Sandy Land Underground Water Conservation District
Agricultural Water Conservation Program
Drip Irrigation Project - Watermelons

TWDB Contract Number: 2004-358-006
Contractor's Vendor Identification: 75-2309394
Address: Sandy Land Underground Water Conservation District
P.O. Box 130
Plains, TX 79355

FINAL
REPORT
Sandy Land Underground Water Conservation District
Agricultural Water Conservation Program
Drip Irrigation Project

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2004 Season
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

June 23, 2004

Filter System purchased and used for drip irrigation on watermelons in Yoakum County 2004.

June 23, 2004

Water being put through filters and layflat lines so workers can complete installation of drip tubes.
Workers inserting drip tubes into layflat. Drip lines come out of layflat and go underground.

Completed installation of drip lines into layflat.
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

July 9, 2004
Transplanting seedless watermelon. Five (5) rows of watermelons have the drip lines beneath them. Eleven (11) rows do not have drip lines beneath them.

July 9, 2004
Close up of machine used to put seedless watermelon transplants into the ground.
Shown here are seedless watermelon transplants soon after planting.

Filter system with fertilizer tank on red trailer. Fertilizer is being injected into the layflat during a watering cycle. Approximately one-third of the fertilizer was used at this drip site as compared to a conventional center pivot system.
Seedless watermelons about one month after planting.

August 20, 2004

Seedless watermelons about fifty (50) days after planting. Small melons are visible in the foreground of plants. Notice the lack of weeds which is an additional benefit to growing watermelons with drip irrigation. (a lot less herbicide is used).
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

August 20, 2004

Closeup of small seedless watermelons.

September 13, 2004

Truck runs are visible to the left side of the picture. These melons have been picked one time. Melons are much more plentiful and will be picked every other day until frost.
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

September 17, 2004

Trucks at the watermelon shed after melons have been picked. Melons will be unloaded and boxed for shipments to markets in other parts of Texas and other states as well.

September 23, 2004

Assorted varieties of watermelons grown in Yoakum County for sale to locals and travelers through Plains, Texas.
Southern Ogallala Rainfall Enhancement Program

June 2004 Rainfall

Legend
- Towns
- District Boundary
- Texas Boundary
- County Boundaries
- June 2004 Rainfall

Contour Interval = 0.50 in
### Rainfall Measurements

**Location:** Yoakum County, Texas

**Year:** 2004

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**Averages:** 0.63 1.62 1.89 4.16 0.15 1.41 2.35 1.47 8.84 2.90 4.31 0.17 29.91
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Agricultural Water Conservation Program
Drip Irrigation Project

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2005 Season
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

These watermelon transplants are sitting in trailers waiting to be planted by hand.

Sticks such as the one shown are used to prepare a hole for watermelon transplants.
Workers planting watermelons by hand.

Watermelons in field with drip tape showing at the end of the row.
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

This photograph was taken about one week after the watermelons were planted.

Watermelons with drip tape showing at the end of the row.
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

Watermelons during the second week of August.

This photograph was taken about six weeks after the watermelons were planted.
This picture shows watermelon plants with a truck run between. There are five rows of watermelons planted on forty-inch rows in each area for a total of 16.87 feet of watered area with approximately 36 feet that is unwatered between. Watermelon vines can spread a great distance, but only the base of the plant needs water, so the drip system allows the producer to water only area of the plant and not the vine extensions or the truck run between.

In this photo, it can be seen that the truck run has very few weeds. This land is in the 36 feet area of drip irrigation that is not watered.

If this road was under a conventional pivot system it would have been watered and it would therefore have more weeds. This would require more herbicide to control the weeds.

So, the drip irrigation saves not only water, but also the additional herbicide that the producer would have had to apply.
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

This photograph shows the field of watermelons with drip irrigation during the harvest season. The watermelons are picked every few days during the harvest.

Watermelon harvesting is not mechanized, but done by hand. The watermelons are picked by hand and then loaded onto a truck which, in turn, takes the melons to the broker.
These watermelons are being loaded unto the truck which will take them to town. There are usually at least 2 people in the truck to stack the watermelons.

The picture to the left shows the workers inside the truck who are stacking the watermelons.
Drip Irrigation Project - Watermelons
Sandy Land Underground Water Conservation District

More photographs taken during the harvest season.

This is a watermelon field toward the end of the harvest. The vines are beginning to look ragged.
Southern Ogallala Rainfall Enhancement Program

June 2005 Rainfall

Legend
- Towns
- District Boundary
- County Boundaries

Contour Interval = 0.25 in
Southern Ogallala Rainfall Enhancement Program

September 2005 Rainfall

Legend

Contour Interval = 0.25 in
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Conclusions
Sandy Land Underground Water Conservation District
Agricultural Water Conservation Program
Drip Irrigation Project - Watermelons

TWDB Contract Number: 2004-358-006
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2004 Production Benefits

Drip Irrigation 54,441 lbs/acre x 60 acres = 3,266,460
Conventional Irrigation 40,706 lbs/acre x 60 acres = 2,442,360
Drip Benefit in Pounds 824,100 lbs.

2004 Water Savings Comparison

Center Pivot
432 hours at 600 gpm
432 hours x 60 minute/hour = 25,920 minute
25,920 minutes x 600 gpm = 15,552,000 gallons
15,552,000 divided by 325,851 = 47.73 acre feet

Drip
266 hours at 350 gpm
266 hours x 60 minute/hour = 15,960 minutes
15,960 minutes x 350 gpm = 5,586,000 gallons
5,586,000 divided by 325,851 = - 17.14 acre feet

Savings 47.73 acre feet minus 17.14 acre feet = 30.59 acre feet
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2005 Production Benefits

Drip Irrigation 58,982 lbs/acre x 60 acres = 3,538,920
Conventional Irrigation 42,184 lbs/acre x 60 acres = 2,531,040
Drip Benefit in Pounds 1,007,880 lbs.

2005 Water Savings Comparison

Center Pivot
293 hours at 600 gpm
293 hours x 60 minute/hour = 17,580 minute
17,580 minutes x 600 gpm = 10,548,000 gallons
10,548,000 divided by 325,851 = 32.37 acre feet

Drip
156 hours at 330 gpm
156 hours x 60 minute/hour = 9,360 minutes
9,360 minutes x 330 gpm = 3,088,800 gallons
3,088,800 divided by 325,851 = - 9.48 acre feet

Savings 32.37 acre feet minus 9.48 acre feet = 22.89 acre feet
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**Total Water Savings and Benefits**

Total Water Savings Over Two Years 53.48 acre feet
Additional Production Benefit Over Two Years 1,831,980 lbs.