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# Sugar Beet Irrigation Strategies in Turkey

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**Abstract:** The main reason for sugar beet to be prioritized in agricultural policies in our country and many other countries is its status as an industrial plant. Almost all by-products resulting from the processing of sugar beets are products of strategic importance. The contributions of sugar beet to Turkish agriculture and the economy can be summarized as follows: Sugar beet, being a significant source of nutrition, forms the raw material for many products such as sugar, molasses, alcohol, yeast, and bioethanol. Sugar, in addition to being a source of calories and a fundamental nutrient in human nutrition, holds strategic importance worldwide due to its contributions to agricultural production, employment, and by-products.

## • Introduction

- Sugar beet ensures continuity in employment and agricultural production, in addition to its economic value.
- One hectare of sugar beet production provides employment for approximately 10 laborers.
- It leads to a 20% increase in yield in subsequent crops, particularly in cereals.
- About 350 thousand farmer families are engaged in sugar beet production on 300 thousand hectares of land.
- The oxygen released into the air through photosynthesis on one hectare of sugar beet is equivalent to the oxygen consumed by 6 people in a year and produces three times more oxygen than a one-hectare forest area.
- Sugar beet plays a significant role in creating added value in agro-based industries.
- As an industrial plant, sugar beet ranks second in terms of the added value it provides among industrial crops.
- By-products such as molasses and pulp resulting from the processing of sugar beet are used as animal feed and are crucial raw materials for the production of spirits and the beverage industry.

## • Material and method

Critical Irrigation Periods for Sugar Beet

**Pre-Planting and Pre-Emergence Irrigations:** Irrigations before planting and emergence are generally done to moisten both the lower and upper soil layers to ensure germination and emergence.

**Early Season Irrigations:** After nitrogen fertilization is done with dilution or only dilution or fertilization, irrigation is usually required.

**Mid-Season Irrigations:** Should be done from the end of June to mid-September.

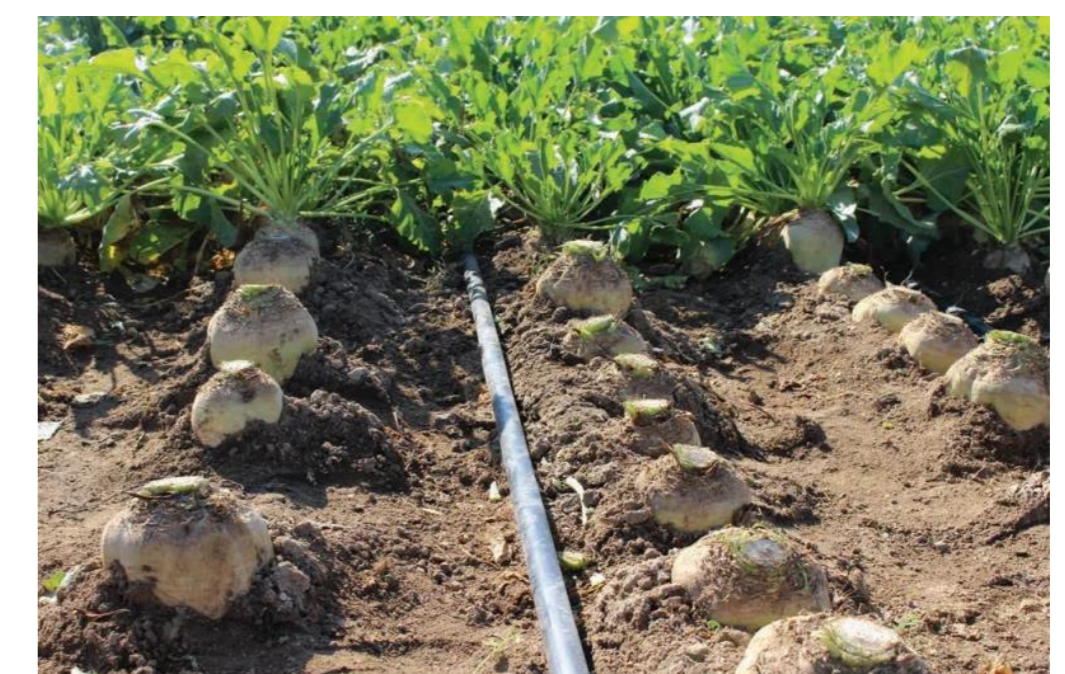
**Late Season Irrigations:** It is the time for the last irrigation before harvest. The timing depends on the desired soil moisture level during harvest. If moist soil is desired, irrigation is preferred 10-15 days before harvest. The number of irrigations should be done 4-6 times, depending on the plant's development.



## • Results and discussions

In Turkey, sugar is entirely produced from sugar beets, and with an annual production of approximately 19 million tons, it ranks after countries like Russia, France, the USA, and Germany. It generates significant economic value in the regions where it is cultivated. Sugar beet, one of the key products in agricultural production in Turkey, is also crucial for its contribution to agricultural industry and livestock through by-products. It holds strategic importance as a fundamental food item.

For achieving high yield and quality in sugar beet cultivation, correct irrigation is the most crucial factor. Therefore, using smart irrigation systems is highly important.



## • Conclusions

Drip Irrigation in Sugar Beet

One of the most suitable irrigation methods for sugar beet is drip irrigation. Avoiding excessive or insufficient irrigation is crucial in sugar beet irrigation. Excessive irrigation not only leads to resource wastage but also causes root rot and certain diseases. On the other hand, insufficient irrigation results in hindered plant development and increased yield losses.

To prevent the occurrence of diseases such as root rot during irrigation, the field should never be allowed to become waterlogged. The best method for this purpose is drip irrigation.

Since plant nutrients can be provided along with irrigation water, the highest level of benefit from fertilizers can be obtained in sugar beet cultivation.

The use of drip irrigation in sugar beet results in increased sugar quality compared to other irrigation systems, as it allows for uniform irrigation in the plant.

