

KANSAS STATE AGRICULTURAL COLLEGE

EXPERIMENT STATION.— CIRCULAR NO. 8.

DEPARTMENT OF AGRONOMY
A. M. TENEYCK, AGRONOMIST IN CHARGE.

Investigation of the Vitality of Kansas Seed-Corn.*

BY

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Corn was severely injured last season by the drought and hot weather in August, which resulted in the production of many light and chaffy ears. Again, the winter set in a month earlier than usual and the early snow and severe cold weather found the larger part of our Kansas corn crop still in the field unhusked, and many farmers failed even to gather seed-corn before the freeze-up. Because of these unfavorable conditions those who were best acquainted with the situation feared that much of the seed-corn was injured in vitality and that there was likely to be a shortage of good seed-corn for planting in this State.

In order to determine the actual condition of the seed-corn, the writer issued a general invitation to the farmers to send samples of the corn which they intended to use for seed to the Agronomy Department of the Experiment Station for testing. This invitation, with a circular giving directions for sampling, etc., was sent to a number of corn growers. The announcement was also published widely through the newspapers and the agricultural press of the State.

The instructions given for sampling were as follows: "Select twenty-five good ears from the seed-corn you have saved or from the crib or field—such ears as you would choose for planting. Select six kernels from each ear, two from near the tip, two from near the middle, and two from near the butt of the ear, removing duplicate kernels from opposite sides of the ear. This ought to give an average sample fairly representing your seed-corn. Place the kernels in a seed envelope with note giving your name and address,

*This work has been in charge of Mr. Joe Lill, one of our graduate students, who has carried out all of the germination work and has made the computations from which the data and conclusions published in this circular have been determined.

name of variety, and a careful description of the condition under which the seed-corn was gathered and stored, and mail to the Agronomy Department of the Kansas State Agricultural College.”

This announcement was first published about the middle of February. The testing of samples was begun the last week in February and has continued to this date (March 15). Nearly 300 samples have been received, and this report includes 250 tests which have been completed. Fifty-seven counties are represented by the tests included in this report. The places from which samples were received were well distributed over the middle and eastern sections of the State, but only a few samples came from the western third of the State.

Several of the parties who sent in samples failed to carry out the instructions fully regarding sampling, and sent smaller samples than required. When possible these were duplicated. A number failed to send descriptive data and a few neglected to write their name and address. A personal letter reporting the result of each germination test was sent to the grower of the corn with advice and directions regarding the planting or further testing of such seed-corn.

The time allowed for the germination of the samples was about six days. The kernels were examined and counted when the rootlets were about two inches in length, and only the grains that showed healthy, normal rootlets were counted as germinated.

The following is some of the general data secured by this investigation:

The average germination of the seed-corn of Kansas as determined by this investigation is 92.25 per cent; that is, 92 kernels out of every 100 kernels tested sprouted.

COMPARING EARLY AND LATE GATHERED SEED-CORN.

One hundred twenty-five samples of corn gathered early, before December 1st, gave an average germination of 95.18 per cent.

Fifty-four samples of corn gathered late, after December 1st, gave an average germination of 88.54 per cent.

COMPARING THE SEED-CORN GATHERED EARLY AND WELL CARED FOR WITH CORN HUSKED EARLY AND THROWN IN THE CRIB, FROM WHICH THE SEED EARS WERE LATER SELECTED.

Eighty samples of seed-corn gathered early and well saved gave an average germination of 97.7 per cent.

Nine samples of corn husked early, but seed taken from the crib, gave a germination of 93.3 per cent.

COMPARING SEED-CORN GATHERED LATE FROM THE SHOCK WITH
THAT TAKEN IN THE WINTER FROM THE STANDING STALKS
IN THE FIELD.

Thirty-six samples gathered from the field after December 1st gave an average germination of 87.7 per cent.

Six samples taken from the shock after December 1st gave an average germination of 86.6 per cent.

COMPARING THE GERMINATION OF VARIETIES.

Fifteen samples of Reid's Yellow Dent corn gave an average germination of 98.8 per cent.

Twenty-eight samples of Kansas Sunflower corn gave an average germination of 95.94 per cent.

Forty-nine samples of Boone County White corn gave an average germination of 94.52 per cent.

Twenty-three samples of Hildreth corn gave an average germination of 92.38 per cent.

Eleven samples of Silvermine corn gave an average germination of 86.85 per cent.

The average germination of 123 other varieties was 91.47 per cent.

COMPARING THE GERMINATION ACCORDING TO THE EARLY OR LATE
MATURING CHARACTER OF THE CORN.

Sixteen samples of fairly early maturing corn such as the Silvermine gave an average germination of 89.03 per cent.

Sixty-six samples of medium early maturing corn, such as Boone County White and Reid's Yellow Dent, gave an average germination of 95.11 per cent.

Thirty-two samples of corn of medium maturing season, such as Kansas Sunflower and McAuley's White Dent, gave an average germination of 95.6 per cent.

Thirty-two samples of late-maturing corn, such as Hildreth and Hiawatha Yellow Dent, gave an average germination of 92.79 per cent.

COMPARISON OF GERMINATION OF SAMPLES BY DISTRICTS.

Southeastern district, including counties of Chautauqua, Montgomery, Labette, Cherokee, Wilson, Bourbon, Allen, and Linn, 17 samples gave an average germination of 95.75 per cent. Of this lot, 9 samples gathered early averaged 96.71 per cent, and 4 samples gathered late averaged 91.16 per cent.

Southern district, including counties of Butler, Cowley, Sumner, Harper, Kingman, Sedgwick, Harvey, Reno, Clark, Stafford,

Pawnee, Rice, Barton, and Rush, 54 samples gave an average germination of 93.21 per cent; 27 samples of early-gathered corn averaged 94.58 per cent, and 8 samples of late-gathered corn averaged 98.53 per cent.

Northern district, including counties of Dickinson, Saline, Ottawa, Clay, Washington, Republic, Cloud, Mitchell, Jewell, Smith, Osborne, and Rooks, 50 samples gave an average germination of 88.78 per cent; 22 samples of early-gathered corn averaged 92.22 per cent, and 16 samples of late-gathered corn averaged 81.44 per cent.

Northeastern district, including counties of Johnson, Franklin, Osage, Lyon, Morris, Wabaunsee, Douglas, Shawnee, Jefferson, Leavenworth, Doniphan, Atchison, Jackson, Marshall, Pottawatomie, Riley, and Geary, 112 samples gave an average germination of 92.5 per cent; 63 samples of early-gathered corn averaged 95.46 per cent, and 33 samples of late-gathered corn averaged 88.87 per cent.

Of the 250 samples tested, 190 samples gave a germination above 90 per cent; of these, 127 samples tested 95 per cent, or better, and 25 samples gave a perfect germination. Only 60 samples out of the 250 tested below 90 per cent, 20 samples tested below 80 per cent, 9 samples tested below 70 per cent, and 3 samples tested below 50 per cent, the lowest germination being 30 per cent.

GENERAL CONCLUSIONS.

1. The average germination of Kansas seed-corn is high.
2. The germination of the early-gathered corn is, on the average, nearly 7 per cent better than the germination of the late-gathered corn.
3. The germination varies in the different districts, being lowest in the northern districts, but the early-gathered corn shows good vitality in each district.
4. Medium or medium early maturing varieties gave a higher germination than the early or very late maturing varieties.
5. There was little difference in vitality of seed-corn gathered late from the standing stalk or from the shock.
6. The early-gathered and well-saved seed-corn germinated 4.5 per cent better than the corn husked early and stored in cribs, and over 9 per cent better than the late-gathered seed-corn.

Approved:

ED. H. WEBSTER, *Director.*

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