

To: Mike Thompson February 21, 2006

Via Fax # 471-2900

From: Ray Supalla

Re: Irrigation water values

We estimated the value of water used for gravity irrigation in Hitchcock County, assuming a typical mid range efficiency and soil. Values were estimated for field deliveries ranging from 1 to 16 inches (full irrigation) in an average year. We found that soybeans yielded the highest return to water, especially at low irrigation amounts, given expected prices for 2006. Hence we assumed that the water was applied to soybeans only, although the returns to corn would be quite similar. Estimated values ranged from \$106 per AF at full irrigation (16 inches) to \$13/AF at 2 inches. Values less than 2 inches produced negative returns, because it did not pay to set up the irrigation system. A single irrigation of 3 inches was found to be worth \$63/AF. Water values peaked at \$119/AF corresponding to a delivery of about 10 inches.

I've attached these results with brief supporting documentation. Note that these values were calculated using expected 2006 prices which are a little different than the trend line prices I used last time. Also, we have updated nitrogen and energy costs.

Hope this helps. Any questions I expect to be available tomorrow except from 1:00 to 3:00.

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Value of Irrigation Water, Hitchcock County, Medium Soil, Gravity System

Irrigation Level (in.)	Crop	Yield/Ac	Net Return \$/Ac	Value of Water	
				\$/Ac-ft.	\$/Acre
16	Soybeans	65	\$209	\$106	\$142
15	Soybeans	64.1	\$206	\$111	\$139
14	Soybeans	62.7	\$200	\$114	\$133
13	Soybeans	61	\$193	\$117	\$126
12	Soybeans	59	\$185	\$118	\$118
11	Soybeans	56.9	\$176	\$119	\$109
10	Soybeans	54.7	\$167	\$119	\$99
9	Soybeans	52.3	\$156	\$119	\$89
8	Soybeans	49.8	\$145	\$117	\$78
7	Soybeans	47.2	\$134	\$114	\$67
6	Soybeans	44.5	\$122	\$109	\$55
5	Soybeans	41.7	\$109	\$101	\$42
4	Soybeans	38.8	\$96	\$87	\$29
3	Soybeans	35.8	\$83	\$63	\$16
2	Soybeans	32.7	\$69	\$13	\$2
1	Soybeans	29.6	\$55	-\$144	-\$12
0	Eco-fallow		\$67	n/a	\$0

418 acres in Riverside

Received Time Feb. 21. 4:29PM

# Water Optimizer

Field ID: Hitchcock 100  
Scenario Desc: Default values

County: Hitchcock  
Soil Type: Medium

## CROP CHOICES & RETURNS

All Crops	Crop Evaluated	Minimum Acres	Maximum Acres	Acres in Production	Yield Unit/Acre	Gross Return \$/Acre	Total Cost \$/Acre	Net Return \$/Acre	Total Net Return
Com	No	na	na	0	0	-	-	-	-
Sorghum	No	na	na	0	0	-	-	-	-
Soybeans	Yes	0	130	100	36	\$181.08	\$98.13	\$82.95	\$8,295.30
Wheat	No	na	na	0	0	-	-	-	-
Sunflower	No	na	na	0	0	-	-	-	-
Edible Beans	No	na	na	0	0	-	-	-	-
Alfalfa	No	na	na	0	0	-	-	-	-
Dry Com	No	na	na	0	81	-	-	-	-
Dry Soybeans	No	na	na	0	28	-	-	-	-
Dry Wheat	No	na	na	0	45	-	-	-	-
Dry Sunflower	No	na	na	0	868	-	-	-	-
Dry G. Sorghum	No	na	na	0	61	-	-	-	-
Dry Alfalfa	No	na	na	0	2.8	-	-	-	-
Dry Wheat/Fallow	No	na	na	0	-	-	-	-	-
Dry Eco-Fallow	No	na	na	0	-	-	-	-	-
Dry Com/SB Rot	No	na	na	0	-	-	-	-	-
Start-up Costs									-\$220.00
									\$8,075.30

Total Acres in Production: 100

## IRRIGATION INFORMATION

Irrigated Crops	Irrigation Depth	Opt. Land Limit Depth	Irrigated Yield	Fully Watered Yield	Marginal Net Return	Average Net Return \$/Ac-In	Water Source	System Type	Hours of Operation	Pump/Well Gravity
Com	0.0	18.6	0.0	215	-	-				
Sorghum	0.0	16.0	0.0	155	-	-				
Soybeans	3.0	15.9	35.8	65	\$13.70	\$11.87				
Wheat	0.0	14.2	0.0	80	-	-				
Sunflower	0.0	18.0	0.0	2500	-	-				
Edible Beans	0.0	14.0	0.0	1800	-	-				
Alfalfa	0.0	0.0	0.0	6	-	-				
Total water used	300						Water Source	System Type	Hours of Operation	Pump/Well Gravity
Total water Avail	300								181	1

## PRICES, COSTS, & DRYLAND YIELDS

Crop	Dryland Yield	Total Price Received \$/unit	Misc. Returns \$/Ac	Irrigated Costs per Acre Yield		Dryland Costs & NR per Acre Yield		
				Production Cost	Dependent Cost	Production Costs	Dependent Costs	
Com	81.3	\$22.27	\$5.00	\$125.51	\$0.58	\$95.42	\$0.54	
Sorghum	61.0	\$22.23	\$3.00	\$75.52	\$0.36	\$72.10	\$0.26	
Soybeans	27.7	\$5.05	\$0.00	\$91.34	\$0.06	\$91.34	\$0.06	
Wheat	45.1	\$3.27	\$0.00	\$81.20	\$0.54	\$56.32	\$0.54	
Sunflower	866.3	\$0.12	\$0.00	\$70.11	\$0.001	\$71.04	\$0.001	
								\$50.38
								\$51.21
								\$47.36
								\$66.78
								\$33.86



# Water Optimizer

Edible Beans	-	\$0.19	\$0.00	\$116.03	\$0.001	-	\$125.45
Alfalfa	2.6	\$66.90	\$0.00	\$40.75	\$11.50	\$24.82	\$9.47
corn/sb	-	-	\$2.50	-	-	-	\$61.98
eco-fallow	-	-	\$0.00	-	-	-	\$67.13
wheat-fallow	-	-	\$0.00	-	-	-	\$58.70

corn yield	wheat yield	sb yield
44.7	21.8	14.3
38.0	32.7	

\*Price and yield units are bushels (bu) for corn, sorghum, soybeans, and wheat. Pounds (lbs) for sunflowers and Edible beans. Tons for alfalfa.

\*\*Total cost (per acre) per crop can be calculated by:  
 (Yld dependent cost\*Yld)+(Cost of water\*In Depth)\*Production Cost

corn yield	1/2 yr
38.0	1/3 yr
32.7	1/2 yr

Pumping Lift	0.00	r
Pump Pressure	0.00	psi
Perf Rating	75.00	%
Energy Cost	0.07	\$/kWh
Cost of Water	\$1.55	\$/ac-in

