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CIRCULAR NO. 93.

Alfalfa Project

Junior Agricultural Clubs

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The objects of the Alfalfa project are (1) to teach the soil requirements of Alfalfa and a successful method of culture and (2) to increase the interest of the boys and girls in farm life.

Requirements:

1. Boys and girls from 10 to 18 years of age may enter this project.
2. Enrollment should take place during the first part of the year, not later than July 1.
3. Members must attend the meetings of their respective clubs.
4. They must study the lessons on "Alfalfa" given in this circular.
5. Each member must grow 1 acre of Alfalfa, following the advice of his county agent.
6. Each member must keep a record in a book which the county agent will supply, of all the work done on the project, showing expense, receipts and profit.
7. Each member should receive the profit from his project.
8. Each member should make an exhibit of Alfalfa hay at some county fair arranged for this purpose.
9. In awarding prizes the following basis will be used:

Highest yield of hay	30 points
Greatest profit	30 points
Best exhibit	20 points
Best record book and story of project	20 points
10. Prices for man labor, horse labor, etc., found in the record book, must be used in estimating profit.
11. Two disinterested persons must measure the ground and determine the yield.

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Alfalfa thrives anywhere in Kentucky if given proper treatment. The failures which have occurred are mainly due to unfavorable soil conditions. Soils should be well drained, rich in plant food, well supplied with lime, free from weeds and inoculated.

CONDITIONS NECESSARY TO SUCCESSFUL PRODUCTION OF ALFALFA.

Drainage.

Alfalfa will not thrive on a wet soil. If water stands on the ground for any length of time after a rain, or if the under-drainage is poor, the land is unfit for alfalfa until it has been tile drained.

Fertile Soil.

Alfalfa will not grow on poor land. When inoculated it will get part of its nitrogen from the air but it cannot get all of its plant food there. Organic matter must be present in the soil if alfalfa is to thrive. This can be supplied by plowing under a green crop or by adding manure.

Alfalfa needs plenty of lime. It is necessary to apply lime to the soil where alfalfa is to be grown, if enough is not already present. Many Kentucky soils are of limestone formation; nevertheless the application of lime or ground limestone is necessary for success with alfalfa in practically all parts of the state, even in the Bluegrass region.

Possibly club members will want to test their soil to see if it needs limestone. Get some strong hydrochloric (muriatic) acid from the drug store. Make a ball from earth taken from the plot where alfalfa is to be sown by working in enough water to give it the consistence of soft putty. Make a hollow in this and fill it with water, to be sure that no bubbles of air rise from

the soil. Pour out the water and put in a little acid; if enough lime is present for the growth of alfalfa, small bubbles will rise from the soil, due to the action of the acid upon the particles of limestone (calcium carbonate) in the soil. If no bubbles appear the soil needs lime.

If the soil needs lime, spread ground limestone at the rate of 2 tons per acre, after the ground has been plowed, and disk it in thoroly.

The soils in nearly all parts of the state outside of the Blue-grass region need applications of phosphate in some form. Five hundred to one thousand pounds of acid phosphate may be applied per acre or three hundred to six hundred pounds of steamed bone meal. Instead of acid phosphate or bone meal, 1000 to 2000 pounds of finely ground rock phosphate may be applied, if plenty of organic matter is present in the soil. These materials are usually applied to the unbroken ground and disked in before the ground is plowed. These applications are sufficient to last for 4 or 5 years. Club members are advised to sow alfalfa after a crop of wheat, oats or early potatoes, or upon land plowed in the spring and harrowed during the summer. After the grain is harvested or the potatoes dug the ground should be plowed as soon as possible and a good seed-bed made by disking, dragging and harrowing. A spike-tooth harrow should be used at frequent intervals until planting time to destroy weeds and grass.

SEEDING.

Just before seeding, the ground should be harrowed and rolled to compact the seed bed. About 15 pounds of seed should be used per acre. The best implement for seeding is a disk drill made for the purpose, which sows the seed in rows 4 inches apart. This distributes the seed evenly and it can be sown at the proper depth. If the seed is sown broadcast it is best to go over the field twice. Divide the seed into two equal portions and sow one in one direction and the other at right angles to the first. This will give a more uniform distribution of seed. The seed should be covered to a depth of half an inch by light harrowing.

INOCULATION.

If alfalfa is to make the best growth it is necessary to inoculate the seed or soil. If grown without inoculation the plants will draw nitrogen only from the soil and not from the air. When the proper bacteria are present this fact is shown by the presence of little bodies called nodules on the roots of the plant. In order to inoculate the soil or seed with the proper bacteria one of several methods may be used. A laboratory culture may be obtained and the alfalfa seed treated according to accompanying directions. Probably the best method is the transfer of soil from an alfalfa field or sweet clover field to the new piece of ground. This soil should be scattered at the rate of 400 to 600 pounds per acre and harrowed in at once. This is necessary because bright sunshine will kill the bacteria if they are exposed very long. This method is the most certain. It has given excellent results and is recommended to club members. The seed may be inoculated by first wetting with a thin solution of glue—a handful of carpenter's flake glue to a gallon of water—then sifting finely screened, inoculated soil from sweet clover or alfalfa field over it. This gives every seed a particle of soil which bears the required bacteria.

CUTTING THE ALFALFA.

If the alfalfa is sown in August do not clip it the first year, as it will need this growth to protect it thru the winter. The time for cutting alfalfa is best determined by the appearance of new shoots at the crowns of the plants. The plants generally bloom at the time these small shoots appear, but not always. Delay at this time may mean complete loss of the last cutting for if the young shoots get too long the tips will be cut off and the maturity of the next crop of hay will be delayed. This may cause the last crop of the season to mature so late that it will not be wise to cut it. Cutting alfalfa very late may cause severe winter killing.

CURING.

The hay should be left in the swath until well wilted; then it should be raked into windrows for the completion of the

curing. Better yet, the wilted hay may be put into tall, narrow shocks for the completion of the curing. The length of time for this process will vary with the weather. When weather conditions are favorable, hay cut in the morning may be put into the shock in the afternoon, where it should remain until thoroly cured. The shocks should be as narrow and tall as possible and well combed down with the fork so they will shed water well. In building them keep the center higher at all times than the outside of the shock. Hay caps made of canvass may be used to protect the hay from the weather if they are available. In curing alfalfa hay try to keep it from sunburning. Sunburning causes a great loss of leaves, the most valuable part of the plant.

CARE OF THE FIELD.

When weeds and grass appear the alfalfa should be harrowed immediately after cutting. A disk harrow may be used but it should be set at a slight angle so that it will not injure the crowns of the plants. After using the disk, it is well to follow with a tooth harrow. A still better implement for cultivating alfalfa is the spring-tooth harrow, or special spring-tooth alfalfa harrow.

COMPLETING THE PROJECT.

The yield of hay will be recorded at each cutting during the second season. The work of the project and the records will be completed by October of the second year about 13 months after sowing the seed. The hay may be baled and marketed; if it is used on the farm its value should be estimated at the market price.

There is always a good market for good alfalfa hay and the boy who attends to his crop well will be rewarded liberally for his work. In Kentucky a field of alfalfa will last for 4 or 5 years if the land has been properly prepared and the field gets good care. The club members' alfalfa need not be plowed up after completion of his project, but may be left as long as the stand is good and thrifty.

RECORDS.

The best way for a farmer to know whether or not he is making money is to keep complete records. It is easy to keep records if one is careful to write down all the items each day. The expense of each operation should be calculated as soon as the work is done and written in the record book. At the close of the project the record will tell an interesting, true story about the cost of growing the crop of alfalfa, and the profit on the undertaking.

SELECTING THE EXHIBIT.

Select a small sheaf about 3 inches in diameter and tie it securely with a strong cord. In making the selection observe the following points:

Color. Be sure that the sample is as nearly "pea green" in color as possible. This is the best grade of alfalfa hay and shows that the hay has been properly cured. The hay should be bright.

Stems. The stems of the hay should be as fine as possible. Coarse stems show poor quality.

Leaves. The leaves are the most desirable part because they are rich in protein. Hence the sample should show stems carrying all their leaves, or as nearly all as possible.

Condition. Do not select any that shows yellow leaves or any other sign of disease, decay, mold or off color. The sample should not be dusty.

Purity. Remove all sticks, weeds, grass or traces of other hay such as clover, sweet clover or timothy.

CLUB SCORE CARD. ALFALFA HAY

Points	Perfect Score	Judges' Score
Color	20
Stems	20
Leaves	20
Condition	20
Purity	20
Total	100
Remarks:
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THE STORY OF THE PROJECT.

Subject. "How I Grew My Alfalfa."

Instruction. The story must be the work of the club member. Pen and ink should be used. 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.

Suggested Outline for the Story.

1. How I became a club member.
2. Object of the alfalfa project.
3. Why I chose the alfalfa project.
4. Preparation of the soil:
Plowing, fallowing, disking, harrowing, rolling.
5. Seeding.
6. Cutting and curing.
7. Exhibits, prizes won, etc.
8. Marketing.
9. Give an account of the yield, cost of production and profit.
10. What has club work done for you?
11. What are your ambitions as a club member for next year?
12. Give anything else of interest. Send a picture with the record book if one is available.

References.

Bulletin 178—Kentucky Agricultural Experiment Station, Lexington, Ky.

Bulletin 76—Illinois Agricultural Experiment Station, Urbana, Illinois.

Farmers' Bulletins 339 and 741—U. S. Dept. of Agriculture, Washington, D. C.

Extension Circular 70, College of Agriculture, Lexington, Ky.