DRIP IRRIGATION COTTON PRODUCTION

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A drip irrigation demonstration was initiated at the Marana Experiment Station in 1977 with promising results. The program was expanded in 1978 and 1979.

The 1980 drip irrigation system was a continuation of the 1979 program. The Chapin Twin-wall 4-mil perforated tubing was left in the field after harvesting the 1979 cotton crop. This was done to determine if the drip tubing was suitable to use for two continuous years.

Stalks were cut and the field was left idle until planting time. 100 pounds of Urea per acre was applied over the beds. Furrows were swept out to eliminate any existing weeds, then beds were listed to put a little more soil on top of the seed beds. On May 2, 1980, DPL-55 seed was planted at 11 pounds per acre. After planting, a cultipacker was rolled over the beds to firm up the tops of the seed beds. Water was applied on May 3.

After water had run for a day, leaks began to appear in the furrows. Attempts were made to repair all major leaks. Observations showed as one leak was repaired another one occurred. More observations were made as to why so many leaks were in the system. Cotton stalks and roots contributed to some leaks when the cultipacker was rolled over the beds. Deterioration of the 4-mil tubing also seemed to be a contributing factor. With so many leaks, the tubing was virtually impossible to repair satisfactorily. The high occurrence of leaks necessitated an excessively large amount of water use.

After repairing most major leaks in the tubing, the system ran its course through the growing season. Poor plant stands resulted from the leaks. Weeds also became a problem in the wet areas. The watering schedule was once a week, based on the cotton consumptive water use curve (Erie, French and Harris). The last irrigation was applied on September 17, 1980.

Multiple year use will be evaluated using 8-mil tubing during 1981-82. The 8-mil tubing has been demonstrated to withstand multiple year use.

NITROGEN RATE EVALUATION TO CONSERVE ENERGY USE

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Petrochemical availability and inflationary costs suggest that growers may be able to conserve nitrogen use if tests and measurements are made for various field conditions. Soil tests and petiole analysis can be used to assess requirements and strip plantings will record yield response. The Eastman trial in 1980 did not show significant response to increased nitrogen application.

LAVEEN LOAM SOIL

Robert Eastman & Sons - Buckeye

Lbs. Nitrogen	Lbs. Lint Per Plot, 1st Pick * 1	2	3	4	1st pick Lbs. Lint Per Acre	2nd Pick Lbs. Lint Per Acre	Total Lbs. Lint Per Acre
103	2640	2483	2509	2585	1212	230	1442
68	2548	2702	2432	2472	1205	222	1427
138	2790	2461	2270	2318	1167	237	1404

*Plot size: Twenty-four 38" rows 1208 feet long