TORO Count on it.

Grower Solutions

Drip Irrigation Works .... and Pays!

Cox Valley View Farms, Long Island, KS

Drip Irrigation on corn and soybeans at Cox Farms provides:

- More efficient use of limited water supplies
- Higher corn and soybean yields
- Better grain quality
- Lower labor costs
- More precise application of fertilizers
- Low operating pressure
- EQIP cost share funding opportunities
- Quick payback

Steven and Chris Cox,
Cox Valley View Farms,
Long Island, KS

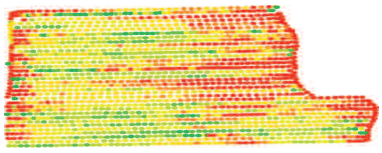
Even before the perfect storm of diminished water supplies, rising corn prices and government cost-share funding hit the plains, Steven Cox knew his irrigated farms would have to change. That's why he installed his first Subsurface Drip Irrigation System over nine years ago on his 4,000 acre operation, and has installed an additional 120 acres of Toro drip irrigation since.

The conversion has allowed him to stretch limited water supplies while increasing yields and grain quality at the same time. "Before drip, we were trying to flood irrigate 60 acres with a 250 GPM well. We were lucky to get top yields on 25 percent of the field. I now get top yields on 100 percent of the field because of the increased uniformity and efficiency I get with drip irrigation." This is important considering the Ogallala Aquifer is now a dwindling resource. All stakeholders must act quickly to save this resource for future generations of farmers.

With drip, both farming and the Ogallala Aquifer are sustainable. Cox stretched his allocation of 18 inches of water per year to produce 300 bushels of corn per acre compared to 150 and achieve a grain test weight of 62 pounds per bushel in comparison with 58. This meant that Cox would have to buy less corn on the open market to supply the 1.5 million bushels he needs to supply his pork facilities each year, a real benefit considering the ethanol boom's recent affect on corn prices.

Gravity vs. Drip Irrigation Yield Camparison

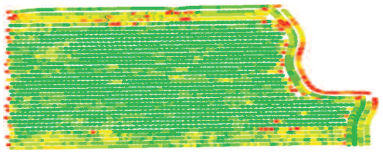
Gravity Irrigation 2004



Estimated Volume (Dry) (bu/ac)

	194.69 – 386.78 (0.00 ac)
	187.32 – 154.53 (0.00 ac)
	179.79 – 187.82 (0.00 ac)
	170.60 – 179.79 (0.00 ac)
	160.99 – 170.60 (0.00 ac)
	138.33 – 160.99 (0.00 ac)
	11.94 – 138.88 (0.00 ac)

Drip Irrigation 2006



Estimated Volume (Dry) (bu/ac)

	207.16 – 542.99 (0.00 ac)
	190.35 – 207.16 (0.00 ac)
	168.76 – 190.35 (0.00 ac)
	146.61 – 168.76 (0.00 ac)
	124.06 – 146.61 (0.00 ac)
	90.84 – 124.05 (0.00 ac)
	9.80 – 90.84 (0.00 ac)

But Cox has experienced other benefits from drip irrigation. In comparison with flood, drip requires little labor, and in comparison to pivots, energy requirements are low. Fertilizers can be placed precisely where needed, and no-till farming becomes a reality. Corn is planted directly into the residue, which is managed by rotating with soybeans. Best of all, no water is wasted to evaporation, runoff, wind drift or deep percolation, and uniformity is generally greater than 90%. "This means that with a 1" application of water, the driest plant will receive .90 inches of water, and the wettest plant will receive 1.10 inches. This allows me to get the most from every gallon of water I pump from the aquifer."

"We place our drip tape on 60" centers, and bury the drip lines between 12-18" deep. A recent root dig revealed roots down to 5 feet deep and beyond, including an impressive root density in the top 12" below both the tape line and corn row."

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Making Drip Irrigation Pay

Cox originally believed that his drip irrigation conversion would take over 5 years to pay for itself, but was pleasantly surprised that it took less than two years. This is partly because corn prices rose, yields were better than expected, and government EQIP funds contributed $330/acre towards the system's cost. In addition, costs dropped an estimated $160/acre due to reduced fuel, labor, chemical, fertilizer and cultivation expenses. Even without subsidies, these benefits would have paid for the system in a little over three years. But that's not all.

Many of the benefits experienced for corn also apply to winter wheat and soybean rotation crops. Steven's son Chris is optimistic that with drip irrigation, a yield of 100 bu/acre or more will be achieved on soybeans. Since soybeans cost less to plant than corn, and market prices are approaching $8-10 per bushel, soybeans may pay for the investment in drip irrigation even quicker than corn.

Perhaps best of all, drip irrigation and no-till helps build the soil, and attracts wildlife nests by keeping the soil surface dry.

Drip Irrigation Payback in Years Based on Actual Results*

	Drip Scenario 1:	Drip Scenario 2:	Drip Scenario 3: (Cox Farms)	
Drip Irrigation System Investment	$1,200	$1,200	$1,100	per acre
EQIP Cost Share	$0.0	$0.0	$330.0	30% of cost
Grower Investment	**$1,200.0**	**$1,200.0**	**$770.0**	per acre
Potential Yield Increase with Drip (assuming 175 bu/ac with Gravity)	50	50	100	bushels/acre
Corn Price	$3.50	$2.50	$3.50	per bushel
Potential Additional Revenue	**$175.00**	**$125.00**	**$350.00**	per acre
Potential Savings				
Fuel Savings	$25.00	$25.00	$25.00	per/acre
Labor Savings	$26.62	$26.62	$26.62	per/acre
Chemical/Fungicide Savings	$27.50	$27.50	$27.50	per/acre
Fertilizer Savings	$43.88	$43.88	$43.88	per/acre
Culitvation Savings	$37.50	$37.50	$37.50	per/acre
Potential Cost Savings	**$160.50**	**$160.50**	**$160.50**	per/acre
Payback Calculation †	**3.6**	**4.2**	**1.5**	**Years**

*Results based on specific conditions - variations may apply.
† Grower Investment divided by sum of Potential Additional Revenue and Potential Cost Savings.
Drip Scenario 1: No Subsidy; 50 bu/ac yield increase; $3.50/bu
Drip Scenario 2: No Subsidy; 50 bu/ac yield increase; $2.50/bu
Drip Scenario 3: EQIP Subsidy; 100 bu/ac yield increase; $3.50/bu

The Drip Irrigation Partnership

Like any technology switch, Steve Cox's successful conversion to SDI took hard work, but he had help. Central Valley Irrigation of Holdrege, NE provided local support in the design, installation and startup of the project using quality products supplied by Toro Micro-Irrigation. The heart of the system is Toro's Aqua-Traxx PC drip tape in a 7/8" diameter and 15 mil wall thickness. Emitters are spaced 24" apart and deliver an application rate of .033"/hour. The tape is supported by pipelines, filters, valves, vents and monitoring devices to ensure proper operation, including a flushing manifold to ensure system longevity.

What's next?

Stephen Cox believes that drip irrigation has a bright future. He encourages corn, soybean, wheat and other crop growers to explore the options and discover for themselves whether drip is applicable in their own operation. He reiterates that for him, the technology works, and it paid for itself quickly. Call Toro or your local dealer today to learn more!

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