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.

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

				Value of Water	
Irrigation Level (in.)	Crop	Yield/Ac	Net Return $/Ac	$/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

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
Corn	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 Corn	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	866	-	-	-	-
Dry G. Sorghum	No	na	na	0	61	-	-	-	-
Dry Alfalfa	No	na	na	0	2.6	-	-	-	-
Dry Wheat/Fallow	No	na	na	0	-	-	-	-	-
Dry Eco-Fallow	No	na	na	0	-	-	-	-	-
Dry Corn/SB Rot	No	na	na	0	-	-	-	-	-
Start-up Costs									-$220.00
		Total Acres in Production:		100					$8,075.30

IRRIGATION INFORMATION

Irrigated Crops	Irrigation Depth	Opt. Land Limit Depth	Irrigated Yield	Fully Watered Yield	Marginal Net Return	Average Net Return $/Ac-in
Corn	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 Use Efficiency	0.75	Water Source	Pump/Well
Total water Avail	300	Water Allocation (in/acre)	3	System Type	Gravity
				Hours of Operation	181
				Ave. Growing Season Precip	1

PRICES, COSTS, & DRYLAND YIELDS

Crop	Dryland Yield	Total Price Received $/unit	Misc. Returns $/Ac	Irrigated Costs per Acre: Production Cost	Irrigated Costs per Acre: Yield Dependent Cost	Dryland Costs & NR per Acre: Production Costs	Dryland Costs & NR per Acre: Yield Dependent Costs	Dryland Net Return
Corn	81.3	$2.27	$5.00	$125.51	$0.56	$95.42	$0.54	$50.39
Sorghum	61.0	$2.23	$3.00	$75.52	$0.36	$72.10	$0.26	$51.21
Soybeans	27.7	$5.06	$0.00	$91.34	$0.06	$91.34	$0.06	$47.36
Wheat	45.1	$3.27	$0.00	$81.20	$0.54	$56.32	$0.54	$66.78
Sunflower	866.3	$0.12	$0.00	$70.11	$0.001	$71.04	$0.001	$33.86

Results computed on: 2/21/2006

Water Optimizer

Edible Beans	-	$0.19	$0.00	$116.03	$0.001	-	-	-
Alfalfa	2.6	$66.90	$0.00	$40.75	$11.50	$24.82	$9.47	$125.45
corn/sb	-	-	$2.50					$61.99
eco-fallow	-	-	$0.00					$67.13
wheat-fallow	-	-	$0.00					$58.70

	corn yield	wheat yield	sb yield	
Corn/sb rotation	44.7		14.3	1/2 yr
eco-fallow	38.0	21.8		1/3 yr
wheat-fallow		32.7		1/2 yr

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

*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*Irr Depth)+Production Cost