

Fertilizer Economics 2009

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Fertilizer Application

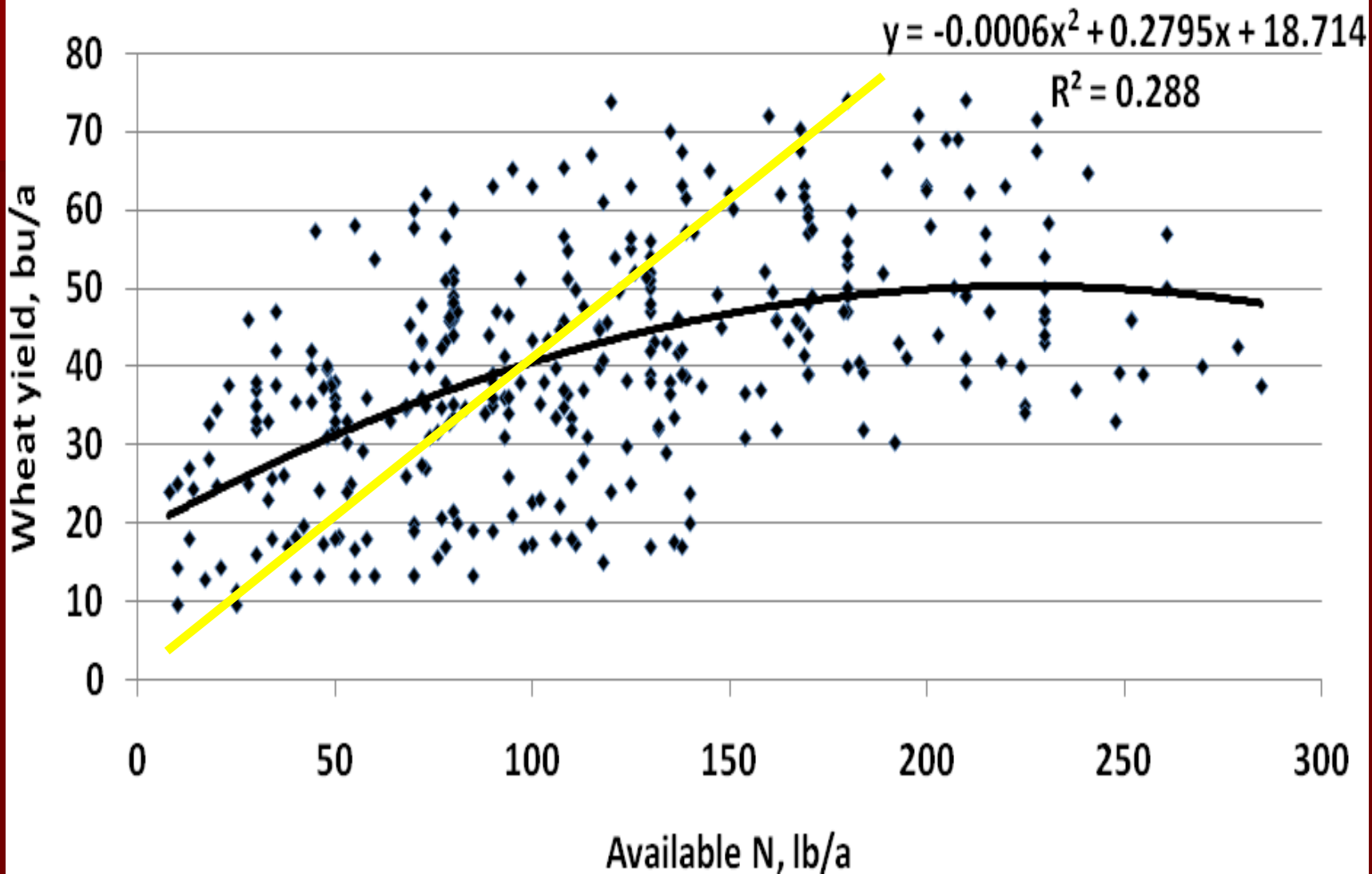
Points to Consider for 2009

- Fertilizer will likely be the most costly input for non-legume crops
- Fertilizer is a yield enhancer – to a point
- Yield response to fertilizer is never certain
- Higher yields are usually associated with lower per unit cost
- Fertilizer prices are trending downward
- Alter your fertilizer bill by changing crop selection
- Set realistic yield goals
- Soil sampling

Historical HRSW and Nitrogen Prices

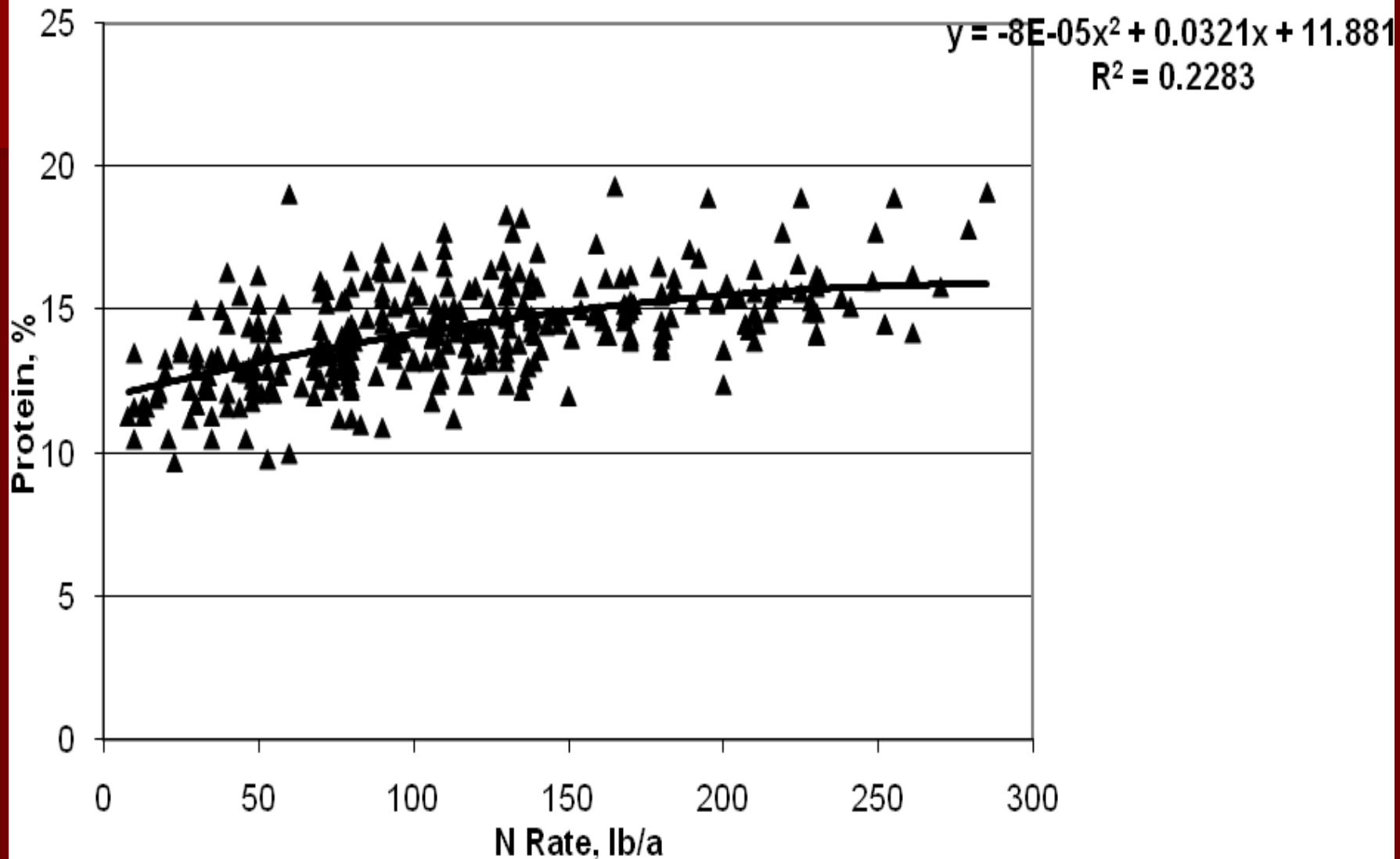
Year	HRSW Price	N Price	Cost of 2.5 lbs N	Percent of HRSW Price
2009	6.30	0.50	1.25	20%
2008	7.00	0.80	2.00	28%
2007	4.23	0.29	0.73	17%
2006	3.57	0.34	0.84	23%
2005	3.48	0.27	0.68	19%
2004	3.49	0.25	0.63	18%
2003	3.47	0.19	0.46	13%
2002	3.35	0.15	0.38	11%
2001	3.30	0.18	0.44	13%
2000	2.96	0.13	0.31	11%

Wheat Yield with Available N, 1970-2008



Source: Dave Franzen, NDSU Extension Soil Specialist

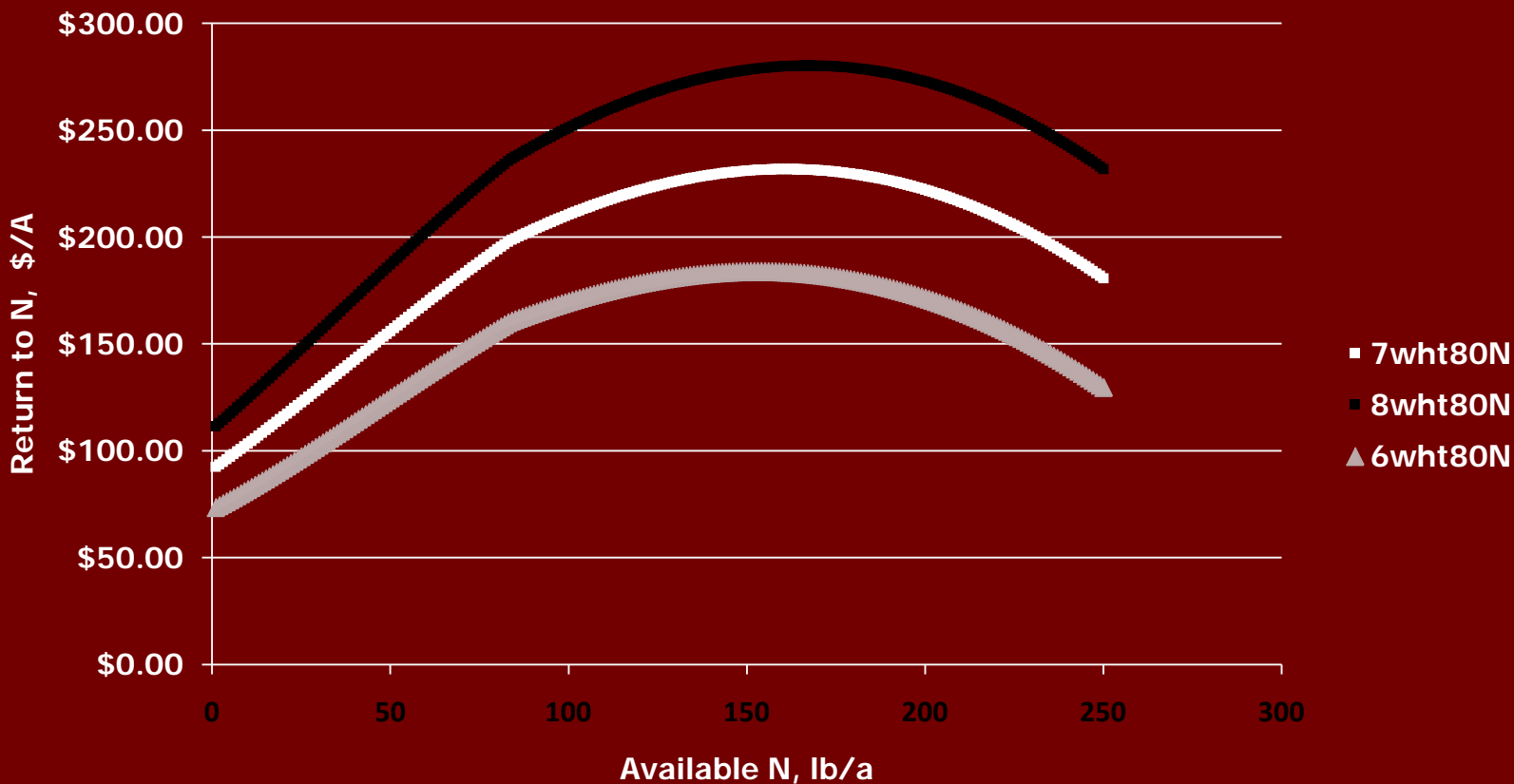
Spring Wheat Protein vs N Rate, North Dakota 1970-2008



Source: Dave Franzen, NDSU Extension Soil Specialist

The optimum economic N rate for \$8 wheat is about 175 lb/a less credits. For \$7 wheat, it is only about 150 lb N/a. \$6 wheat, even lower.

Return to N, North Dakota, 80 cent N
\$6,\$7 & \$8/bu wheat



Banding P increases its efficiency.

For any crop, if P is banded when soil test P is medium or higher, rates can be cut by 1/3.

If P is low or lower, rates can be cut by 1/2.

P farther from the seed than about 2 1/2 inches is NOT a starter application.

Crops that need a starter will need something near the seed.

Crops that do best with a starter-

Corn (we're north of Dekalb)

Wheat

Barley (really important!!!)

Canola (really important!!!)

Potato

Sugarbeet (unless you have \$ to burn)

Crops that don't respond to starter

Soybean

Peas

Most legumes

Sunflower

Crops that don't respond to P at all-

Flax

Potassium-

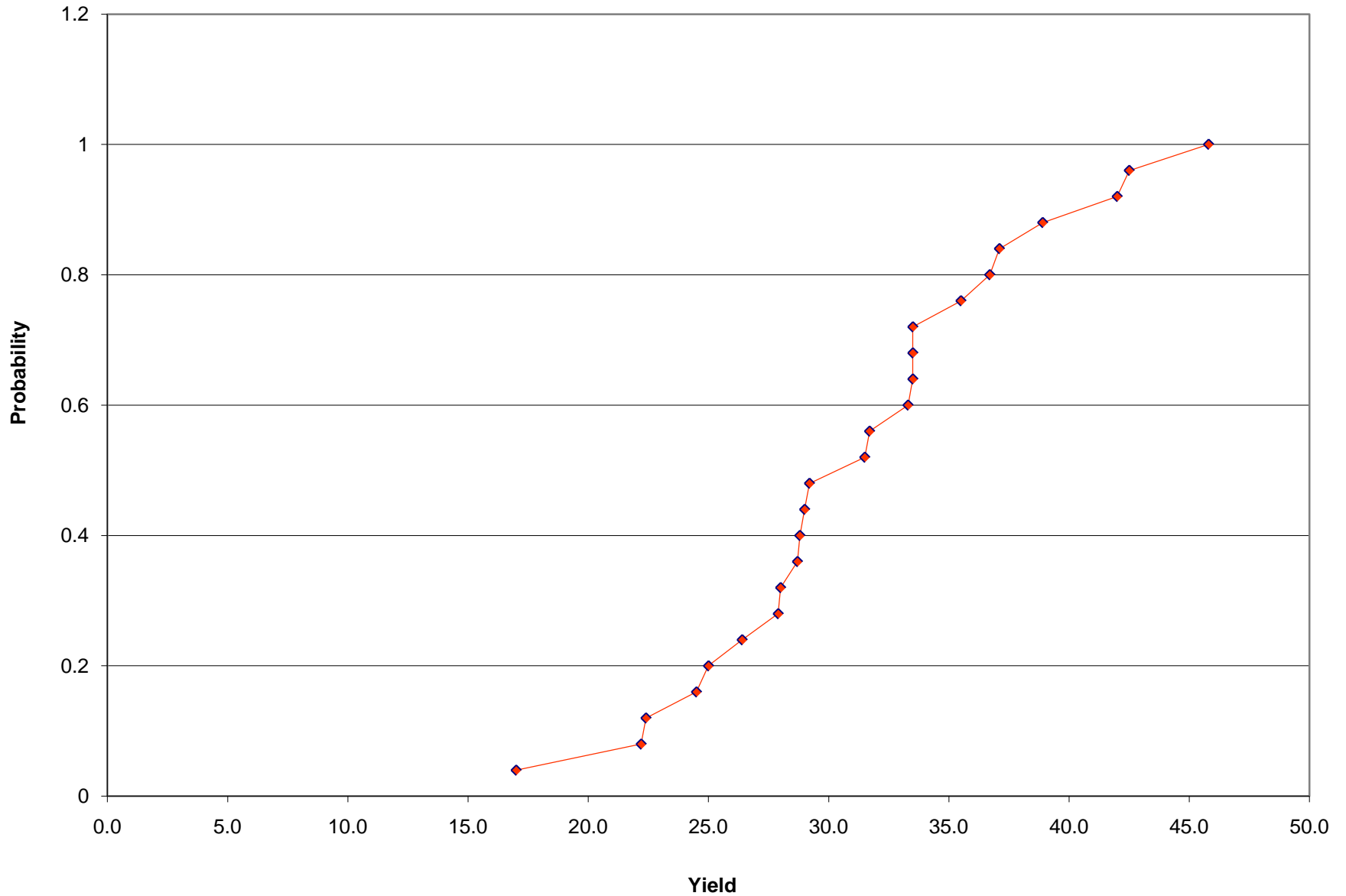
Our sandy soils in the east will probably still need K. Reduce table values by 1/3 if banding. Don't try to build K in a sand- it won't work.

If you are using 0-0-60 for small grains, it will cost about \$7.50 to achieve an average 2 bu/a gain. Do the math.

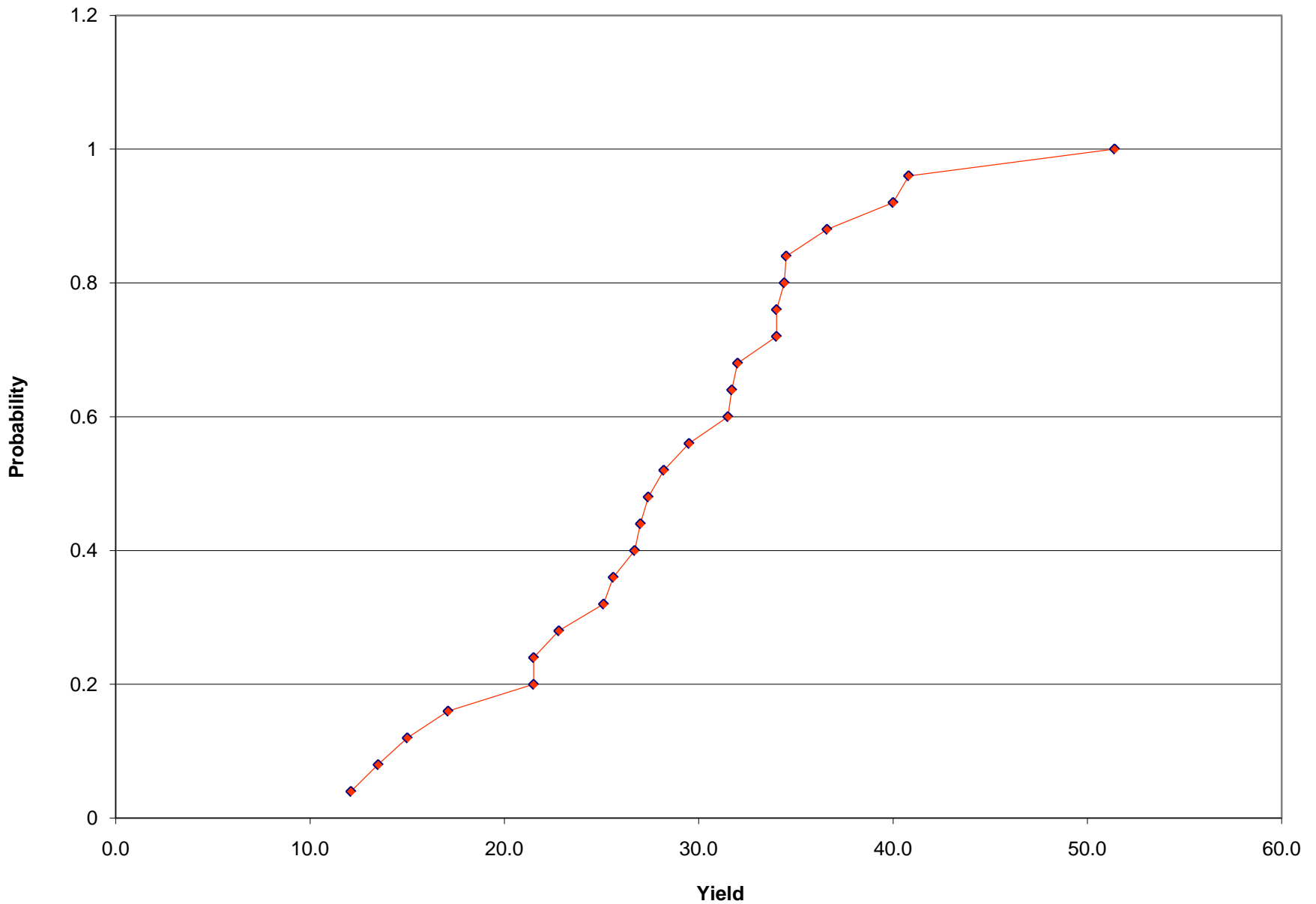
Ramsey County Average Yields

Year	HRSW	Durum	Barley	Corn Grn	Canola	Drybns	Soybns
2007	38.9	31.7	55.8	108.6	1286	1593	34.1
2006	37.1	36.6	61.3	83.4	1465	1043	23.6
2005	31.7	31.5	52.8	105.1	1352	1290	28.7
2004	42.5	51.4	70.1	34.3	1930	708	11.5
2003	36.7	34.0	62.3	99.4	1321	1580	25.5
2002	28.8	27.4	48.0	97.1	1152	1479	26.9
2001	26.4	12.1	49.7	103.4	1351	1573	28.5
2000	33.3	13.5	54.9	85.6	1365	1457	24.3
1999	29.0	17.1	51.0	90.8	1322	1567	22.8
1998	27.9	34.4	53.6	76.2		1426	22.6
1997	22.2	22.8	43.5	72.1		1284	25.8
1996	29.2	25.1	55.3	81.9		1535	
1995	22.4	21.5	48.2	61.0		1500	
1994	28.7	26.7	46.1	77.8		931	
1993	24.5	21.5	42.0			506	16.5
1992	45.8	40.8	70.5	35.3		1101	12.3
1991	33.5	32.0	51.7	68.5		1284	21.5
1990	35.5	34.0	49.5	45.0		690	18.0
1989	25.0	25.6	41.0	24.0		570	9.0
1988	17.0	15.0	20.0	33.5		560	9.0
1987	33.5	28.2	48.5	81.1		1400	25.5
1986	31.5	29.5	46.0	70.6		1000	18.5
1985	42.0	40.0	55.0	30.0		730	8.0
1984	33.5	34.5	54.5	41.0		1050	15.0
1983	28.0	27.0	41.0	44.0		850	17.5
1982	32.0	33.0	46.0	50.0		1020	11.5
AVG	31.4	28.7	50.7	68.0	1394	1143	19.9
STD	6.7	9.0	9.9	26.4	217	362	7.3
CV	0.21	0.31	0.20	0.39	0.16	0.32	0.37
5-Yr AVG	37.4	37.0	60.5	86.1	1471	1243	24.7

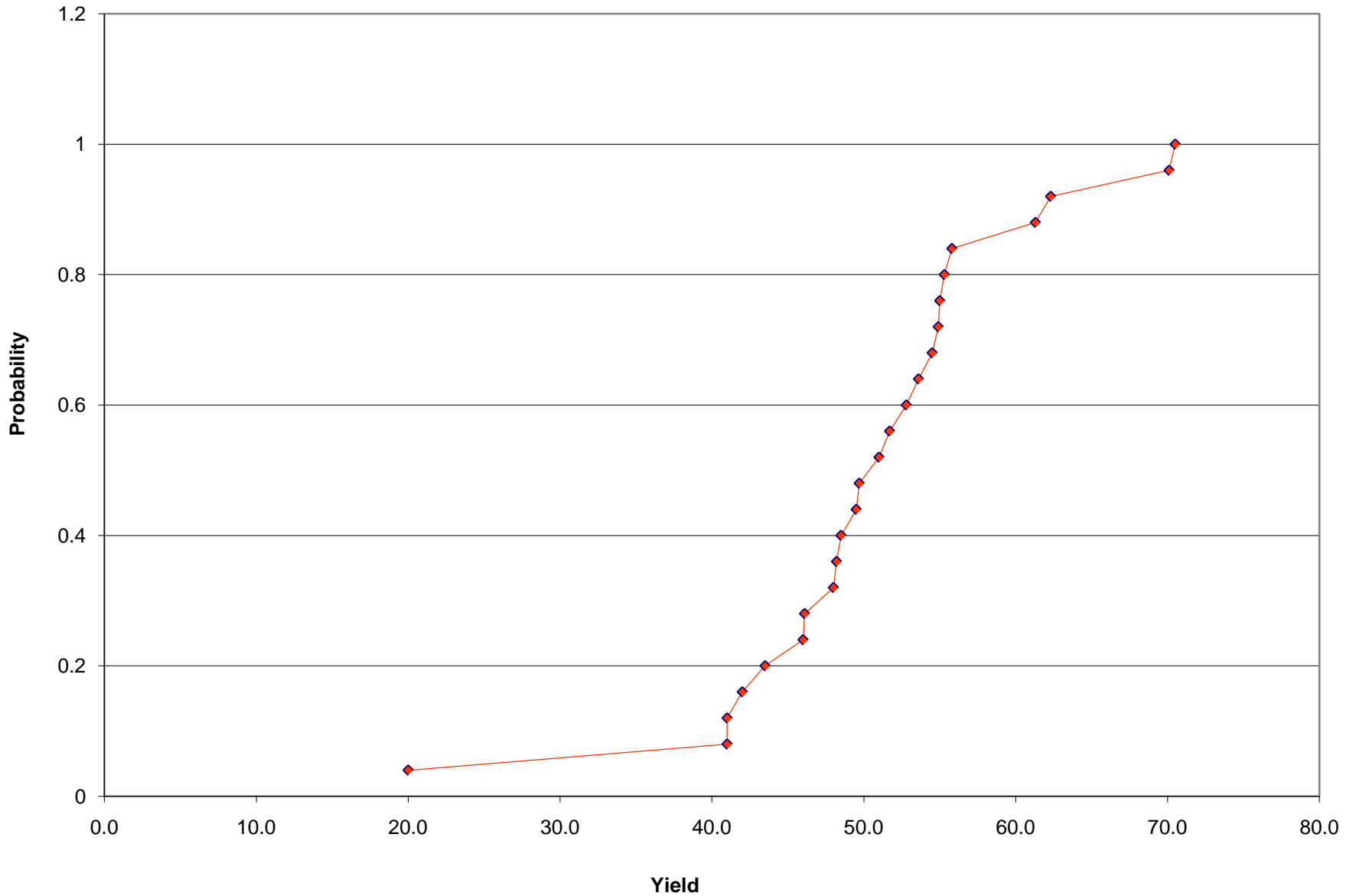
Ramsey Spring Wheat Yields



Ramsey Durum Yields



Ramsey Barley Yields



Probability of Crop Yields for Ramsey County

Percent Probability	HRSW	Durum	Barley	Corn	Canola	Drybns	Soybns
	-----yield above-----						
10%	48.5	51.9	76.9	129.7	1829	1841	36.7
20%	43.0	44.6	68.8	108.3	1653	1547	30.8
30%	40.9	41.8	65.7	100.1	1586	1435	28.6
40%	39.1	39.3	62.9	92.7	1525	1333	26.5
50%	37.4	37.0	60.5	86.1	1471	1243	24.7
60%	35.7	34.8	58.0	79.5	1416	1152	22.9
70%	33.8	32.3	55.2	72.2	1356	1051	20.8
80%	31.7	29.5	52.1	64.0	1288	938	18.5
90%	26.3	22.2	44.1	42.6	1112	645	12.6

Expected Marginal Return for Wheat from 2.5 Additional Pounds of Nitrogen for Ramsey County

Percent Probability	HRSW	Fertility Yld Goal Yield	Wheat @ \$5.00 % of Ave	Wheat @ \$5.50	Wheat @ \$6.00	Wheat @ \$6.50	Wheat @ \$7.00
10%	48.5	130%	\$0.50	\$0.55	\$0.60	\$0.65	\$0.70
20%	43.0	115%	\$1.00	\$1.10	\$1.20	\$1.30	\$1.40
30%	40.9	110%	\$1.50	\$1.65	\$1.80	\$1.95	\$2.10
40%	39.1	104%	\$2.00	\$2.20	\$2.40	\$2.60	\$2.80
50%	37.4	100%	\$2.50	\$2.75	\$3.00	\$3.25	\$3.50
60%	35.7	96%	\$3.00	\$3.30	\$3.60	\$3.90	\$4.20
70%	33.8	90%	\$3.50	\$3.85	\$4.20	\$4.55	\$4.90
80%	31.7	85%	\$4.00	\$4.40	\$4.80	\$5.20	\$5.60
90%	26.3	70%	\$4.50	\$4.95	\$5.40	\$5.85	\$6.30

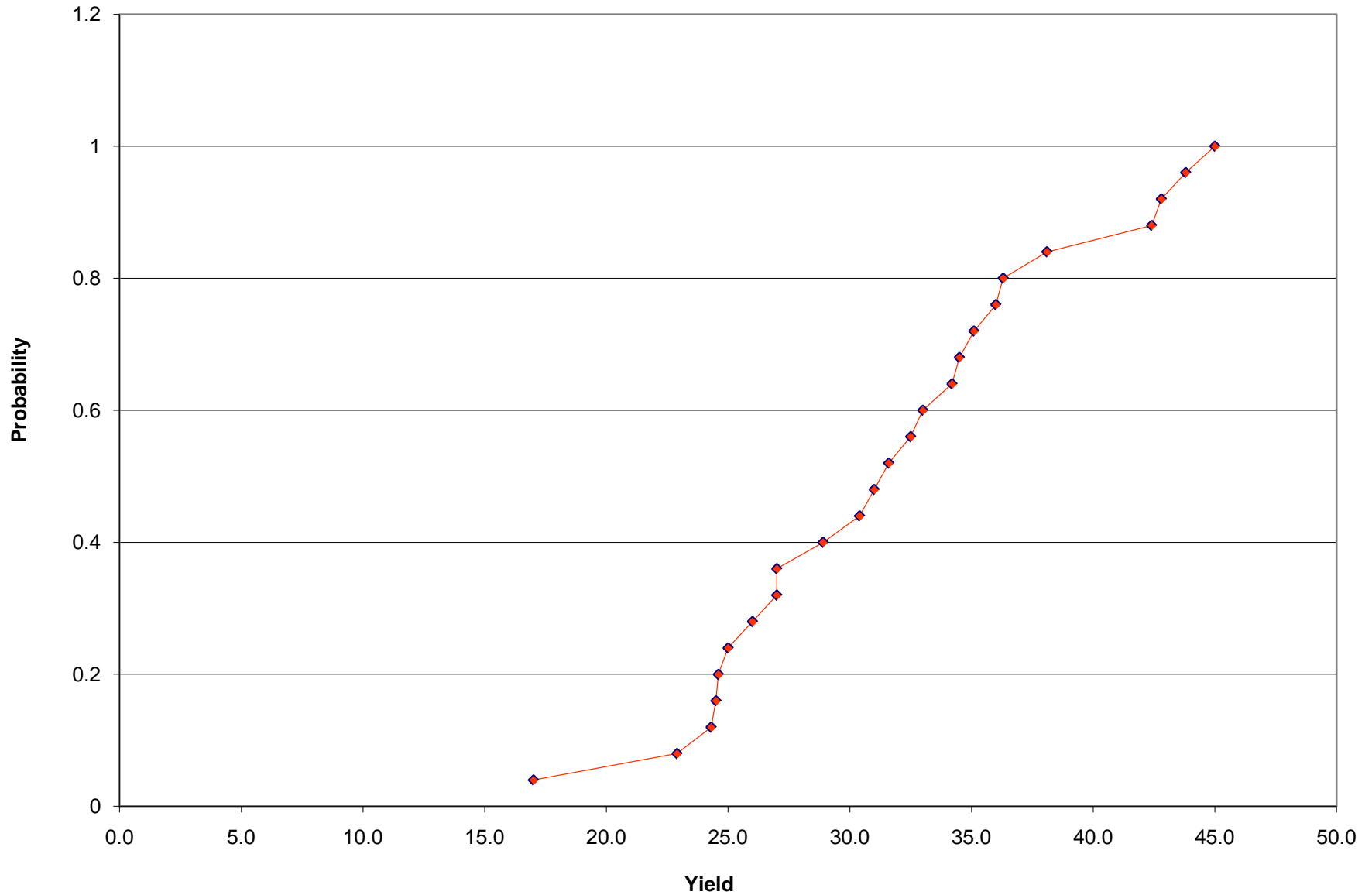
Nitrogen recommendation for wheat = 2.5 YG-STN-PCC

\$/lb of N	\$/N/bu	\$/T-NH3	\$/T-Urea
\$0.35	\$0.88	\$574	\$322
\$0.40	\$1.00	\$656	\$368
\$0.45	\$1.13	\$738	\$414
\$0.50	\$1.25	\$820	\$460
\$0.55	\$1.38	\$902	\$506

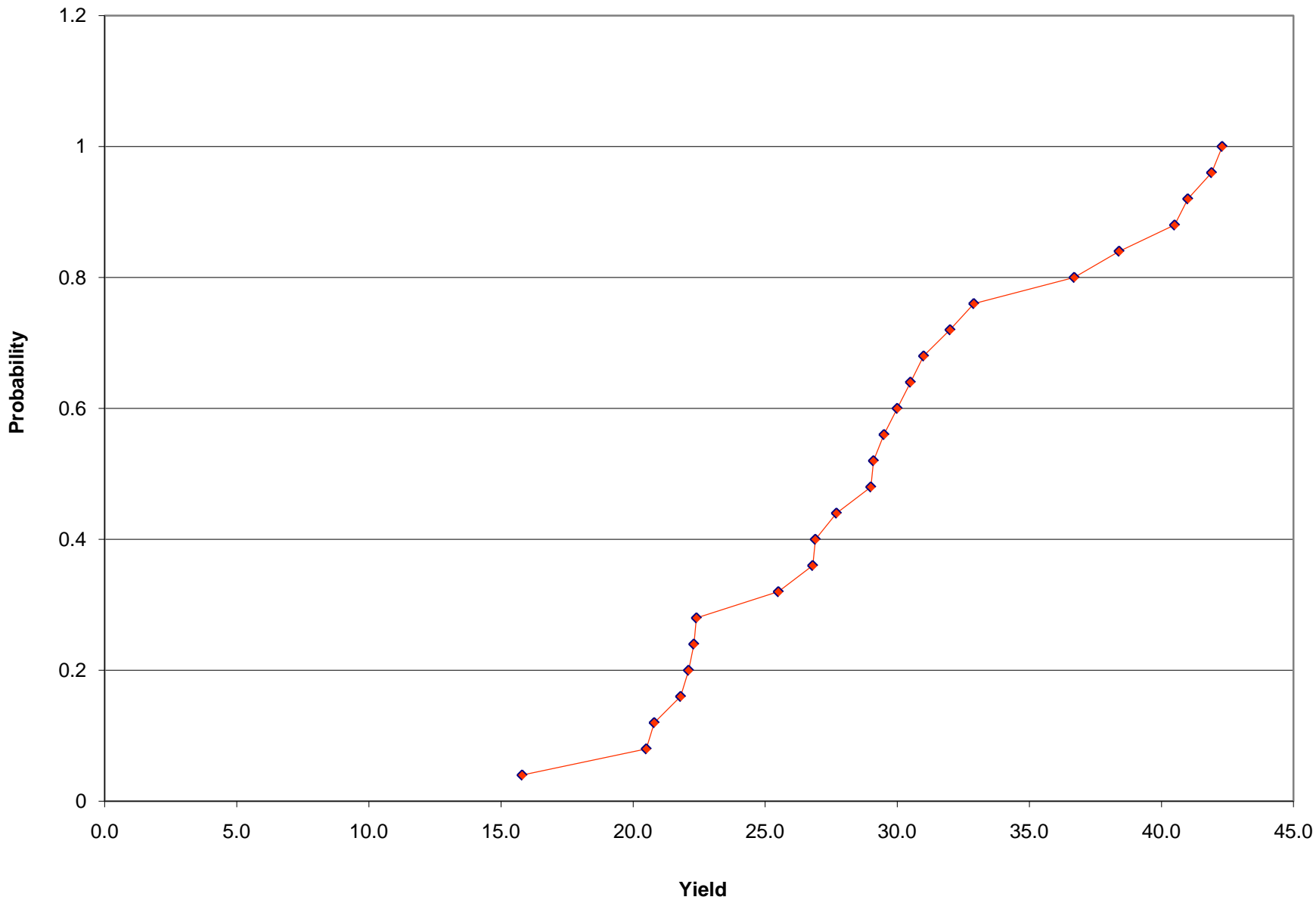
Towner County Average Yields

Year	HRSW	Durum	Barley	Drybeans	Oil Snfl	Flax
2007	38.1	42.3	57.0	1609	1489	21.9
2006	36.3	41.9	58.7	1440	1698	21.5
2005	31.6	32.9	50.9	1318	1215	19.5
2004	42.4	38.4	59.9	692	690	23.5
2003	42.8	36.7	65.3	1594	1839	22.1
2002	28.9	29.1	48.0	1350	1275	19.0
2001	24.3	22.3	48.2	1237	1392	20.8
2000	35.1	29.5	52.1	1008	1013	21.4
1999	34.2	20.8	43.7	1366	1140	25.1
1998	25.0	31.0	47.5	1485	1693	23.3
1997	22.9	22.1	43.3	1154	1298	17.5
1996	27.0	20.5	49.0	1091	1276	16.1
1995	24.6	21.8	41.0	1500	1363	13.8
1994	30.4	27.7	55.4	1548	1306	14.7
1993	24.5	22.4	36.2	526	305	13.2
1992	43.8	41.0	67.3	855	733	21.1
1991	34.5	32.0	52.0	1265	1392	22.7
1990	32.5	29.0	43.5	560	940	10.5
1989	26.0	26.9	38.0	730	950	8.0
1988	17.0	15.8	18.5	320	1030	8.0
1987	36.0	30.0	48.5	1350	1500	18.0
1986	31.0	26.8	46.0	1360	1180	19.0
1985	45.0	40.5	55.0	930	860	17.0
1984	33.0	30.5	45.5	750	970	14.7
1983	27.0	25.5	40.0	840	1130	13.4
1982	34.0	35.0	48.0	900	1070	18.0
AVG	31.8	29.7	48.4	1107	1183	17.8
STD	7.1	7.3	9.9	366	339	4.7
CV	0.22	0.25	0.20	0.33	0.29	0.26
5-Yr AVG	38.2	38.4	58.4	1331	1386	21.7

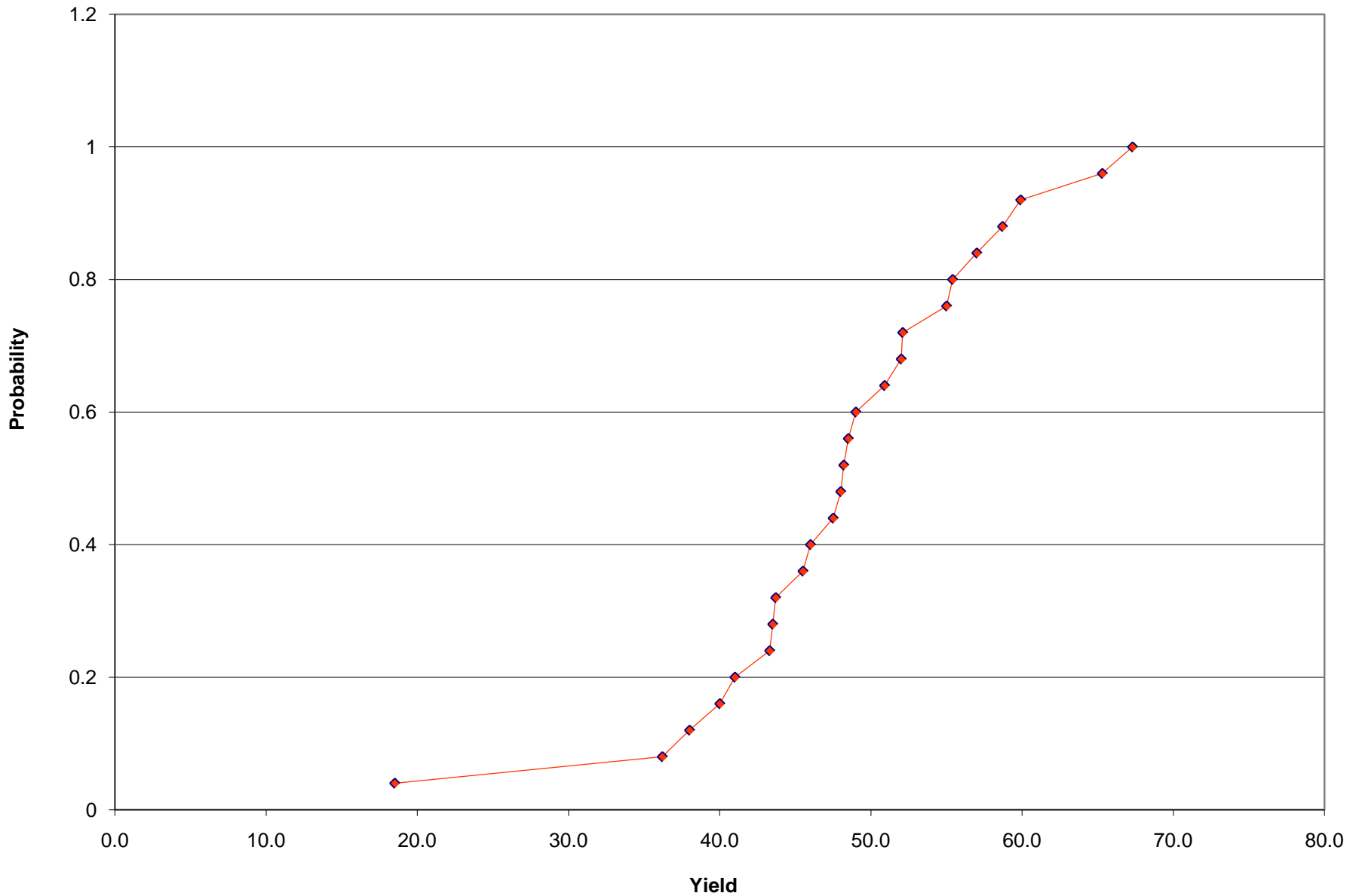
Towner Spring Wheat Yields



Towner Durum Yields



Towner Barley Yields



Probability of Crop Yields for Towner County

Percent Probability	HRSW	Durum	Barley	Drybns	Oil Snfl	Flax
	-----yield above-----					
10%	49.9	50.6	74.7	1934	1945	29.5
20%	44.1	44.5	66.6	1634	1667	25.6
30%	42.0	42.3	63.6	1525	1566	24.2
40%	40.0	40.3	60.8	1422	1471	22.9
50%	38.2	38.4	58.4	1331	1386	21.7
60%	36.5	36.6	55.9	1239	1302	20.5
70%	34.5	34.6	53.1	1137	1207	19.2
80%	32.3	32.3	50.1	1023	1102	17.8
90%	26.5	26.3	42.0	727	828	13.9

Expected Marginal Return for Wheat from 2.5 Additional Pounds of Nitrogen for Towner County

Percent Probability	HRSW	Fertility Yld Goal Yield	Wheat @ \$5.00 % of Ave	Wheat @ \$5.50	Wheat @ \$6.00	Wheat @ \$6.50	Wheat @ \$7.00
10%	49.9	131%	\$0.50	\$0.55	\$0.60	\$0.65	\$0.70
20%	44.1	115%	\$1.00	\$1.10	\$1.20	\$1.30	\$1.40
30%	42.0	110%	\$1.50	\$1.65	\$1.80	\$1.95	\$2.10
40%	40.0	105%	\$2.00	\$2.20	\$2.40	\$2.60	\$2.80
50%	38.2	100%	\$2.50	\$2.75	\$3.00	\$3.25	\$3.50
60%	36.5	95%	\$3.00	\$3.30	\$3.60	\$3.90	\$4.20
70%	34.5	90%	\$3.50	\$3.85	\$4.20	\$4.55	\$4.90
80%	32.3	84%	\$4.00	\$4.40	\$4.80	\$5.20	\$5.60
90%	26.5	69%	\$4.50	\$4.95	\$5.40	\$5.85	\$6.30

Nitrogen recommendation for wheat = 2.5 YG-STN-PCC

\$/lb of N	\$/N/bu	\$/T-NH3	\$/T-Urea
\$0.35	\$0.88	\$574	\$322
\$0.40	\$1.00	\$656	\$368
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Objective is to maximize return over variable costs-ROVC is available to pay:

- Land costs
- Machinery ownership
- Labor and management (family living)

Cash Price for Breakeven Return over Variable Costs - North East N.D.

Base Crop is

Wheat

Enter the futures price for	Wheat	\$6.30
Enter your expected local basis		\$0.30
Expected local cash price for	Wheat	\$6.00

Base crop = 1

	0	0	1						
	Corn	Soybean	Wheat	Barley	Drybeans	Oil Snflr	Conf Sunf	Canola	Flax
Yield	97	27	37	56	14.1	14.8	12.9	14.7	21
Price	\$3.54	\$7.78	\$6.00	\$3.66	\$17.76	\$15.54	\$19.57	\$17.39	\$8.39
Income	\$343.02	\$210.15	\$222.00	\$204.82	\$250.40	\$230.05	\$252.46	\$255.56	\$176.09

Variable costs:

seed	\$62.65	\$46.56	\$16.45	\$15.20	\$42.00	\$23.54	\$37.05	\$39.50	\$11.20
herbicide	17.00	17.00	17.00	14.00	33.00	22.00	22.00	18.00	17.00
fungicide			5.50	1.50					
insecticide	0.00	8.00				6.00	12.00	0.00	
fertilizer	98.02	16.45	66.19	62.29	36.08	49.87	40.91	81.15	37.44
crop insurance	28.60	14.30	14.10	7.20	22.50	14.70	20.80	15.60	9.30
fuel & lube	17.33	12.07	11.86	13.38	13.89	13.21	12.92	10.23	11.82
repairs	17.93	14.29	13.46	14.47	16.15	14.27	14.09	12.35	13.66
drying	19.40					2.96	2.58		
misc.	1.50	6.00	1.50	1.50	9.75	7.25	13.00	1.50	1.50
operating int.	10.50	5.39	5.84	5.18	6.93	6.15	7.01	7.13	4.08
Total var.costs	\$272.93	\$140.06	\$151.90	\$134.72	\$180.30	\$159.95	\$182.36	\$185.46	\$106.00

Return over variable costs	\$70.10	\$70.10	\$70.10	\$70.10	\$70.10	\$70.10	\$70.10	\$70.10	\$70.10
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Note: - Only variable costs are considered in this comparison. You can include an amount under "misc." to account for any differences between crops in fixed costs, labor, management and risk.

Summary

- We are in deflationary period for commodities
- Watch for pricing opportunities in the spring when bidding for acres takes place
- Delay purchasing of inputs
- Consider changing crop mix
- Don't over react – fertility is still important

NDSU Farm Management Web Page

www.ag.ndsu.nodak.edu/aginfo/farmmgmt/farmmgmt.htm