

THE RIDGE-COVER METHOD AT THE LONGMONT EXPERIMENT STATION

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Experience gained in 1946 at the Longmont Experiment Station resulted from two distinctly different approaches in the use of "ridge-cover" on planter rows. The first and premeditated approach was the design of a definite experiment set up to study by comparison the value of flat, furrow, and ridge-cover planting. The second, however, resulted from the more or less spontaneous employment of ridge-covering weeks after the Experiment Station fields had been planted by the usual standard flat method.

Germination during the spring of 1946 was very much delayed in the Longmont area, due to the very dry soil conditions. As a consequence of the extremely low soil moisture content, coupled with limited rainfall and lack of early irrigation water, a challenge for methods that would aid germination was presented to each beet grower of the area. The results obtained at the Experiment Station and the methods used in an attempt to aid germination are now to be discussed.

In the test specifically designed to compare standard, furrow, and ridge-cover planting, the methods used were briefly as follows:

1. Standard flat planting.
2. Furrow planting. Plantings were made 2-2½ inches deep and then 1-1½ inches of soil was scraped off.
3. Ridge-cover planting. Ridges were thrown up using 10-inch discs on cultivator immediately following planting so that 3-4 inches of soil covered the planter row. The removal of the ridges was later affected by the use of wide winged shovels attached to a tractor cultivator.

The rate of seeding was 3 pounds of segmented seed per acre, amounting to 6-8 seed portions per foot. The plantings were made in strips the length of the field on four different dates. Germination stand counts were obtained, which appear in the following table along with dates of planting and time of removing ridges.

Comparison of flat, furrow, and ridge-cover plantings. Longmont, 1946

Planting(a)	Plants/ 100 inches			Maximum gap inches		
	Flat	Furrow	Ridge-cover(b)	Flat	Furrow	Ridge-cover
1st	31.0	28.4	25.9	12.6	14.7	16.6
2nd	25.5	28.0	45.4	14.2	15.0	9.9
3rd	28.4	28.3	24.9	13.2	13.7	16.6
4th	3.3	2.0	14.3	61.5	70.7	25.1

(a) Dates of planting

April 18
May 8
May 15
May 22

(b) Ridges removed

May 3
May 15
May 18
May 27

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While the data in the above table are not extensive, the ridge-cover planting stands out as definitely better for two of the four dates of planting; namely, May 8 and May 22.

Even greater gains were obtained, however, from the ridge-cover method when used on fields exclusive of the above test to conserve the moisture received from an early light rain. In this case the ridge-cover method was not used experimentally but was used on all of the variety and agronomic plots because of its apparent possibilities. In a brief resume of the circumstances it will suffice to say that these experimental fields on the Station were planted by the standard flat method early in April. Germination did not occur the first week, the second week, or the third week. Scattered showers occurred but no apparent benefit to germination was received.

The records on precipitation at Longmont for the month of April show that it rained .09 inch on the 8th, .08 inch on the 9th, .19 inch on the 14th, and .36 inch on the 27th. The rain occurring on April 27 was the largest for the month. At the time it was believed that this rain would be enough to cause germination. However, on further observation it was appreciated that the greater portion of this moisture would soon be lost again through evaporation unless retarded in some manner. To counteract this loss a blind cultivation, throwing a ridge-cover upon the planter rows, was made April 29, though the treatment should have been even more effective if it had been done a few hours sooner. Nevertheless, by ridging at this time, the surface soil on the rows was supplemented with additional moist soil, thereby concentrating the moisture in the area needed, and also reducing the amount of evaporation in the area adjacent to the seed.

The ridges were left until May 4, when in this case they were removed by harrowing the field crosswise of the rows, the harrow teeth being set nearly flat to act mostly as a drag but also to leave a loose, slightly rough surface.

By this practice of ridging following a light rain (.36 inch), germination was initiated in one field in April, whereas, in an adjacent farmer's field germination for plots not ridged did not take place until after rains totaling .74 inch on May 9 and 10. Thus, two weeks of additional growth was obtained by the practice of ridging. An early photograph taken of the Experiment Station field where ridging was done and a second photograph of the farmer's field across the road taken the same day show a marked contrast in the stages of development of the beets. Since no portion of the Experiment Station fields were left unridged as checks in the operations where ridging followed planting by several days, no direct comparison is possible. However, the average yield for the Experiment Station this year was higher (19.79 tons per acre) than for an average of the three previous years. This is in direct contrast to the yields for the Longmont area as a whole, as this year the factory had a very low average (10.62 tons per acre).

In 1945 spring moisture conditions were good and no advantage in germination stands was obtained from the ridge-cover method. The stands, in fact, were somewhat less for the ridge-cover plantings than for the standard flat planting. This slight decrease in stand was attributed to incomplete removal of the ridges. The reduction in stand, however, was more than offset by the weed control obtained through the use of the ridge-cover method. The differences in germination stands in 1945 was not a factor since all the stands were good, while on the other hand the weeds presented a real factor. A photograph taken early in 1945 shows good control of weeds by the use of the ridge-cover method as contrasted with no control by standard flat planting.

In summary, "Ridge-cover" was found to be advantageous under certain conditions for conserving moisture, elimination of weeds, and/or control of surface soil crust.

Ridging was found to be of no aid to germination if done under such dry conditions that no moist soil was thrown over the planter rows in the process of ridging. In that case, the process was found effective if delayed until immediately following a light rain. If the amount of rain received was large, or if soil moisture was abundant, no beneficial effect on germination was obtained by "ridge-cover."

In a comparison of furrow and standard flat planting no essential differences were observed.