



Crop Production Costs and Rotation Decisions

Gary Schnitkey

schnitke@uiuc.edu

University of Illinois



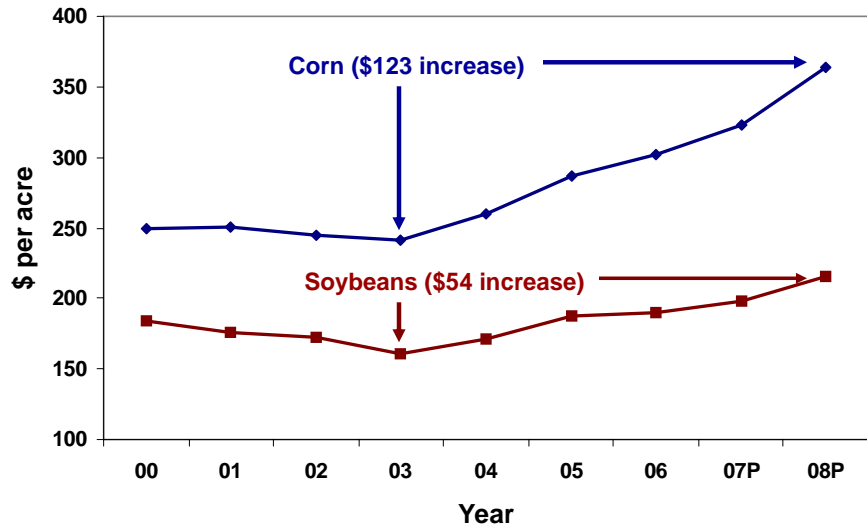
2007 Illinois Farm Economic Summit

The Profitability of Illinois Agriculture: Where to from Here?

Topics

1. Cost increases
2. Impacts on per acre break-even revenues
3. Corn versus soybean decisions
4. Controlling costs with more corn

Per Acre Non-land Costs, Central Illinois High-Productivity Farmland



2007 Illinois Farm Economic Summit

3

Variability Across Farms



- Reporting averages
- Large variability across farms
- More variability in 2008 because of fertilizer price variability



2007 Illinois Farm Economic Summit

4

Items Contributing to Increase



Harness the Power
of the Internet

Per Acre Cost Differences from 2003 to 2008P, Central Illinois, High Productivity Farmland

Corn		Soybeans	
Fertilizer	\$58	Fertilizer	\$18
Seed	19	Seed	11
Crop insurance	13	Fuel and oil	6
Storage	7	Crop insurance	5
Fuel and oil	7	Interest	4
Interest	4	Mach depreciation	4
Mach depreciation	4	Other	<u>6</u>
Other	<u>11</u>	Total	\$54
Total	\$123		

2007 Illinois Farm Economic Summit

5

Non-land Costs and Revenue



Harness the Power
of the Internet

Breakevens

Break-Even Revenues to Cover Non-Land Costs, Central Illinois, High-Productivity Farmland

	Corn	Soybeans
Expected yield	186 bu.	54 bu.
Direct costs	\$252	\$114
Power costs	62	55
Overhead costs	<u>50</u>	<u>46</u>
Non-land costs	\$364	\$215
Break-even revenue *	\$1.99	\$3.98

* Non-land costs divided by expected yield

2007 Illinois Farm Economic Summit

6

Break-Even Revenues to Cover Non-Land Costs



	<u>Corn</u>		<u>Soybeans</u>	
	Exp. Yield	Break-Even	Exp. Yield	Break-Even
Northern	178	\$2.13	51	\$4.47
Central (high-prod)	186	\$1.99	54	\$3.98
Central (low-prod)	168	\$2.18	50	\$4.30
Southern	148	\$2.50	47	\$4.77

2007 Illinois Farm Economic Summit

7

Non-land Costs and Revenue Breakevens



Break-Even Revenues to Cover Total Costs, Central Illinois, High-Productivity Farmland

	<u>Corn</u>	<u>Soybeans</u>
Expected yield	186 bu.	54 bu.
Direct costs	\$252	\$114
Power costs	62	55
Overhead costs	<u>50</u>	<u>46</u>
Non-land costs	\$364	\$215
Land cost	<u>190</u>	<u>190</u>
Total costs	\$554	\$405
Break-even revenue *	\$2.98	\$7.50

* Total costs divided by expected yield

2007 Illinois Farm Economic Summit

8

Break-Even Revenues



Harness the Power of the Internet

Per Bushel Break-Even Revenues for Differing Per Acre Cash Rent Levels

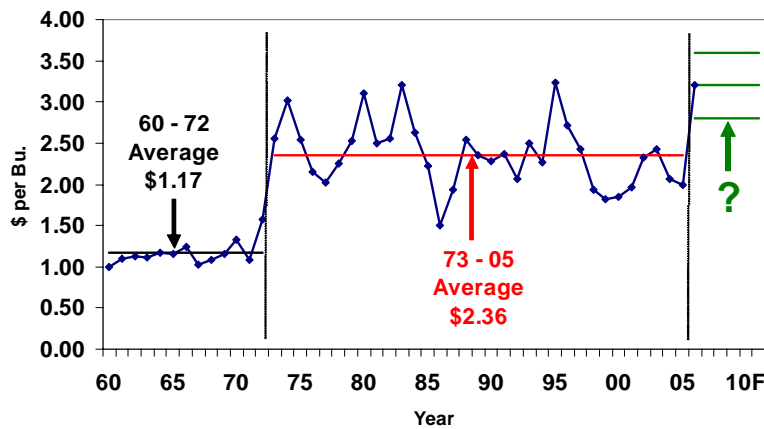
Cash Rent	Corn	Soybeans
175	\$2.91	\$7.22
200	3.05	7.69
225	3.18	8.15
250	3.32	8.61
275	3.45	9.07
300	3.59	9.54
325	3.72	10.00
350	3.86	10.46

Break-even to Actual Prices



Harness the Power of the Internet

U.S. Corn Prices, 1960 to 2006.



Acres in Crops



Harness the Power of the Internet

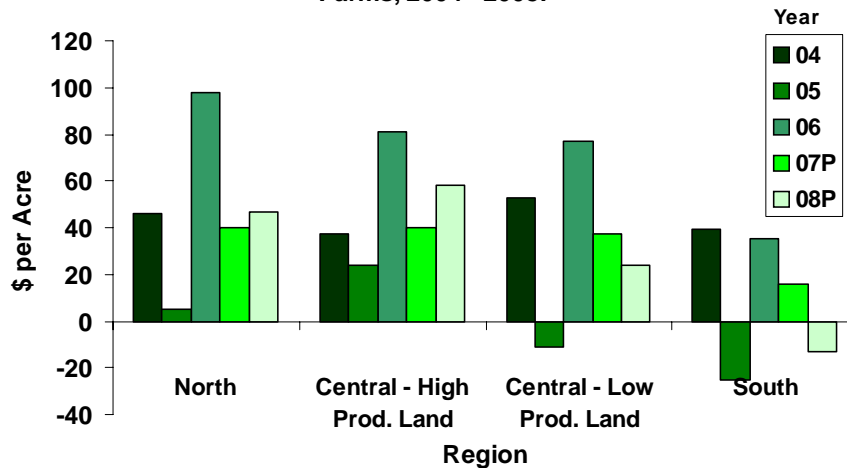
Crop Reporting District	2006 Acres	2007 Acres	Change
(,000) acres			
Northwest	1,857	2,089	12%
Northeast	1,045	1,245	19%
West	1,069	1,234	15%
Central	1,619	1,904	18%
East	1,596	1,855	16%
West Southwest	1,612	1,838	14%
East Southeast	1,490	1,721	16%
Southwest	484	627	30%
Southeast	528	687	30%
Illinois Total	11,300	13,200	17%
U.S.	78,327	93,616	20%

Corn Versus Soybean Acres



Harness the Power of the Internet

Corn Minus Soybean Returns on Illinois FBFM Grain Farms, 2004 - 2008P



Corn Versus Soybeans



Harness the Power of the Internet

	Corn-after -Soybeans	Corn-after -Corn	Soybeans
Panel A. Northern Illinois			
Yield (\$ per acre)	183	173	51
Price (\$ per bushel)	\$3.75	\$3.75	\$9.20
Total revenue (per acre)	\$715	\$678	\$498
Non-land costs (per acre)	<u>373</u>	<u>387</u>	<u>228</u>
Operator and land return	\$342	\$291	\$270
Panel B. Central Illinois (high-productivity farmland)			
Yield (\$ per acre)	191	181	54
Price (\$ per bushel)	\$3.80	\$3.80	\$9.25
Total revenue (per acre)	\$753	\$715	\$527
Non-land costs (per acre)	<u>357</u>	<u>371</u>	<u>215</u>
Operator and land return	\$396	\$344	\$312

Corn Versus Soybeans



Harness the Power of the Internet

	Corn-after -Soybeans	Corn-after -Corn	Soybeans
Panel C. Central Illinois (low-productivity farmland)			
Yield (\$ per acre)	173	163	52
Price (\$ per bushel)	\$3.80	\$3.80	\$9.25
Total revenue (per acre)	\$682	\$644	\$506
Non-land costs (per acre)	<u>359</u>	<u>373</u>	<u>215</u>
Operator and land return	\$323	\$271	\$291
Panel D. Southern Illinois			
Yield (\$ per acre)	148	138	47
Price (\$ per bushel)	\$3.85	\$3.85	\$9.30
Total revenue (per acre)	\$589	\$550	\$456
Non-land costs (per acre)	<u>363</u>	<u>377</u>	<u>224</u>
Operator and land return	\$226	\$173	\$232

Table 2. Break-Even Soybean Prices for Different Corn-After-Corn to Have Same Return as Soybeans.¹

Corn Price	Northern Illinois	Central Illinois		Southern Illinois
		High Productivity	Low Productivity	
\$ per Bushel				
3.00	7.06	7.17	6.38	5.55
3.25	7.91	8.00	7.17	6.29
3.50	8.75	8.84	7.95	7.02
3.75	9.60	9.68	8.74	7.76
4.00	10.45	10.52	9.52	8.49
4.25	11.30	11.36	10.30	9.22
4.50	12.15	12.19	11.09	9.96

¹ Break-even soybean prices calculated using yields and costs shown in Table 1.

- Budgets assume costs don't change with increases in corn acres (e.g., power costs do not increase with corn acre increases)
- Much concern about controlling yield drags in corn-after-corn
- More of a concern may be controlling costs as increase corn acres

Operator and Land Returns



Harness the Power
of the Internet

by Percent Acres in Corn

- **Average Operator and Land Returns for FBFM farms that:**
 - Are in Northern and Central Illinois
 - Receive most of their income from grain operations
 - Have limited other farm activities
- **Average returns by “Percent Acres in Corn”**

Farm Level Results



Harness the Power
of the Internet

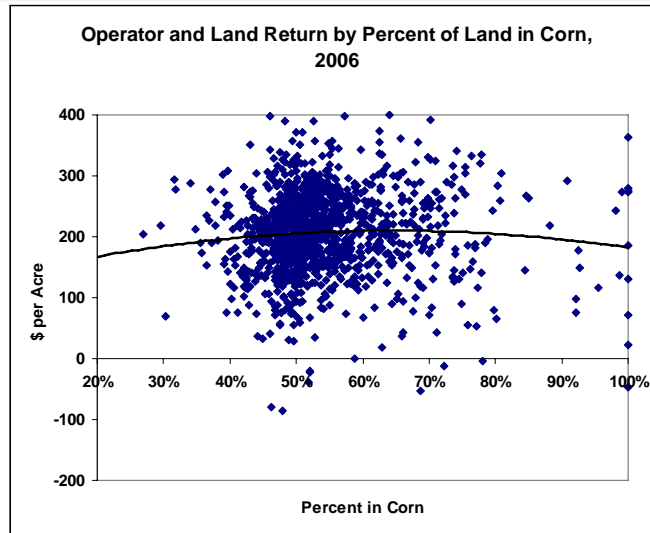
Operator and Farmland Returns by Percent of Land in Corn

Percent acres in corn	Year			
	2003	2004	2005	2006
40.1% to 45%	170	182	142	182
45.1% to 50%	171	187	165	199
50.1% to 55%	167	197	158	212
55.1% to 60%	170	200	150	208
60.1% to 65%	177	198	147	213
65.1% to 70%	169	194	150	216
70.1% to 75%	178	209	151	214
More than 75%	162	201	140	190

2006 Scatter Graph



Harness the Power of the Internet



2007 Illinois Farm Economic Summit

19

Farm Level Results in 2006



Harness the Power of the Internet

Per Acre Costs and Yields

Percent acres in corn:	Costs		Yields	
	Power	Non-land	Corn	Soybeans
40.1% to 45%	63	242	172	51
45.1% to 50%	63	250	174	53
50.1% to 55%	62	255	176	54
55.1% to 60%	65	269	179	54
60.1% to 65%	71	278	179	54
65.1% to 70%	78	301	184	55
70.1% to 75%	84	305	179	57
More than 75%	95	341	177	56

2007 Illinois Farm Economic Summit

20

- **Costs increase cause break-evens to be at new levels**
- **Corn looks more profitable in 2008 on high-productivity farmland**
- **Cost control is key for more corn-after-corn**