

# Irrigation of Sugar Beets Grown for Seed in Hemet Valley, California

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Experiments on irrigation of sugar beets grown for seed were conducted during five seasons. In each season, uniform irrigation over the whole field was practiced until about May 1, or shortly before the beginning of the blooming period. After that time, the field was divided into several series of six replicated plots each. Each series was then irrigated at intervals of varying lengths, such as 7, 14, and 21 days. The relative amounts of water applied at each irrigation to the 14 and 21-day series were two and three times, respectively, of that applied to the 7-day series. Thus, effort was made to apply the same total amount of water to each series, regardless of the frequency of application.

Soil-moisture studies were conducted to determine the availability of moisture at all levels to a depth of 8 feet, in the 14 and 21-day-interval plots. The relative humidity of the air during flowering time was determined in each series of plots and in tin adjacent open field. There was no obvious deficiency of moisture shown by the plants in any of the treatments. The relative humidity of the air was the same in all irrigation treatments, and distinctly higher than in the adjacent open field. Obviously, where there was a dense, high stand of seedstalks and an adequate supply of soil moisture, the sugar beets had a marked influence on the humidity of the atmosphere immediately adjacent to them.

The seed yields showed that where the soil moisture was supplied in adequate amount the yields were practically the same, regardless of the frequency with which water was applied. The same was found to be true with regard to germination.

Results of Irrigation with Sugar Beets

| Interval between irrigations | Yield of clean seed per acre | Germination of seedballs, 14-day period | Yield of viable seed per acre |
|------------------------------|------------------------------|---|-------------------------------|
|                              | Pounds                       | Percentage                              | Pounds                        |
| <b>Tests in 1935</b>         |                              |   |                               |
| 7 days                       | 3539                         | 95                                      | 3382                          |
| 14 days                      | 3288                         | 92                                      | 3025                          |
| 21 days                      | 3454                         | 93                                      | 3212                          |
| <b>Tests in 1939</b>         |                              |   |                               |
| 7 days                       | 3088                         | 82                                      | 2532                          |
| 14 days                      | 3094                         | 79                                      | 2444                          |
| 21 days                      | 3093                         | 80                                      | 2474                          |

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