

## 2. Thickness of Planting Tests

**T**HE PURPOSE of these tests was to determine and demonstrate the relation of planting seed at different thicknesses to the yield and quality of the crop produced.

### PLAN OF THE TESTS

The seed was planted in plots of seven by ten hills during the first three years and replicated four times in different parts of the field to minimize yield differences due to differences in soil, drainage, and other factors. Four plots, eight hills square, were used during the four years 1908 to 1911. Six or eight plots of four by eight hills were used in 1912 and 1913. All seed was dropped by hand so as to insure accuracy in the number of kernels planted. The hills were spaced three-and-a-half by three-and-a-half feet.

Nine thicknesses of planting were compared — from one to five kernels (or stalks) per hill. Thus the planting was done at rates of from 3,556 to 17,780 kernels (or stalks) per acre.

### SOURCE OF SEED

The seed used in each county was obtained from farmers living in the respective counties. It usually was

obtained from a farmer known to have good seed. However, for some tests the seed was a composite of seed planted in the Farmers' Variety Test.

Records are not available for the individual tests conducted from 1905 to 1908. However, for 88 tests conducted in 25 counties from 1909 to 1913 the following methods were used:

Mixed seed was planted with one to five kernels in 23 tests.

Mixed seed was thinned to one to five stalks in two tests.

One farmer's seed was planted with one to five kernels in 41 tests.

One farmer's seed was thinned to one to five stalks in 22 tests.

## RECORDS

This summary reports on only the bushels per acre, percent stand, stalks per acre at harvest, percent barren stalks, and percent of marketable ears. The percent of marketable ears as reported here includes both the "seed ears" and the "marketable ears" of the original data. Records obtained on the percent of suckers, and the percent of nubbins and worthless ears are not here reported because of their apparent less worth.

### Bushels Per Acre

In estimating the yield in bushels per acre, the total number of pounds produced was divided by 70, 75, 80, or 85, according to the estimated dryness of the corn when harvested.

### Percent Stand

This refers to the percentage of stalks found at harvest time to the number of kernels planted, or the number

of stalks to which the corn was thinned at the time of the first cultivation.

### Percent Barren Stalks

Barren stalks were recorded as those stalks other than suckers which bore no harvestable ears.

As the corn was harvested the ears were divided into four grades by numbers of ears as: Seed ears, market ears, nubbins, and worthless ears.

### RESULTS AND CONCLUSIONS

The average results of 143 thickness of planting tests in 32 counties during the eight years of 1905 to 1913, except 1907, are shown in Figures 2.1, 2.2, and 2.3.

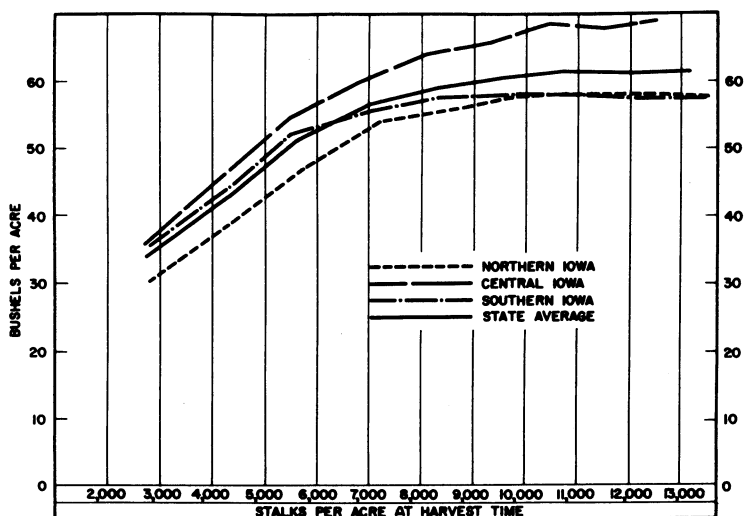


Fig. 2.1. Bushels per acre in relation to stalks per acre: 143 tests in 32 counties during the eight years, 1905 to 1913, except for 1907.

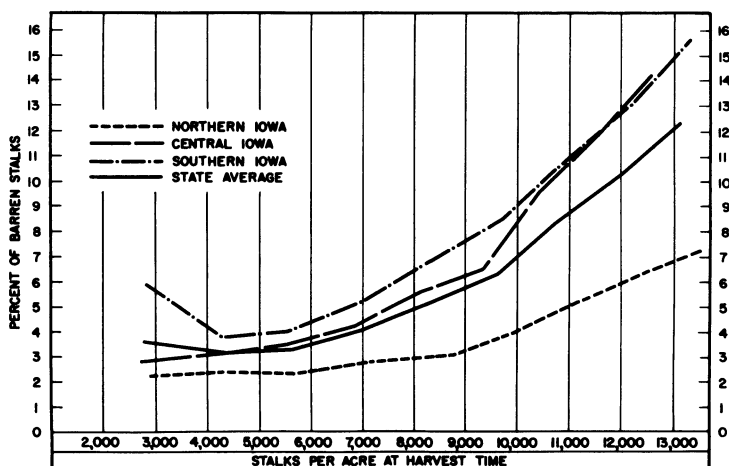


Fig. 2.2. Percent of barren stalks in relation to the stalks per acre.

It is evident from the results here reported that there was more danger of loss from planting too little than too much seed. It would appear that the general practice of planting three kernels per hill (10,668 per acre) was about right for the conditions as they prevailed at the time, but when the planter missed three it was better to drop four rather than two.

The yield increased rapidly with the increase from one to three kernels or stalks per hill (3,556 to 10,668 per acre), increased slightly more for four per hill (14,224 per acre), and leveled off about the same for four-and-one-half and five per hill (16,002 and 17,780 per acre). The highest eight-year average yield was in northern Iowa with four kernels or stalks per hill, in central Iowa with five per hill, and in southern Iowa with three-and-one-half per hill.

There were only 75 to 80 percent as many stalks left at harvest as there were kernels planted, or stalks left at the time of the first cultivation.

The proportion of suckers decreased rapidly with an increase in the thickness of planting. Consequently, it

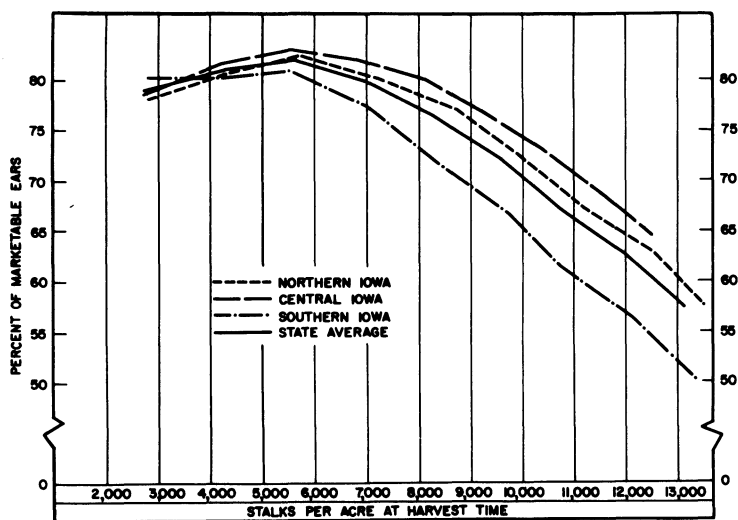


Fig. 2.3. Percent of marketable ears in relation to stalks per acre.

was recommended that a person should plant plenty of seed, especially on rich land, for it is better to have stalks than suckers, because those ears which are produced on suckers are usually small, late, and of poor quality.

The proportion of barren stalks increased with the increase in thickness of planting. This was much more pronounced in central and southern Iowa than in northern Iowa.

The proportion of marketable ears decreased with the increase of thickness of planting. This also was more apparent in southern than in central or northern Iowa.

These two facts — namely, the increase in the percentage of barren stalks and the decrease in marketable ears as the thickness of planting increased — are the two facts that had so important a bearing on the location of the causes of the great differences in yield of corn from different farmers and of different ears of the same man's seed (other than for germination and low stand). It is for that reason that the Thickness of Planting Tests are being discussed before the Farmers' Variety Tests.

The fact that "On rich land the thicker planting gave better results than on soil lacking in fertility" was recognized in the original manuscript prepared in 1912. Of course, it is now recognized that the old-time, blanket recommendation that "The general practice of dropping three kernels per hill is about right under average conditions" needs to be very much broadened. Present recommendations vary the thickness according to the fertility level of the soil, the available moisture, and the decrease in size of stalks and ears as one goes north from the middle of the Corn Belt.