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KENTUCKY AGRICULTURAL EXPERIMENT STATION,
LEXINGTON, KY.

BULLETIN No. 153

Boys' Corn Clubs and Improved Methods of Corn Growing

By T. R. BRYANT, Superintendent of Extension Division.

INTRODUCTION.

This bulletin is designed to meet the needs not only of the members of the boys' agricultural clubs but also for farmers in general. The Experiment Station is continually called upon for information concerning various matters relative to corn growing, hence it seems appropriate to give the subject a general discussion in the form of a bulletin.

It is the duty and constant endeavor of the Agricultural College to improve the agricultural conditions of the State. The principal difficulty encountered is how to go about this work of teaching. It is one thing to tell a person how to do something and an entirely different proposition to get him to do it and to do it well.

The most successful plan yet devised has been to provide for practical demonstrations of the value of the application of the principles advocated by the Agricultural College, rather than to rely upon printed matter and lectures alone. To this end, the College has undertaken the organization of boys' and girls' agricultural clubs in various localities of the State, which, under the guidance of experts, are putting into practice the teachings of the Agricultural College. No new or untried experiments are to be undertaken by these clubs, but rather they are intended to put into practice some well known facts.

In many places such clubs are designated as corn clubs because the improvement of corn is one of the first tasks undertaken. It is the intention of the Agricultural College that these clubs shall give demonstrations first with corn and later in other branches of agriculture, hence the name "agricultural clubs." Results showing the value of improved methods can usually be gotten more quickly through the cultivation of corn than by any other method, thus demonstrating the value of improved methods and encouraging the members of the club later to undertake longer and more difficult problems, such, for instance, as the improvement of the live stock of their community.

The value of these clubs cannot be questioned. The average corn yield in Kentucky for the last ten years has been 26.7 bushels per acre. For 1909 and 1910 the average yield was 29 bushels, an increase of 2.3 bushels or 7.9 per cent. The total production for Kentucky in 1910 was 105,270,000 bushels. An increase of 7.9 per cent. of this amount is 8,316,330 bushels, and with a value of fifty-three cents per bushel, as quoted by the Government reports, gives us a total increase in the value of the Kentucky corn crop of \$4,407,654.90.

The boys' corn clubs of the Southern States have made an increase by the selection of pure seed of 50 per cent. over the average for those states; by the proper preparation of the seed bed 100 per cent. increase, and by thorough cultivation 100 per cent., making a total increase of 250 per cent. over the average for those states. One club in Kentucky, for example, produced an average of 61¾ bushels per acre with an average cost of 18 cents per bushel not counting rent but including team, labor, fertilizers and manures.

BOYS' AGRICULTURAL CLUBS.

One of the prerequisites of such a club is that it shall have a definite organization with constitution and by-laws, and to accomplish this end the following general outline is given, though it may be modified to suit the needs of a given club.

PROPOSED CONSTITUTION AND BY-LAWS
FOR
BOYS' AGRICULTURAL CLUBS.

Article I.

This organization shall be known as the.....County Boys' Agricultural Club.

Article II.

The objects of this association shall be:

- (1) To advance the interests of corn growers by promoting better methods of selecting and caring for seed corn and other farm products.
- (2) To encourage more thorough methods of cultivation.
- (3) To hold a corn show annually.
- (4) To develop an interest in agricultural education.

Article III.

Any boy eighteen years of age or under who grows any farm crop may become a member of this club. Any other person interested in farming may become an associate member.

Article IV.

The officers of this association shall consist of President, First and Second Vice Presidents, Secretary and Treasurer, who shall be elected annually and who shall constitute the Executive Committee.

Article V.

There shall be at least two meetings held annually. One meeting shall be held before corn planting time to discuss and formulate plans for the year's work. The other meeting shall be held in the fall after corn gathering for the purpose of holding a corn show.

Article VI.

A quorum for the transaction of business shall consist of not less than ten members.

Article VII.

This constitution may be amended at any regular meeting by a two-thirds vote of the members present.

Article VIII.

The arrangements for all shows held by this club shall be made by a committee appointed by the President and approved by the Executive Committee.

BY-LAWS.

1. The duties of the officers of this club shall be those usually performed by such officers.
2. The President may call a meeting at any time by giving a proper notice and shall call a meeting on written request signed by not less than five members of this club.
3. The Executive Committee shall have power to fill vacancies.

It is well to have a county organization to be under the direction of the county superintendent of schools, and to have this club composed of various sub-divisions located at different points about the county.

IMPROVED METHODS OF CORN GROWING.

The following are the principal points to be considered by an agricultural club with regard to corn: (1) Preparation of the seed bed; (2) Testing of the seed; (3) Planting and cultivation; (4) The keeping of definite accounts, including expenses, yields, prices obtained, etc.; (5) General and specific arrangements for a corn show in the fall.

FERTILIZERS.

So far as fertilizers are concerned, only very general rules can be given that would apply to the State as a whole. If it is desired to use commercial fertilizers it would be best to write to the Agricultural College, stating the locality of the farm, what crops have been raised for the past four or five years on the field which is to be cultivated, and what general condition the land is in at the present time. One safe rule in regard to fertilizers may be given, however, and that is that a liberal application of barnyard manure will suffice in almost any case.

Outside of the Central Bluegrass Region, which includes Fayette and adjoining counties, the soils are low in phosphorus and on this account it would generally be advantageous to use some form of phosphate in addition to manure. Two or four hundred pounds of high grade acid phosphate or of fine ground steamed bone would answer, either applied broadcast before the last harrowing or mixed with the manure. Upon the best land of the Bluegrass Counties this would be unnecessary, because the soil is already rich in phosphate, but the experiments carried out at the Station farm indicate that the use of one hundred pounds of muriate or sulphate of potash to the acre would be beneficial there if the ground has been long in cultivation.

IMPORTANCE OF GOOD SEED.

The fate of almost any crop of corn is largely decided before the corn is planted. In fact it is decided during the early winter preceding the season in which the corn is to grow. Too much stress cannot be laid upon the importance of the proper selection of seed.

One must be a good judge of corn to win in corn shows and eventually to get the best of yields. However, it is of greater importance to get a uniform stand even though the ears are not perfect specimens or extremely large.

If every hill in an acre should produce an ear weighing 8 ounces, which is a very small ear, the yield would be approximately equal to the average for Kentucky. Hence we see that if every stalk in an acre of perfect stand would produce a nubbin weighing one half pound, we would approximately double the average yield for Kentucky.

It would be interesting some time to take a walk through one of the best corn fields in your neighborhood and count one hundred hills. Notice how many hills have three stalks, how many two, how many one, and how many are entirely missing. Count the number of barren stalks, then calculate the percentage of a stand on the basis of two or three stalks per hill, as the farmer may have desired to have, and you will be surprised at the low percentage of good ear-bearing stalks you will find. Count also the percentage of the farmer's time and labor lost, as well as that of his horses and implements and the amount of unoccupied ground.

The question of good seed is one that each spring stares us in the face and there is an enormous demand for good reliable seed corn. Great importance is attached to the testing of seed, and below we shall describe the methods by which it may be done. However, if our corn has not been properly cared for during the fall and winter, our test will simply reveal to us the fact that our corn is of a low grade as regards germination and vitality.

The ideal condition for communities, so far as seed corn is concerned, would be the presence of some man in that community who has through long years carefully bred pure seed corn and made a study of how to gather and take care of seed, thus being able to supply his community with the best product. Few communities are thus favored. Hence probably the best general plan that could be recommended would be for each person to select his own seed corn in the fall, even though it is not pedigreed corn, or still better, get his start from some reliable corn breeder as near home as possible, and after that save his own seed. A few suggestions might here be made in regard to the selection of seed corn.

HOW TO SELECT SEED CORN.

Seed corn should be selected in the fall just as it is coming into maturity. Select well developed ears growing on well developed vigorous stalks, and of the same maturity. Mark them and allow them to mature. Do not select large ears from stalks that have grown in hills by themselves, that have been extremely favored in the way of a rich spot or have been favored in regard to moisture for any reason, but prefer those that have produced most heavily when growing under average conditions. Other things being equal, select ears from short thick stalks rather than from tall slender ones as the latter are more likely to be blown down. Never select an ear that is extremely long of shank but rather select one of a medium shank with the tip pointing downward at an angle of about 45 degrees. Prefer ears that do not have a gross, coarse, heavy husk.

HOW TO PRESERVE SEED CORN.

Take the corn immediately and put it in a dry, cool, well ventilated place, so that it may thoroughly season before freezing weather. There are numerous good methods by which this may be accomplished. A good plan is to hang the ears in binder twine, one above the other, a loop being made for each ear. Ordinary binder twine will hold twelve to twenty ears. The ears should not touch each other. This part of the procedure is most important, because if any considerable amount of moisture is left in the corn it will probably freeze in the early winter, and even if the germ is not killed, its vitality will be so impaired that its stalk will never be as thrifty as it should be. This drying process should be started immediately after gathering because aside from the danger of freezing, the corn may be injured by being placed in sacks or piles where it is subject to heating or mildew. Do not think because corn is apparently dry and gathered on a bright autumn day that it is in condition to be stored away in bulk.

When the corn is thoroughly dry, probably two months being allowed for this purpose, it may be stored away. Mouse-proof barrels or boxes are desirable for this purpose because in this way

the seed may probably be better protected from weevil, grain moth and the like.

GERMINATION TEST.

When spring comes a germination test will probably be an extremely gratifying process rather than the revelation of a sad fact, as would be the case with corn selected from the crib.

A germination test may be performed in the following manner. First a box 24 inches square and about 3 inches deep is made; it is filled 2 inches deep with clean sand, good soil or sawdust that has been well leached. The sawdust or other material should be thoroughly moistened and well packed down. Cut out a piece of white cloth to fit inside the box. Lay this off into 2-inch squares with a black pencil, ten each way like a checkerboard, thus leaving a border 2 inches around the box. This box will accommodate one hundred ears of corn, enough to plant seven acres. Number the squares from 1 to 100. Select 100 ears desirable for planting and arrange them in line, butts towards you. Number little squares of card board from 1 to 100. With pins or shingle nails pin these to the butts of the ears; then take six grains from each ear and lay them at the butt of the ear. Two grains should be taken from near the butt on opposite sides of the ear; two from opposite sides of the middle, the ear being revolved one third of its circumference; and two from opposite sides of the ear toward the tip, the ear being revolved as before. Thus grains are taken from six different places on the ear. Place each of these groups of six grains in its corresponding square in the box, with the heart side up and the tips all pointing in the same direction. Cut out another piece of cloth just the size of the inside of the box, wet it and cover the corn without disturbing the position of the grains. Take another piece of cloth larger than the box and spread it down carefully on this; on this put an inch of wet sand, or whatever material was used in the bottom of the box. Fold the edges of the cloth back over the box, put on a cover of boards and set the box where the temperature will not fall below 55 degrees and will run up to about 70 degrees. In about a week or ten days the box will be ready for inspection. Carefully remove the cover. When a square

does not show six well developed sprouts, discard the corresponding ear.

GRADING BY SIZE OF GRAINS.

When preparing to plant corn, discard the tip and butt grains because they are irregular in size and in the planter will not be deposited in the right number in the hills.

After the ears are so treated, it would be well to arrange the ears in three grades according to the size of grain borne by the ears, so that the different plates of the corn planter may be used for each size of grain. It is advisable to test these grades in the corn planter so as to ascertain just what plate to use with each grade.

PREPARATION OF THE SEED BED.

The land that is to be planted in corn should be plowed as early as possible in the spring but care should be exercised that it is not plowed too wet. No definite rule can be given for the depth of plowing, but in general we might say that if the soil permits, we should plow eight inches deep, and if not, that we should at least bring up a little of the sub-soil. The ground should be harrowed as soon as possible after plowing before hard clods are formed by the drying out of the earth, also as a means of beginning the conservation of moisture. If possible between plowing and time for planting, the ground should be harrowed or dragged two or three times to kill any growth of weeds that may appear.

PLANTING AND CULTIVATION.

The matter of planting corn in drills or in checks should be decided by local conditions. If the ground is foul with weeds it should, however, by all means be checked. After the corn is planted the ground should be harrowed at least once before the corn appears and it would not be a bad idea to roll the ground once. The corn should not be plowed deep more than once, and this should be done before the corn is six inches high inasmuch as we

would be allowing the escape of a considerable amount of moisture that should be conserved and if the corn is well along in the growing period, we will break away the roots which ramify in the soil between the rows, thereby cutting off this portion of the available plant food.

After the corn is well up, the cultivation should be done with a plow with several teeth penetrating the soil only a short distance, thus keeping young weeds killed and getting a dust mulch established in order to check the rise of moisture before it reaches the surface and evaporates. The keynote of the whole matter is frequent shallow cultivations rather than occasional deep cultivations.

JUDGING CORN.

The next thing that we shall consider is the judging of corn so that we may select intelligently for our local, county, state and national shows which we are to enter through the fall and winter months. One of the most important points to be considered in selecting an exhibit of more than one ear (exhibits usually consist of ten) is uniformity. Selecting an ear as described below, the other nine ears should be carefully selected most closely to resemble this standard, as uniformity is always given great weight by judges.

THE STANDARD EAR.

In order to have something of a standard, we shall here give a description of what an ear of corn should be. The ear should be cylindrical in shape, tapering only very slightly. The official standard for the Kentucky Corn Growers' Association requires that an ear of corn be between 10 and 11 inches long and measure between $7\frac{1}{2}$ and $8\frac{1}{4}$ inches in circumference measured at one third the distance from the butt; in other words the circumference at this point should be three fourths the length of the ear. In our ordinary farm corn the kernels should be moderately deep dented because smooth kernels are usually shallow and this is frequently a sign that the corn is deteriorating. The shank should be smooth and rather small but should be large enough to insure that the ear will not fall from the stalk. The tip and butt should be well covered with deep, well shaped grains. The grains should be of such a shape as to leave very little open space between them. Especially

should round shouldered and peg-tipped grains be avoided. Viewed from the edge a grain of corn should be of almost uniform thickness.

CORN SCORE CARD.

The following score card has been adopted by the Kentucky Corn Growers' Association:

1. Uniformity of exhibit.	
Uniform in shape, length and circumference.....	5
2. Shape of ear.	
Ears cylindrical with straight rows and with proper proportion of length and circumference.....	10
3. Length of ears.	
General standard 10 to 11 inches. Varies with variety.....	10
4. Circumference of ears.	
General standard $7\frac{1}{2}$ to $8\frac{1}{4}$ inches. Varies with variety.....	5
5. Tips of ears.	
Oval shape and regularly filled out with large dented kernels.	5
6. Butts of ears.	
Kernels rounded over the end of the cob in regular manner, leaving a deep depression when shank is removed.....	5
7. Kernel uniformity.	
Kernels from the same ear and from the several ears uniform in size and shape.....	5
8. Kernel shape.	
Kernels deep, wedge shaped, full at germ end.....	5
9. Color in grain and cob.	
Free from mixture and true to variety color.....	10
10. Space between rows.	
Furrow between rows and space caused by round corners of kernels, which should be narrow, deep and sufficient for perfect ventilation.....	5
11. Space between kernels at cob.	
Space in row between kernels at cob.....	5
12. Vitality or seed condition.	
Ripe, sound, dry and of strong vitality. Grains of a pinkish color objectionable. Three dead grains shall disqualify an entire exhibit.....	10
13. Trueness to type.	
Conforming to variety characteristics in variety classes and to prevailing type in general classes.....	10
14. Proportion of shelled corn to cob.....	10
Total	100

LIST OF BULLETINS OF THE KENTUCKY AGRICULTURAL
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14. Analyses of Commercial Fertilizers. July, 1888.
20. Commercial Fertilizers. July, 1889.
25. Strawberries. April, 1890.
26. Corn Experiments. April, 1890.
27. Experiments with Commercial Fertilizers on Hemp. April, 1890.
28. Tobacco Experiments. May, 1890.
29. Commercial Fertilizers. July, 1890.
30. 1. Wheat Experiments. 2. A New Wheat Insect. August, 1890.
39. Marls. March, 1892.
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42. 1. Experiments with Wheat. 2. With Oats. September, 1892.
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57. 1. Wheat Experiments. 2. Oat Experiments.
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64. Analyses of Commercial Fertilizers. July, 1896.
65. Analyses of Commercial Fertilizers. 1. Official Analyses; 2. Analyses of Other Samples. December, 1896.
71. Analyses of Commercial Fertilizers. 1. Official Analyses; 2. Analyses of Other Samples. December, 1897.
75. Commercial Fertilizers. June, 1898.
76. Commercial Fertilizers. August, 1898.
79. Commercial Fertilizers. December, 1898.
81. A Method of Avoiding Lettuce Rot; 2. Potato Scab Experiment. 1899.
82. Commercial Fertilizers. July, 1899.
83. Wheat. 1. Experiments with Fertilizers; 2. Variety Tests; 3. Notes and Description. August, 1899.
84. The Elms and Their Diseases. November, 1899.
85. Commercial Fertilizers. December, 1899.
88. Commercial Fertilizers. August, 1900.
94. Wheat. 1. Test of Varieties; 2. Description of Varieties. 1901.
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97. Commercial Fertilizers. December, 1901.
99. Oats. 1. Test of Varieties; 2. Treatment of Smut; 3. Test of Fertilizers; 4. Relative Value of the Varieties for Feeding. 1902.
100. Inspection and Analyses of Food. February, 1902.
102. Commercial Fertilizers. September, 1902.
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108. Some Results in Steer Feeding. July, 1903.
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111. The Hessian Fly in 1902-3. December, 1903.
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113. Protein Content of the Wheat Kernel. February, 1904.
115. Wheat. Field Test of Varieties. September, 1904.
117. Commercial Fertilizers. December, 1904.
118. Corn. Field Tests. March, 1905.
119. Labels on Adulterated and Imitation Foods Sold in Kentucky.
121. Commercial Fertilizers. August, 1905.
122. Corn. Method of Selecting Seed Corn; Chemical Study of the Composition of a Number of Varieties of Kentucky Corn.
123. Commercial Fertilizers. December, 1905.
124. On the Adulterants and Weed Seeds in Kentucky. Samples of Bluegrass, Orchard Grass, Timothy, Red Clover and Alfalfa Seeds. March, 1906.
125. Observations and Experiments on Clover, Alfalfa and Soy Beans. 1906.
126. Soils—Method and Use of Soil Analysis; Analyses of Soils in 1904-5; On the Determination of Humus in the Soil. 1906.
127. The Inspection of Seeds under the Kentucky Pure Seed Law. 1906.
128. Commercial Fertilizers. December, 1906.
130. 1. Food of the Crow Blackbird. 2. The Corn Root-worm. 1907.
131. Concentrated Commercial Feeding Stuffs.
132. Commercial Fertilizers. December, 1907.
133. Spraying Apple Trees. 2. Apple Orchard Pests in Kentucky.
134. Milk Supply of Kentucky—Louisville. February, 1908.
135. Wheat. 1. Test of Varieties. 2. Chemical Study of Varieties. June, 1908.
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137. The Army-Worm. December, 1908.
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139. Tobacco—Cultivation, Curing, Marketing. January, 1909.
140. 1. How to Purchase and Use Commercial Fertilizers; 2. Source of Fertilizing Materials; 3. Care of Farm Manures; 4. Green Manure Crops. March, 1909.
141. Commercial Feeding Stuffs. 1. General Discussion. 2. Discussion of Results. 3. Analysis of Inspectors' Samples. 4. Analyses of Forage Plants and Hays. March, 1909.
142. Carnation Root-Knot. April, 1909.
143. Sheep Scab. May, 1909.
144. Information on Food and Drug Inspection and Investigation. December, 1909.
145. Some Lessons from Corn Shows. Corn Pests. December, 1909.
146. Commercial Fertilizers. December, 1909.
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148. Seed Testing Apparatus. A Study of the Conditions under which our Germination Tests are Made. May, 1910.
149. Bleached Flour. September, 1910.
150. Preservation of Drugs. September, 1910.
151. An Outbreak of the Gad-fly in Kentucky. October, 1910.