



EM4815

SWEET CORN

The most important fact that growers need to keep in mind is that sweet corn, as well as other vegetables, is a high moisture commodity. Sweet corn is sold on the basis of high quality alone, and it will suffer damage both to yield and quality if it is water stressed during the growing season.

Current estimates are that between 10,000 and 11,000 acres of sweet corn are grown each summer in the Yakima River Basin, primarily in the lower Yakima Valley. Of this acreage, about 2,000 to 3,000 acres are grown for the fresh market. The remaining portion of the crop is grown for processing.

Discussion

If the water supply forecast is for 50% or less of normal water, with the possibility of early cutoff of supplies, fresh market sweet corn growers have the option of planting early season varieties. Provided that water supplies will not be cut off or interrupted during silking and ear fill, then the crop can be harvested by mid-July.

Growers of processing sweet corn and those growers who normally grow for the mid- and late summer markets do not have that option. However, compared with some commodities, sweet corn does not require an excessive amount of water.

1. Sweet corn in central Washington will require from 20 to 25 inches of irrigation water for the production of a satisfactory crop. Water stress during any stage of growth will diminish yield and quality, but particularly during tasseling, silking, and ear fill. As mentioned, vegetables are marketed solely on the basis of appearance and quality. If required amounts of water will not be available, the crop should not be planted.
2. Several factors influence sweet corn water use.
 - **Climate.** More water is used during hot, dry, and windy weather.
 - **Length of growing season.** Long season varieties (95 to 100 days) will use more water than short season varieties.
 - **Stage of growth.** As corn approaches tassel formation and silking, its water use rises dramatically.
 - **Irrigation practices.** The more frequently corn is irrigated, the higher the rate of evapotranspiration. This is due primarily to excessive water evaporation losses from soil surface and foliage. The difference in evaporation loss may be large under sprinkler systems or quite small with furrow systems.
 - **Stand.** A proper stand uses water most efficiently. In the case of poor stands, excessive water loss from bare soil may occur.
 - **Fertility.** The best ratio of production to water used is obtained under moderate, but adequate fertility. Nitrogen is the most important element in this regard. Under less than optimum fertility, water use per unit of gain is excessive.
3. The most critical periods of water need in sweet corn occur during the tasseling stage, silking stage, and ear fill. Even a 3- to 4-day period of water stress during these stages can result in a 60% yield reduction.
4. Recent work done at Oregon State University has shown that in spite of the best efforts to

scientifically schedule corn irrigation, the most practical approach is to irrigate by crop growth stage.

- Irrigate before planting if moisture is low.
- Sweet corn needs one to two irrigations between planting and tassel formation, depending on the soil type. Corn can tolerate some water stress during this growth stage without serious impact on yield and quality. Maintain soil moisture at about 40% of field capacity.
- Corn needs two to three irrigations during tasseling and silking. Raise soil moisture to 60% ten to twelve days before tasseling and to 70% during pollination. Take measurements at about the 10- to 12-inch depth.
- After pollination, corn may need one to two irrigations. The soil moisture percentage can fall off to about 60%.

In summary, corn requires adequate water to maintain quality and yield. Since product quality is the primary feature by which the crop is marketed, a reduction in quality is not acceptable.

If water is going to be a little short, growers can reduce water applications to some degree early in the growth of the crop. However, it is critical to have sufficient moisture during tasseling and

silking. Some irrigation districts may consider interrupting supplies for varying periods of time during the irrigation season to better accommodate perennial crops. Therefore, before planting sweet corn, growers should check to ensure water supplies will not be interrupted during a crucial growth period.

If the overall forecast is for less than adequate irrigation water, and if growers cannot purchase more water from neighbors, then they should consider the advisability of planting the crop.

Information on soil moisture monitoring and crop evapotranspiration from Washington's Public Agricultural Weather Stations (PAWS) and Washington Irrigation Scheduling Expert (WISE) are available on the Scientific Irrigation Scheduling (SIS): web page
<http://sis.prosser.wsu.edu>

Drought advisories and other Washington State University Cooperative Extension Bulletins are available online at
<http://pubs.wsu.edu>
Type "drought" in the search box for downloadable files.

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