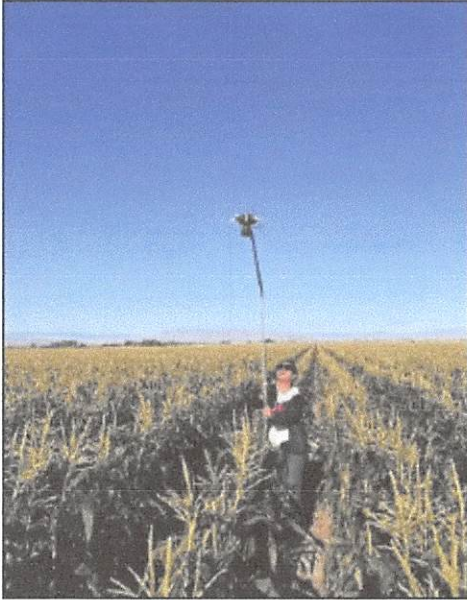


Drip irrigation shows promise in desert sweet corn study

Imperial Valley Press · 2 Jun 2022 · BY JOYCE LOBECK Montazar can be reached at (442) 2657707 or by email to amontazar@ucanr.edu

HOLTVILLE — Drip irrigation can be considered as an effective and promising on-farm water conservation tool in desert sweet corn, according to a recent study conducted in several fields in Imperial County.



The findings of the study demonstrated that drip irrigation clearly has the potential to enhance the efficiency of water, Ali Montazar, irrigation and water management advisor for the University of California Cooperative Extension in Imperial, Riverside and San Diego Counties, concluded. The study also demonstrated more efficient use of fertilizer, reduced labor costs and increased yields.

The low desert is one of the main production regions for sweet corn in California.

Over the past 10 years, sweet corn production has fluctuated around 8,000 acres in Imperial County. The spring sweet corn planting occurs from late December to February for harvest in April through June. Fall sweet corn is planted from late August to September for harvest in November through December.

Typically, sprinklers are used until the seedlings emerge and the fields are then furrow irrigated for the remainder of the season. While furrow irrigation dominates irrigation systems in desert sweet corn, there are growers who have adopted drip irrigation.

Sweet corn requires frequent irrigation throughout the crop season since the plant root system is shallow, especially during the early stages of germination and again during peak growth. The key advantage of drip irrigation system is to apply irrigation water more frequently and uniformly across the corn field over the season, Montazar noted. Improved irrigation delivery systems and irrigation scheduling may affect yield and the crop's quality as well as result in more efficient use of water and fertilizer.

Field trials were conducted over the 2021-2022 crop season on 11 commercial sweet corn fields in the Imperial Valley. Of the 11 fields, five fields were under furrow irrigation and six fields were under drip irrigation. The drip-irrigated fields were established using drip while the fields under furrow irrigation were germinated using sprinklers. Dominant soil textures were sandy loam to loamy fine sand in the experimental sites.

In addition to the marketable yield at harvest, the amounts of applied water and fertilizers were monitored throughout the season in each field with soil moisture sensing stations. Meaningful differences were observed between the seasonal applied irrigation water in the drip-irrigated fields and the furrow-irrigated fields, Montazar reported. Overall, an average of 2.2 acre-feet of water was conserved in the fields under drip irrigation compared with the fields under furrow irrigation. It appears that the drip-irrigated fields (totaling 400 acres) received nearly 37 percent less water than the furrow-irrigated fields (totaling 365 acres). This conserved water could be sufficient to irrigate more than 300 acres of lettuce fields throughout the crop season in the low desert region.

In addition, considerable fertilizer was conserved in the drip-irrigated fields. Drip could reduce by nearly 25.7 percent the fertilizer costs compared to regular furrow irrigation practice, Montazar said.

The farms in the study reported notable reductions on labor costs as a result of switching to drip for plant establishment and throughout the growing season.

Also, on average, high-quality sweet corn yields were 5 percent greater in the fields under drip than the fields under furrow.

However, salinity may be a limiting factor for using a drip system in the spring sweet corn fields that are harvested in late May through mid-June, Montazar cautioned. Buildup of soil saline conditions could occur on the topsoil in drip-irrigated sweet corn fields. Applying sufficient irrigation water at high enough frequencies is required to guarantee adequate leaching in the effective crop root zone.

Montazar concluded: "Even though the results suggested economic and environmental promises of drip for sweet corn production, further work is needed to better understand the optimal management practices and strategies to maintain economic viability and sustainability of utilizing drip irrigation in sweet corn."

She gratefully acknowledged the farms that contributed to the study, providing data and information, and for allowing the research staff to implement the study in the trial fields.