

Economics of Crop Rotations under New Input and Grain Prices

Paul D. Mitchell

Assistant Professor

Agricultural and Applied Economics

University of Wisconsin-Madison

Wisconsin Fertilizer, Ag Lime, and

Pest Management Conference

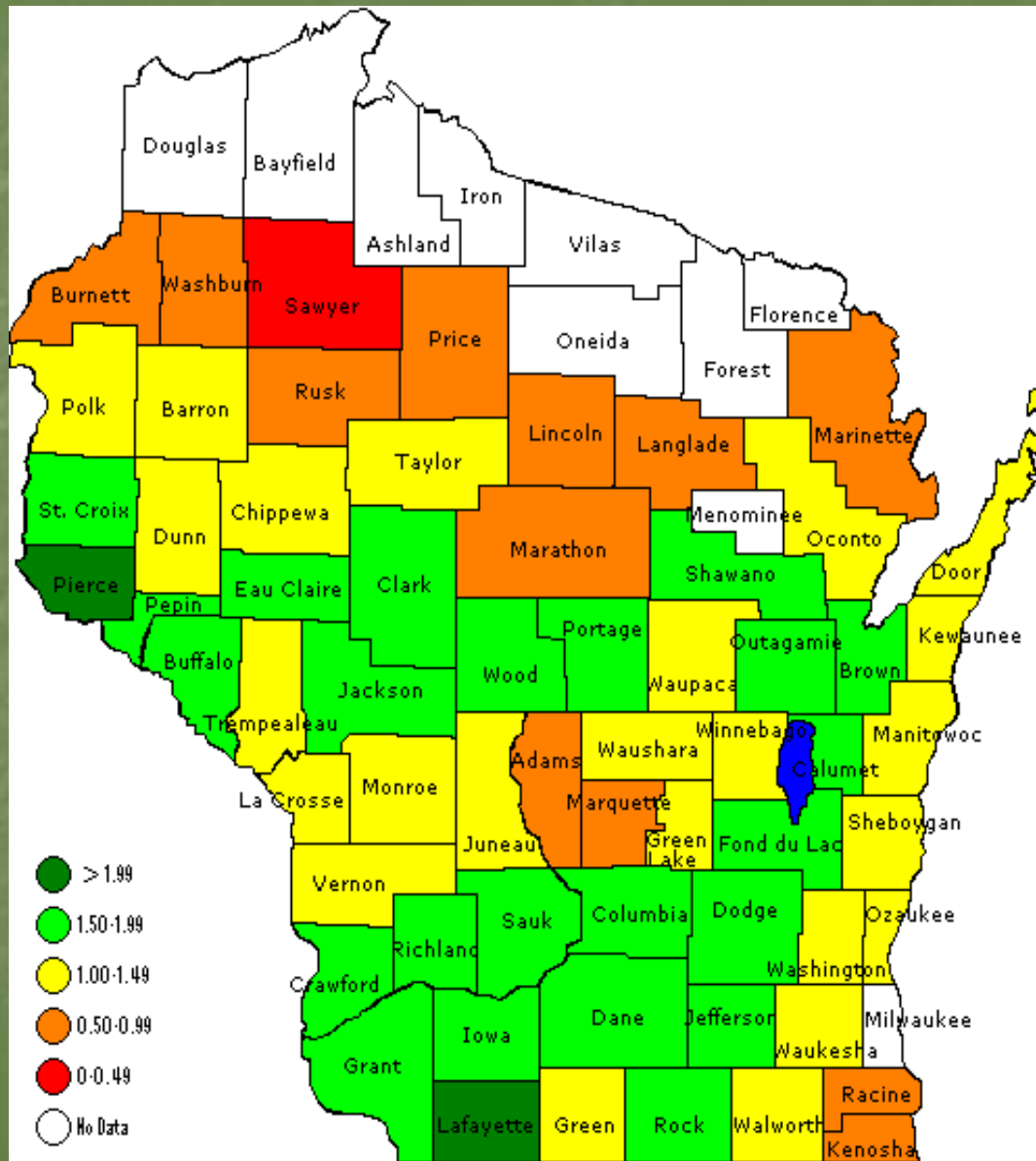
Madison, WI

January 16, 2008

Crop Prices are High

- Closing prices on CBOT Tuesday 1/15
- Dec 08 corn \$5.29/bu
- Nov 08 soybean \$12.85/bu
- Sep 08 wheat \$8.57/bu
- Sep 08 oats \$3.47/bu
- These price drive the image that farmers are rolling in the money

Yields are Increasing too



Annual increase
(bu/ac) in NASS
county average
yield for corn
from 1977 to
2006, estimated
by regression

The "New" Economics of Corn and Soybeans



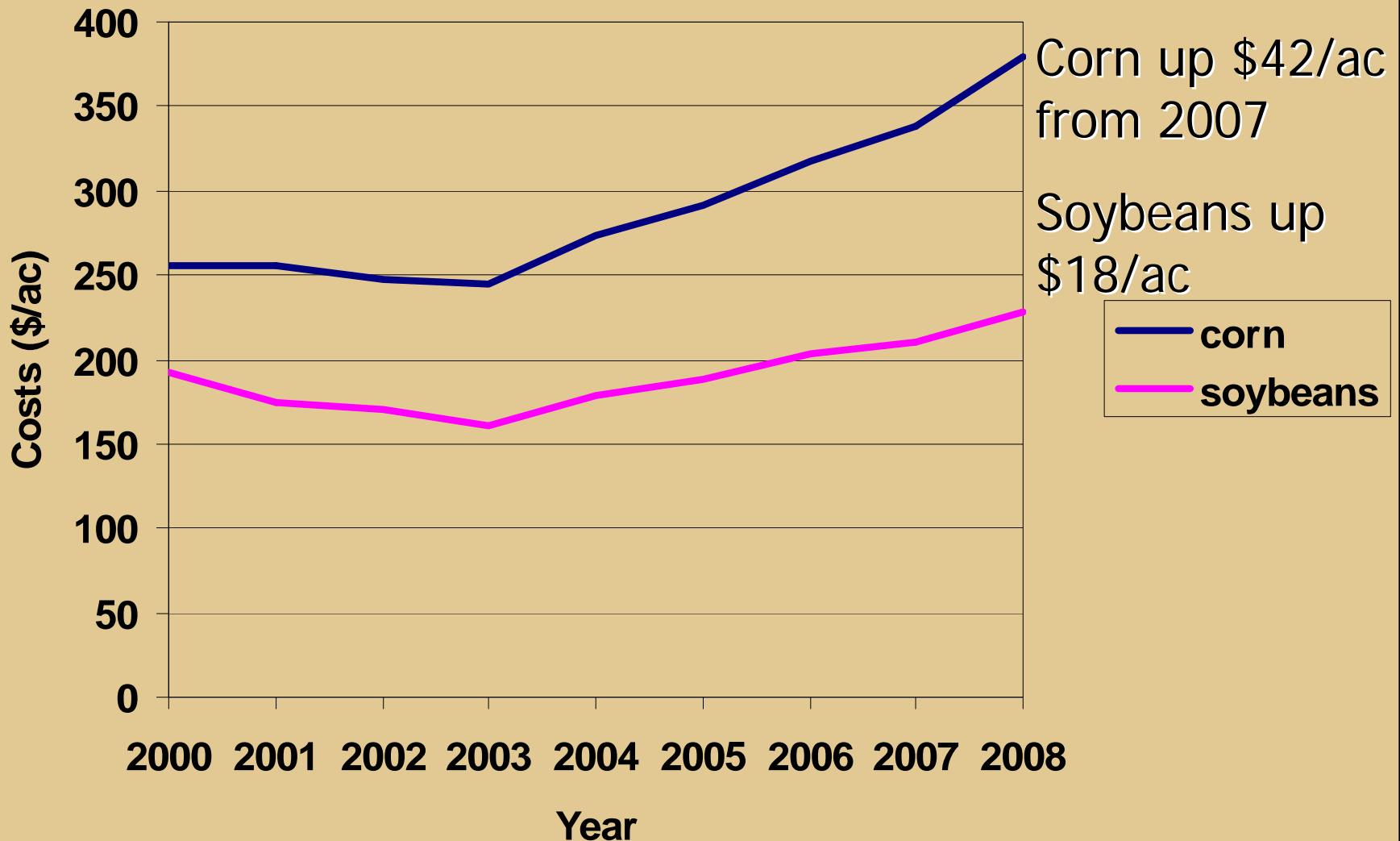
But Input Costs Have Increased

- Fertilizer prices (\$/ton) leading the way

Fertilizer	2008	2007	% increase
Urea	505	409	23%
Anhydrous	775	514	51%
32% N Solution	403	269	50%
Ammonium Sulfate	240	209	15%
DAP	578	334	73%
Potash	418	254	65%

- Seed prices up around 15%

U of IL non-land costs for corn and soybean production in northern IL



Annual Increase: U of IL non-land costs for corn and soybeans in northern IL



The "Real" Economics of Corn and Soybeans



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Quick Cost of Production Estimates

- Quick cost of production estimates for corn, soybeans and wheat in Wisconsin
- Use major cost categories
- Neither scientific nor rigorous, but based on simple assumptions
- Farmers will want to do their own cost and returns projections

Fertilizer Costs

Price		Corn		Soybeans		Wheat	
	\$/lb	Amt.	Cost	Amt.	Cost	Amt.	Cost
N	0.55	120	66	0	0	100	55
P	0.50	50	25	35	18	35	18
K	0.40	40	14	70	28	20	8
Total		107			45.50		80.50

Seed Costs

- Corn
 - $32,000/\text{ac} @ \$168/\text{bag} = \67.20
- Soybeans
 - $1.2 \text{ bag}/\text{ac} @ \$32/\text{bag} = \$38.40$
- Wheat
 - Assume \$35/ac
 - Lots of numbers out there
 - Depends on variety, germination rate, etc.

Input Cost Summary

Item	Corn	Soybeans	Wheat
Fertilizers	107.00	45.50	80.50
Seed	67.20	38.40	35.00
Pesticides	25	25	15
Insurance (75% CRC)	25	13	15
Miscellaneous	10	10	10
Interest (8% @8 mo.)	12.50	7	8.30
TOTAL	246.69	138.93	163.79

Machinery Costs

- Hard to estimate/measure
 - Both fixed and variable
- Very specific to each farmer
- Use estimates for 2008 machinery costs from Iowa State University
- Adjusted upwards for WI about 50%
 - Smaller fields and farms
 - Higher custom rates

Machinery Costs

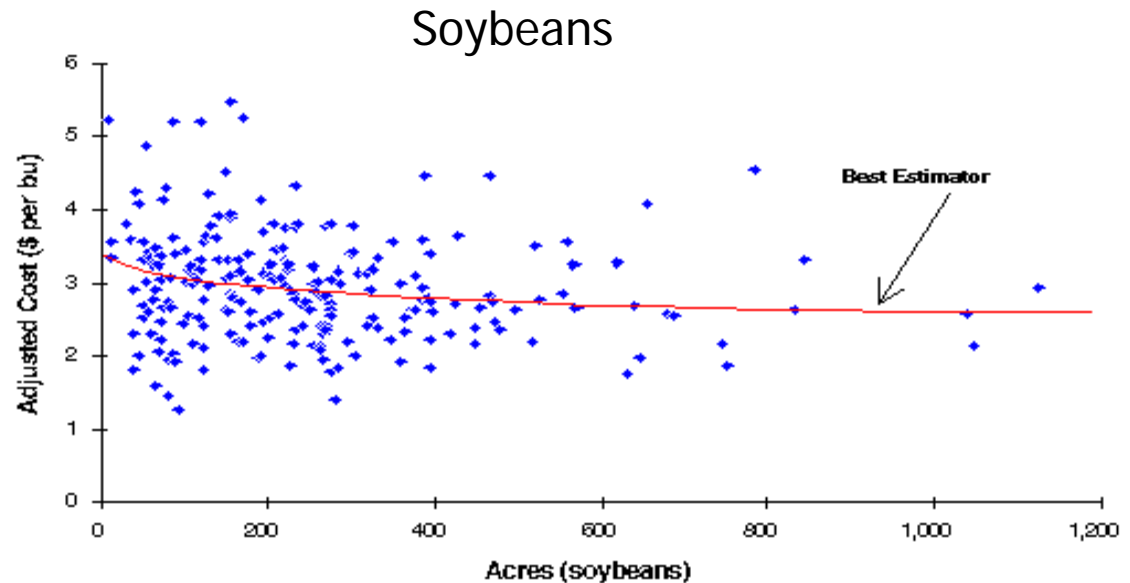
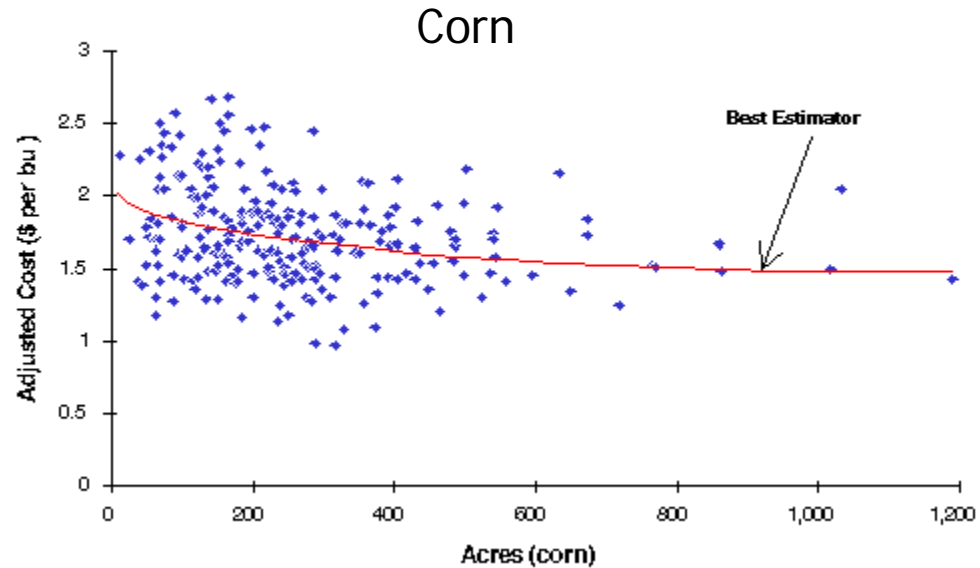
Item	Corn	Soybeans	Wheat
Pre-Harvest	50	42	36
Harvest (Combine)	35	30	30
Haul/Handle	9	3	5
Dry	36	0	2
TOTAL	130	75	73

Cost Estimate Summary

Item	Corn	Soybeans	Wheat
Inputs	247	139	164
Machinery	130	75	73
TOTAL	\$377/ac	\$214/ac	\$237/ac
Range	\$325-\$425	\$275-\$255	\$200-\$280

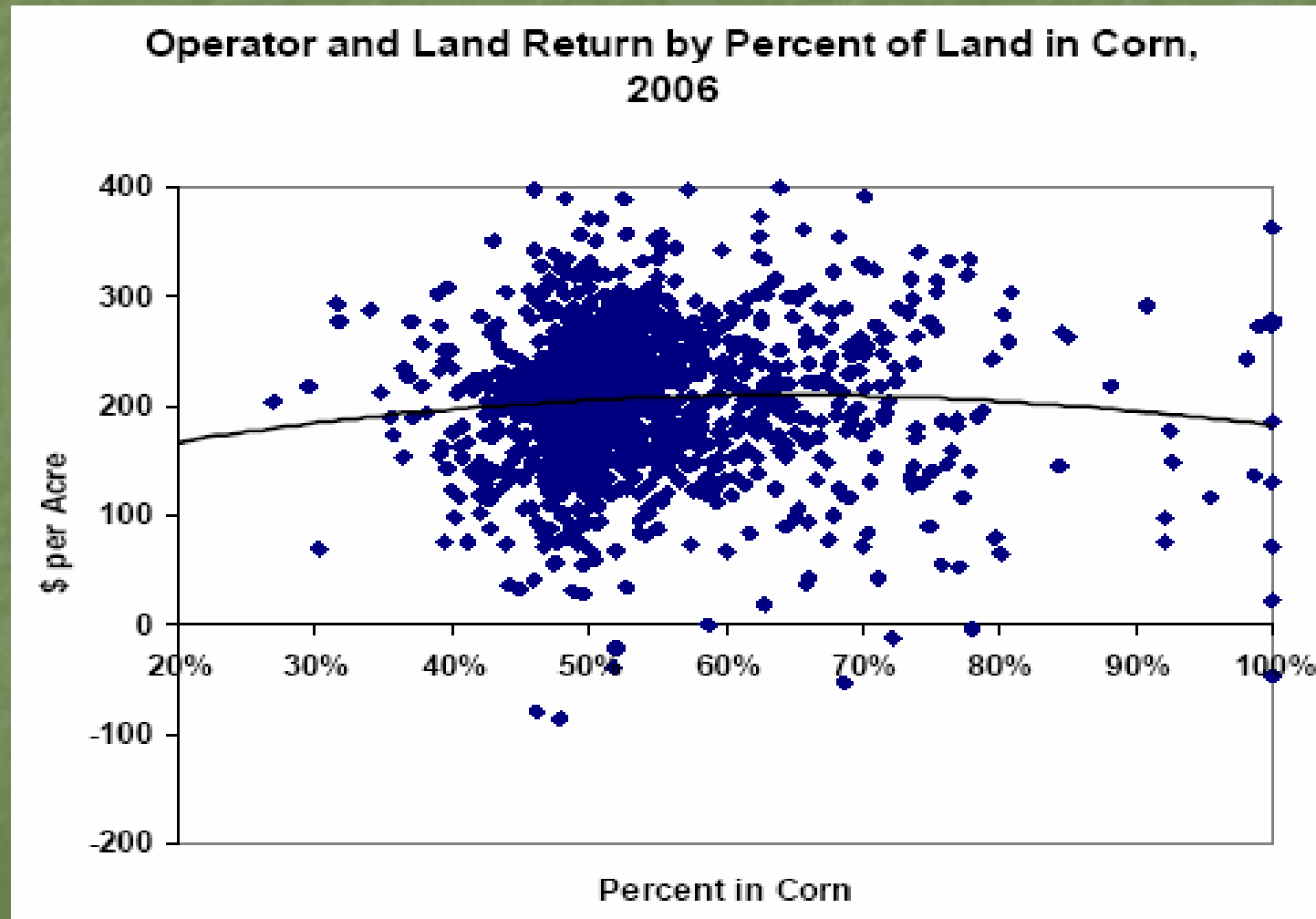
**Does not include cost for land,
management, or investment of capital**

1996 Data for about 250 Minnesota Corn and Soybean Farmers



Source: Southeastern and
Southwestern Minnesota
Farm Business Management
Associations

Illinois Data for 2006



Source: Gary Schnitkey "Crop Production Cost and Rotation Decisions"

Corn following Corn VS. Corn following Soybeans

- This cost estimate was for corn following soybeans, what about corn following corn?
- Need more N fertilizer: add 20 more lbs
 - $20 \times 0.55 = \$11/\text{ac}$
- Soil insecticide or transgenic hybrid for corn rootworm control
 - Use \$19/ac
- Yield reduction occurs
 - IL: 10 bu/ac, IA: 15 bu/ac. WI? Use 10 bu/ac

Net Returns

	Corn after Corn	Corn after Soybeans	Soybeans	Wheat
Yield	165	175	50	75
Price	4.50	4.50	11.50	7.50
Revenue	742.50	787.50	575.00	562.50
Costs	407	377	241	237
Returns to land and operator				
	335.50	410.50	334.00	325.50
Rent	100	100	100	100
Net Return	235.50	310.50	234.00	225.50

Crop Rotations under New Input and Grain Prices

With these costs, prices, and yields

- What to plant after soybeans?
 - Corn after soybeans is best deal
- What to plant after corn?
 - Corn or soybeans is about equal
 - Wheat is about \$10/ac lower
- Assuming different prices, costs, and yields will give different answers

Farmers should make their own budgets

- University and other budgets are usually averages or approximations (like these)
- Farmers should estimate their own costs and returns, as it is their money and they live with the consequences
- Budgets can be as simple or detailed as they want to make them
- Here are some resources to use

Wisconsin Resources Available

- UW Center for Dairy Profitability
www.cdp.wisc.edu/crop%20enterprise.htm
- UW-Team Grains web page
www.uwex.edu/ces/ag/teams/grains/
- My Extension web page
www.aae.wisc.edu/mitchell/extension.htm
- Detailed Excel spreadsheets with base cases and then you enter your numbers

Other States

- Farm DOC (IL): www.farmdoc.uiuc.edu/
- Lots of stuff, see FAST tools
 - Corn-Soybeans-Wheat Rotation Tool
 - Crop Budgeting Tool
- Ag-Decision Maker (Iowa State University)
www.extension.iastate.edu/agdm/
 - "Cost and Returns" and "Machinery"

Machinery Costs

- Economic Engineering Approach
 - Ron Schuler on UW Team Grains webpage
 - Google "Machinery Cost Estimates"
 - U of IL, U of MN, IA State, Purdue
- Simple Rules of Thumb
 - "Fast and Simple Method to Estimate Typical Machinery Costs" on my web page
www.aae.wisc.edu/mitchell/extension.htm
 - Your cost 25%-50% higher than custom rate

Questions?

Paul D. Mitchell

UW-Madison Ag & Applied Economics

Office: (608) 265-6514

Cell: (608) 320-1162

Email: pdmitchell@wisc.edu

Extension Web Page:

www.aae.wisc.edu/mitchell/extension.htm