

Irrigation by Subsurface Drip Proves Cost Effective

So far, the findings from the first year of a 10-year study indicate that buried (subsurface) drip irrigation of cotton crops grown in sandy soils is technically feasible and cost effective—and conserves water. In addition, subsurface drip irrigation may be used on vegetable crops to achieve the same positive results. And it also works on crops grown in good-quality soil as well as crops grown in poor-quality soil.

The 10-year study is examining and comparing the effects of subsurface drip irrigation to that of furrow irrigation on the growth, yield and quality of cotton grown without crop rotation. The study is sponsored by the United States Department of Agriculture, Agricultural Research Service (USDA-ARS).

The study, after the first growing season, shows that an average of 1.5 to 2 acre-feet (or 18 to 23 inches) of applied water per acre can be conserved each season using a buried drip irrigation system. These water savings were measured from a three-acre experimental plot at the USDA Cotton Research Station in Shafter, California.

The two irrigation systems (subsurface drip and furrow) are being

tested on cotton grown in good soil as well as cotton grown in poor soil.

Although the yield of cotton grown in good soil has stayed the same using both irrigation systems, the amount of water applied by drip irrigation is much less—only 24 inches compared to 42 inches with the furrow irrigation system.

On the cotton grown in poor soil, the amount of water applied with drip irrigation is still less than the furrow system—23 inches compared to 46 inches; however, the yield has increased. (See table)

Bill De Tar and Claude Phene, USDA-ARS principal researchers for the project, point out that when using drip irrigation, and even more so when using buried drip irrigation, two important management factors must be considered:

❑ irrigations must be scheduled frequently—meaning at least once a day and

Soil Type	Water Applied (inches per acre)		Yield (bales per acre)	
	Drip	Furrow	Drip	Furrow
Good Soil	24	42	3.6	3.6
Poor Soil	23	46	3.3	2.9

❑ nutrients must be applied continuously through the irrigation water.

Therefore, automation of irrigation and fertilization through drip systems is necessary.

For more information about this study please contact C.J. Phene at (209) 453-3101 or W.R. De Tar at (805) 323-6153. ■

The California Department of Water Resources sponsored a workshop at the Shafter Cotton Research Station last March to explain the results of this research project. Fifty people attended and expressed interest in attending another workshop in August. The August workshop includes a field visit to the project sites. This will allow attendees to compare the difference between crops irrigated by the furrow system and crops irrigated by subsurface drip. For information on future workshops on this research project or any other subsurface drip demonstration project, contact Arturo Carvajal at DWR's Water Conservation Office, (916) 324-7127.