

# Sweet Corn

## growth and yield affected by irrigation in semiarid areas

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**Growth of sweet corn** is greatly affected by insufficient soil moisture, as measured by yield of marketable ears, size of plant, and dry matter produced.

Irrigation studies were made at Davis for two years with a small sweet corn variety—Golden Bantam—and a large variety—Oregon Evergreen. Each treatment was grown on soil filled with available water to a depth of six feet. Treatment *A* received no irrigation water; treatment *B* received the greatest amount of water; treatments *C* and *D* received successively smaller amounts of water. Each plot was 1/115 of an acre; rows were three feet apart, with single plants 12 to 15 inches apart in the rows; and plots were replicated four times.

All crops were planted in the spring, and none was suckered. Records were obtained of: relative rate of growth; number of suckers per plant; plants with tassels; and, plants with silks. The yield was determined in terms of marketable and unmarketable corn, with the marketable being approximately U. S. No. 1 corn.

After harvest, the plants were cut and allowed to field-dry during July and August for dry-weight determination of the stalks in the entire plot.

Unlike most vegetable plants grown in the field which become stunted rather than wilting under conditions of low soil moisture, sweet corn plants exhibited several degrees of wilting. The dry plots showed the greatest rolling of leaves, but wilting was noticeable on the wet plots at about 2 p.m. on a hot afternoon, a day or two after irrigation. Oregon Evergreen corn rooted somewhat deeper and showed less rolling of leaves than Golden Bantam.

The indications of insufficient water on the wet treatment were unusual but might be explained by the rapid growth of corn near tasseling time. Corn plants may grow so fast that the roots are unable to obtain a sufficient volume of water to keep the leaves turgid. A somewhat similar condition has been noted on white potatoes—another crop with a shallow and limited root system.

The sizes of sweet corn plants were greatly affected by the amount of irrigation water. In all four experiments, the height measurements of the plant were

proportional to the amount of irrigation water added. Treatment made little difference in the height of young sweet corn, but at maturity, the height was roughly proportional to the amount of water applied. The effect of insufficient water on growth could be noticed within 30 to 40 days after seed planting.

When the nonirrigated and amply irrigated plants were compared, there were always more suckers on the irrigated plot than on the nonirrigated. During one year of the experiment there were 2.7 suckers per plant on the dry treatment, and 3.5 suckers on the wet treatment for Golden Bantam; and 1.0 sucker on Oregon Evergreen with dry treatment and 2.0 suckers on the plants with the wet treatment.

A count of the number of tassels per plant showed that Golden Bantam had 2.6 tassels per plant on the dry treatment, 3.9 tassels on the wet treatment; similarly, Oregon Evergreen had 1.5 tassels per plant as against 2.1.

In the 15 comparisons made, only one treatment had more tassels per plant than the wet treatment. Similar results were obtained in the number of ears with silks. There were always more ears with silks on plants of the wet treatment. The relative values per plant for the dry and the wet treatments and Golden Bantam were 0.9 to 2.4 the first year, and 1.8 to 4.2 the second. Similar data for Oregon Evergreen were 1.4 to 2.2 for the first year, and 1.6 to 2.2 for the second.

The average increase in yield from irrigation in these five experiments—in three years—was 2,000%. This was the greatest increase obtained for any crop in studies at Davis; and may be compared with 35% obtained from averaging five deep-rooted crops.

During the first year of the experiment, Golden Bantam produced 0.07 marketable ears per plant on dry plot A, compared to 1.18 ears on irrigated plot B. At the same time Oregon Evergreen yielded 0.08 marketable ears on plot A and 1.10 ears on plot B. The following year the difference was less striking but still significant: Golden Bantam produced 0.56 marketable ears on the dry plot and 1.61 on the heavy irrigated plot. The figures for Oregon Evergreen were 0.65 and 1.33 respectively.

Few ears were produced on the non-irrigated plots; these were usually poorly filled with grains, and a marketable ear was rare.

Size of a marketable ear from the dry treatment was only slightly smaller, than on the wet treatment. Most of the ears produced on the dry treatment were unmarketable and this condition as well as fewer ears per plant is the result of insufficient irrigation. If the weight of edible corn had been compared, rather than the weight of corn, cob, and husk, it is believed the differences between treatments would have been greater.

The data collected indicate that irrigation treatments affected the composition of the corn kernels. Insufficient soil moisture increased the percentage of dry matter as well as its various constituents, such as sugars and nitrogen. These results are similar to those obtained elsewhere for field corn.

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## PEACHES

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The Sunglow is also a vigorous, upright grower. The fruit is medium in size. Its yellow skin has an attractive deep red blush. The flesh is light yellow, smooth textured, with a sweet, pleasing flavor. The Golden State is similar to the two varieties just described. The fruit is not as attractively colored and the flavor is slightly acid. It is inclined to preharvest drop.

The last to ripen of this group is the Rubidoux, a medium-sized yellow peach with a red blush. The red pit color extends slightly into the light yellow flesh. It is sweet and juicy with a first-rate flavor. The tree is strong and vigorous in growth, and a good producer.

The varieties described are well adapted to the lower elevations of southern California and other areas having a similar climate. They well merit consideration by the orchardist and home gardener.

These varieties have another important characteristic. They may be picked while still firm and arrive at the consumer's table sweet and juicy, and in top eating condition. Often the commonly grown varieties lack in this respect.

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