

FIELD OPERATIONS AND CONDITIONS

The north one third of the Manta tract of the College Farm (see 1935 report) was used for the test plots in 1939. The previous crops were: beets 1935, barley 1936, corn 1937 and oats 1938. Some manure was applied for the corn and oats crops. A moderate application of well rotted manure was applied on the oat stubble and the land irrigated in August. Heavy rains following this irrigation delayed plowing till mid-September. An unusually thick and heavy growth of volunteer oats was plowed under. A subsurface packer was run over the field after plowing and the land left moderately rough for the winter. Approximately 100 pounds per acre of 49% superphosphate was drilled in in March and seed bed preparation partly completed with harrow and float. Just before planting in April the land was thoroughly cultivated to kill germinating weeds. Closely set knives and duckfeet on a standard beet cultivator was the tool used for this cultivation. The cultivator was followed by float and harrow to complete seed bed preparation. Due to the contour of this field it was necessary to run beet rows both east and west; and north and south on different parts. For this reason some difficulty was experienced in fitting the various tests to the field and in some cases borders were scarcely adequate.

Early planting, in the date of planting test, was made March 24. Most of the seedlings had emerged by mid-April when a hard freeze was experienced. A considerable portion of the seedlings were killed outright and others appeared to be more or less severely damaged. However fairly satisfactory stands were obtained from this early planting. In a few instances farmers who had planted at about the same time in March replanted following this freeze.

The medium planting, in the date of planting test was made April 21 and planting of the balance of the tests was completed April 24. The late date of planting was May 17. The tests were thinned the last week in May. Except in the cases where spacing was a variable in the test all plots were thinned to a spacing of 12 inches in 20 inch rows. Very good to excellent stands were obtained. Cultivation and hoeing sufficient for the control of weeds conformed to recognized good farm practice.

Considerable "Blackroot" was in evidence in parts of the field when thinning started. The precipitation received May 25-27 appeared to check this condition and with the exception of some of the inbred breeding strain lines its effect appeared to be negligible. Loss from root rots was of little consequence and only a very light leaf spot infection developed very late in the season. No trouble was experienced with webworms or grasshoppers. The very dry and hot weather of July and August favored red spider and they were very much in evidence on the foliage in late summer. The infestation of red spider was exceedingly heavy on very wide spaced beets. Mosiac infection and "Savoy" were moderately abundant in parts of the field in late summer.

General irrigations of the test field were applied as follows: First irrigation, June 5 except space-stand test which was irrigated June 17; Second irrigation, July 1; Third irrigation, July 18 and 19; Fourth irrigation, August 12; Fifth irrigation, September 2 and 3. This field was difficult to irrigate and some breaking over and washing occurred. It is also impossible to adequately care for waste water. This resulted in the flooding of the lower portions of the field and possibly the inadequate soaking of small portions at some of the irrigations.

While it seems possible that irrigation may have been slightly short of the optimum for this year, experimental results do not appear to have been seriously impaired by water shortage or the difficulties of irrigation.

The application of water to the irrigation test will be discussed in connection with that test.

All tests with the exception of the special spacing study were harvested by lifting the inside rows with a puller. One man followed the puller and made a careful separation of the beets at the plot lines. Two 20 beet samples were taken for analysis and all remainder beets sacked, taken to the laboratory and washed weights obtained. In general the remainder of the beets were washed very promptly. Harvest of the tests started October 12 and was completed October 21.

During late summer and early fall an addition to the preparation shed at the laboratory was made and an additional washing machine installed. The water lines leading to the nozzles of the old washing machine were changed and the efficiency of this machine much improved. In the place of the beet splitter and rasp formerly used a rasp obtained from the National Seed Company was installed. Whole beets are dropped into buckets on an endless chain which carries the beet over the rasp blade of this machine. A conveyor system was installed which carries the split beets from the rasp and to a truck outside the shed. The washed remainder samples, after being weighed, can also be placed in the conveyor. These changes have materially increased the efficiency of the preparation crew without the addition of any laborers.

In May 1939 the Director of the Colorado Experiment Station requested the termination of the lease under which the Mantz tract of the College Farm has been used for beet experiments since 1935. In October a cooperative agreement with the Colorado Experiment Station was completed under which the beet experimental work will be conducted on the East, or Agronomy, Farm. The land that will be available under this new agreement is believed to be better for experimental work, water rights and irrigation facilities are better than those serving the Mantz tract and it is believed that in general much closer cooperation with the Agronomy staff of the experiment station and college can be attained under the new arrangement.

The field used for the tests this year proved to be exceedingly variable. This variability may have been increased by the extreme climatic conditions. Irrigations may have been slightly inadequate and if so probably tended to increase the effect of subsoil variability. Yields of identical varieties or treatments showed very great variation from plot to plot. The extreme case illustrating this is that of a variety in the Leaf-Spot-Resistant Varieties Test; plot 214 yielded at the rate of 20.94 tons per acre while plot 295 yielded at the rate of 6.95 tons per acre; or just one third as much as plot 214. Due to the great variability within varieties or treatments rather large differences in yield were not statistically significant in most of the tests here reported.