent.
8. Each member should receive the net return from his project.
9. To get the most benefit from 4-H Club work, a member should attend all meetings of his Club and take part in its activities.

## Timely Reminders

- January.....Enroll in the project.
- February.....Study project circular.  
Select ground for the project.  
Have project leader teach how to test seed corn.
- March.....Get best quality seed corn. Learn about hybrid corn.
- April.....Plow and prepare ground. Apply barnyard manure.  
Apply commercial fertilizer.
- May.....Harrow to conserve moisture and keep down weeds.
- June.....Plant when ground is warm.  
Thin when plants are 8 to 12 inches high.  
Keep an accurate record of your working time.
- July.....Continue shallow cultivation.
- August.....Keep down weeds and grass.  
Cultivate to break up crust following rain.  
Go on a project tour with other Club members.
- September.....Check measurements of plot before harvesting.
- October.....Harvest when ears are dry.  
Sow winter grain for cover crop.  
Keep careful record of yield.  
Make exhibit at community and county fairs.
- November.....Market any grain to be sold. House the feed corn  
in a rat-proof crib.
- December.....Turn in completed project record.

*(Revision of Circular 82)*

## CORN PROJECT FOR 4-H CLUBS

By E. J. Kinney and E. E. Fish

THE OBJECTS OF THE CORN PROJECT are (1) to teach a good method of corn culture, (2) to furnish profitable employment for a part of the Club member's time during the summer, (3) to stimulate interest in farm life among farm boys.

When a 4-H Club member selects corn for his project he hopes to produce a high yield. Yields of 100 bushels per acre are not uncommon among state and county project members. Club members strive for a large yield per acre because that means more corn for feeding and a smaller relative cost of production. Many items entering into the cost of production, including taxes, rent, plowing and seedbed preparation are the same whether the yield is large or small.

### Preparing for the Crop

#### Selecting the plot

The foundation for successful corn growing is soil productivity. Corn is given its place in the crop rotation immediately after clover or alfalfa or other legume sod is turned under. Most profitable yields are obtained from moderately low-lying but well-drained, loamy soil.

#### Applying manure

The soil should be well supplied with organic matter. Application of 8 to 10 loads of barnyard manure per acre is an excellent way of supplying the needed organic matter. This may be applied before breaking the land or, if not too coarse and strawy, after breaking. The latter method often gives slightly better results.

#### Plowing

Land is plowed to loosen it, to destroy weeds, and to cover organic matter. More rainfall is taken up by plowed than by unplowed land. Fall plowing has some advantages. The larvae of harmful insects, such as cutworms and grubworms, are brought to the surface and destroyed by exposure. Fall plowing exposes the soil to the mellowing action of freezing and thawing and hastens the decay of the organic matter (clover, manure, etc.) which was plowed under. However, where land is hilly it is not advisable to plow in the fall because this would subject the soil to serious losses

by washing and leaching. Land to be plowed in the spring should be plowed as early as possible, to a depth of about 7 inches.

### **Preparing the seedbed**

In the spring, work plowed sod ground with a disk harrow. If you have no disk harrow, use a spring-tooth, or a spike-tooth harrow. A fairly good seedbed can be prepared by several harrowings with a sharp spike-tooth harrow. Repeat the harrowing at intervals until planting time. This keeps down weeds and saves moisture which would be lost rapidly if a hard crust were allowed to form. Thorough preparation of the soil is very important.

### **Using commercial fertilizer**

Phosphorous is the element most lacking in manure. It can be supplied in various forms to make a proper balance. If manure is used, the fertilizer application should be 300 pounds per acre of 20-percent superphosphate. Superphosphate and ground limestone should be spread broadcast on the plowed land before preparing the seedbed, so that harrowing will mix them with the soil thoroughly. Where manure is not available 500 pounds per acre of a mixed fertilizer containing 5 to 8 percent nitrogen, 6 to 8 percent phosphoric acid, and about 6 percent of potash should be applied broadcast and worked into the soil.

### **Choice of variety**

Hybrid seed corn is so superior to the old open-pollinated varieties in yield and strength of stalk and roots that it has practically displaced the open-pollinated varieties in all important corn-growing areas of this country. Any of the Kentucky certified hybrids may be used. Kentucky 102 and 103, and US 13, are the yellow hybrids certified in Kentucky; and Kentucky 72 B and Kentucky 203 the white hybrids. Consult your county agent in selecting the variety.

### **Measuring the plot**

Before planting, be sure that the plot contains more than the required acre, 43,560 square feet. Two disinterested persons should measure the acre before the corn is planted, or soon after. Space should be left outside the measured acre for turning the horse or mule while cultivating. Drive strong posts (which will remain throughout the season) in the corners of the measured acre

Any rectangular plot that is at least 10 rows wide and that contains the necessary amount of ground is satisfactory.

### **How to plant**

If a corn planter is used, regulate it so as to drop the desired number of grains each time. Whether to check or drill should be decided by the local conditions. If the ground is weedy the corn preferably should be planted in checks. On hillsides, it is necessary to drill. There seems to be little difference in the yield of corn whether drilled or checked, if the same number of plants are grown in both cases. On rich land that holds moisture well, drop 4 grains  $3\frac{1}{2}$  feet apart in the row or 2 grains every 14 inches if drilled. Thin to 3 stalks per hill, or 1 stalk in each place in drilled corn. On less fertile land thin to 2 stalks per hill and space drilled corn about 21 inches apart. If early-maturing, smaller-growing varieties are used, they should be planted at the thicker rate. Corn should be planted only deep enough to place the seed in moist earth. There is no advantage in planting very deep, as it takes longer for the corn to come up; in fact there is a chance that it may never come up.

### **When to plant**

Corn should not be planted until the ground is warm. The time for planting varies somewhat in different localities and in different years, because of varying seasonal conditions. Most of the corn in Kentucky is planted between April 25 and May 10. Community experience as regards time of planting is a very valuable guide and the best practice is to plant when the best farmers of the community are planting the main crop. Neither very early nor very late planting should be practiced.

## **Cultivation**

### **Reasons for cultivation**

The reasons for cultivating corn may be summarized as follows:

1. To destroy weeds. This is probably the most important reason. In fact, it is a much-debated question whether it helps to cultivate corn more than is necessary to keep weeds down.
2. To save moisture. Heavy rains pack the soil and form a

crust on the surface that aids in the evaporation of water from the soil. Breaking up the crust by cultivating lessens this loss, somewhat.

3. To aerate the soil. By breaking up the crust, air is allowed to circulate more freely in the soil, thus favoring the growth of useful bacteria and making plant food available.

4. To let the water from rains sink into the soil quicker by keeping the surface loose and porous.

### **Depth of cultivation**

Sometimes the first cultivation is given by going over the field with a light spike-tooth harrow soon after planting. If the harrow is light and the teeth are set to slant backward a little, this method can be used safely on plants 3 or 4 inches high. The advantage of harrowing is that it kills the young weeds. The first plowing may be deep and close to the plants; however, at no time should the cultivation be close enough to disturb the roots. Later cultivation should be shallow and preferably done with a cultivator which has several teeth or shovels. Don't use the old-fashioned double shovel or bull-tongue plow unless absolutely necessary, because they tend to injure the crop by cutting off many of the feeding roots and also by permitting greater evaporation of moisture from the soil by leaving the ground with ridges and deep furrows. Cultivate whenever necessary to kill weeds and also as soon as possible after a rain, to break up the crust and make the surface of the soil fine and loose. Frequent, shallow cultivation in the early stages of growth gives the best results.

### **Number of times to cultivate**

How many times to cultivate corn depends upon the kind of soil and the weather which each season brings. Not fewer than three or as many as five cultivations may be needed to keep the plot free from weeds. The growth of weeds on a plot shows a lack of cultivation.

### **Cover crop**

It is very important that corn land be sown to a cover crop to prevent leaching and soil erosion. This should be done as early in September as possible.

## Insects and Diseases

### Insects

Both field and sweet corn are subject to injury by several destructive insects. Some work on the roots and others eat the leaves or ears.

The wireworm, white grub, and corn root worm attack the roots. These pests are the larvae of beetles, and the methods used to combat them must be in the nature of cultivation. Growing corn on the same field year after year may help these insects to increase. Rotation of crops tends to hold them in check. Fall and winter plowing destroys a great number of these insects as they are brought to the surface and subjected to freezing. Also this kills many larvae which spend the winter in the soil and feed on the corn above ground during the growing season.

One of the worst corn pests is the corn ear-worm. It is found in the tip of the ear of corn. Fall plowing helps to control this insect, it is believed. The very serious insect known as the European corn borer has now spread over most of Kentucky but has not become numerous enough to do great damage. Plowing under all corn-stalks and corn stubble in the spring is the practice recommended for controlling this insect.

### Diseases

Corn smut is one of the most common diseases in cornfields. Cut off the affected stalks, carry them out of the field and burn them.

## Selecting Exhibits

An exhibit is an important part of the corn project. Each club member is required to show a 10-ear sample of his crop. This exhibit may be displayed at a county fair, a school fair, or a local club fair.

The county agent will have someone to judge the exhibits. This judge will have several things in mind when he looks over the exhibits, and club members should know what the most important of these things are, so they can select their samples of 10 ears intelligently. First, a judge will be influenced greatly by the uniformity of the exhibit. This means that each ear should be just as much like every other ear as possible. Second, he will

insist that the ears be up to a certain standard in size and that they be well proportioned. He will insist that all ears be absolutely sound; any signs of unsoundness will bring down the score greatly. Finally, the judge will be influenced by the finish of the ears; that is, the way the tips are covered and the finish of the butt ends.

#### **Shape of ears**

All ears should taper slightly. Take care to choose ears that do not taper too much nor too sharply.

#### **Size of ears**

Never select abnormally large ears for an exhibit. Medium ears are best.

#### **Purity**

All grains in an exhibit should be of the same color. If it is an exhibit of white corn, all grains should be white. If there are any red or yellow grains it shows that the corn is not pure. In an exhibit of yellow corn there should be no white or red grains. White corn preferably should have white cobs, but some varieties of white corn have red cobs, so the important point is to have the color uniform. Yellow corn should have red (or pink) cobs.

#### **Tips and butts**

The tips and butts should be well filled and carry as nearly as possible the same size and shape of kernel as the rest of the ear. Unfilled tips, broken off so as to make the ear appear more uniform, will cause the exhibit to be disqualified for competition.

#### **Type of grain**

An ideal kernel is slightly wedge-shaped, but not pointed. The kernels should fit up against one another so that little space is lost between rows. The rows should be straight and extend from butt to tip. The grains should have a medium dent.

#### **Type of germ**

The germ should be large, broad, and healthy. A large, broad germ indicates vitality and strength.

#### **Number of rows**

The number of rows will vary with the variety of corn.



### **Character of cob**

The cob should be medium in size. A small cob is broken easily. When cobs break, much grain is lost in handling and shipping. If the cob is too large, the ears are slow in drying and the corn may spoil in the crib.

### **Freedom from disease**

Corn that is diseased should not be selected for exhibit. Look for smut and mold. Never select corn with mouse-eaten grains.

### **Maturity**

Ears should be dry and sound. Shrunken, wet or loose grains on the cob indicate immaturity.

## **Keeping Records**

Keep the record book up to date as the work is done. Every time something is done connected with the acre of corn, enter it in the record book. The number of hours required for plowing, planting, cultivation, and so on, should be put down as the work is done. Then when the crop is harvested and the yield determined, a short summary will show exactly the cost of producing the crop. Don't try to remember items of expense. Let the record book do the remembering. First, last, and all the time, keep up the record. The state champion corn project member is determined from the yield and project record. County agents will help county champions to get accurate yields allowing for moisture content.

## Club Score Card—Corn Judging

POINTS	Perfect Score	Judge's Score
1. Uniformity of exhibit .....	5	.....
2. Shape of ear .....	10	.....
3. Length of ear .....	10	.....
4. Circumference of ear .....	5	.....
5. Tip of ear .....	5	.....
6. Butt of ear .....	5	.....
7. Kernel, uniformity .....	5	.....
8. Kernel, shape .....	5	.....
9. Color in grain and cob .....	10	.....
10. Space between rows .....	5	.....
11. Vitality or seed condition .....	15	.....
12. Trueness to type .....	10	.....
13. Proportion of shelled corn to cob .....	10	.....
Total .....	100	.....

### Project Record

1. Variety .....
2. Did you test your seed?..... What germination?.....
3. Kind of soil (rich, medium, or poor).....
4. What crop was grown on the land last year?.....
5. Did you use commercial fertilizer?.....  
     Kind of fertilizer used..... Amount.....
6. How much barnyard manure did you use?.....
7. How did you prepare the seedbed?.....  
 .....



## Business Account

Number acres grown .....

Average yield per acre.....

### EXPENSES

	Dollars	Cents
Rent or use of land at \$8.00 per acre .....	.....	.....
Use of hand tools at 40c per acre .....	.....	.....
Member's time at 20c per hour .....	.....	.....
Help's time at 30c per hour .....	.....	.....
Team's time at 15c a horse hour .....	.....	.....
Tractor time at 70c per hour .....	.....	.....
Value or cost of seed .....	.....	.....
Manure at \$2 a ton (each 2-horse wagon load) .....	.....	.....
Value or cost of commercial fertilizer .....	.....	.....
Other items of expense .....	.....	.....
Total expenses .....	\$.....	.....

### RECEIPTS

	Dollars	Cents
Value of corn produced .....	.....	.....
Value of stover saved .....	.....	.....
Value of cowpeas, beans, etc., grown with crop .....	.....	.....
Total value .....	\$.....	.....
Expenses (as totaled above).....	\$.....	.....
Net Return .....	\$.....	.....

The above account is a true record of my project, carried out to the best of my ability.

\_\_\_\_\_

*Date*

\_\_\_\_\_

*Club Member*

## Story of the Project

**Subject** — "How I Raised an Acre of Corn."

**Instructions** — The story must be your own work. If written by another person it will not be accepted. Use pen and ink. Everything of interest connected with the project should be told. If the story is interesting and well written it may be sent to some farm journal for publication.

The following outline may help:

1. Where you obtained seed, and what variety.
2. Selection and preparation of the ground, including treatment.
3. Planting and cultivation of your crop.
4. Diseases of corn; insect pests.
5. Harvesting, storing, and marketing your corn.
6. Exhibits—description; place held; prizes won.
7. Careful account of the yield, total number of bushels, amount sold, price at which it was sold, discussion of expenses and net return.
8. Improvement you would make next year in the same project.
9. Moisture condition during growing season.

## References

Farmers' Bulletins: No. 948, 1548, and 1822, U. S. Department of Agriculture, Washington, D. C.

Leaflet 7, "Plant Hybrid Corn This Year," and Leaflet 66, "Produce More Corn," College of Agriculture and Home Economics, Lexington, Kentucky.

## Story—How I Raised An Acre of Corn

This story must be in the club member's own handwriting.

Handwriting practice lines consisting of multiple horizontal dotted lines for writing.

**STORY — Continued**

[Faint, illegible text visible through the paper, likely from the reverse side of the page.]

**Corn Project of**

Name ..... Age .....

County ..... Date.....

Post office ..... R. F. D.....

Years in Club work ..... In this project.....

Approved .....  
(County Agent)

Date .....

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