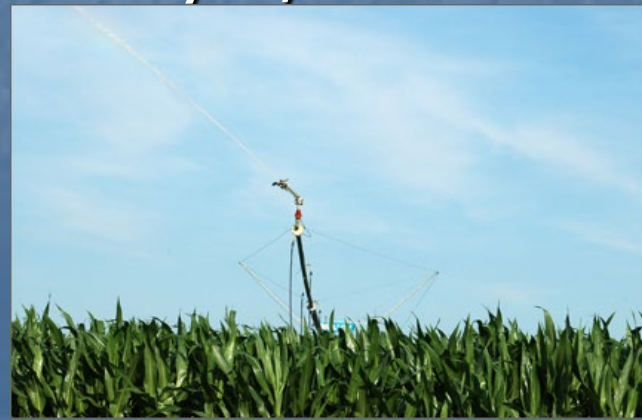




Estimating your Cost of Production for Growing Irrigated Corn



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Goal Today

- Present basic cost concepts and methods to estimate cost of production
- Simple method to estimate a typical cost of production for a farm your size
- Work through an example
 - Cost of Center Pivot Irrigation
 - Returns to Irrigated Corn

Major cost categories for crop production

- Variable Input Costs
 - Seed, fertilizer, herbicides
- Machinery Costs
 - Fixed: depreciation, capital cost
 - Variable: maintenance, fuel, lubrication
- Land, Labor, and Management
 - Often unpaid costs of your time and your management skill and energy

Variable Input Costs

- Amount of each input times its price
- Add them all up to get variable input costs
- Simplified examples for corn
 - Seed: $\$110/\text{bag} \times 0.425 \text{ bag}/\text{ac} = \$46.75/\text{ac}$
(80,000 seeds/bag, 34,000 seeds/ac)
 - Nitrogen: $200 \text{ lbs N}/\text{ac} \times \$0.35/\text{lbs} = \$70/\text{ac}$
 - Prowl: $1.5 \text{ lbs}/\text{ac} = \$9.75/\text{ac}$

Machinery Costs

- Substantial component of costs (25-40%)
- Difficult to measure/estimate: user specific
- Variable Cost, Use-Related Cost, Operating Cost
 - Costs due to using the machinery
 - Fuel, lube, maintenance, use-related repairs and labor
- Fixed Cost, Time-Related Cost, Overhead Cost
 - Costs paid whether you use the machinery or not
 - Interest, insurance, taxes, housing
- Depreciation: both a variable and fixed cost

Machinery Costs

- Best method: keep accurate records and use them to determine your actual costs
- Estimate Costs
 - When do not have records, or want to compare costs for different options
 - Economic Engineering
 - Custom Rates

Economic Engineering Approach

- Estimate machinery costs based on careful engineering data collection
- Use the machinery and carefully document
 - repairs, maintenance, fuel/lubrication
 - speed, turning time, labor
- Develop formulas to estimate fixed and variable machinery costs

Economic Engineering Approach

- Farm Machinery Economic Cost Estimates for 2005, Lazarus and Selley at U of MN, Center for Farm Financial Management
<http://www.apec.umn.edu/faculty/wlazarus/mf2005.pdf>
- Numbers seem too low?

Machinery Cost Example

- What does it cost to run a chisel plow?
- Lazarus and Selley 2005 (23 ft): \$6.81/ac
- Iowa 2005 Custom Rate \$11.05/ac
- Wisconsin 2004: \$13.30/ac
- Indiana 2004 Custom Rate \$11.78/ac
- South Dakota (East) Custom Rate: \$10/ac
- Missouri 2003 Custom Rate
\$10/ac (\$12.10/ac heavy soil)
- SW Minnesota 2001: \$10.83/ac



Economic Engineering Approach

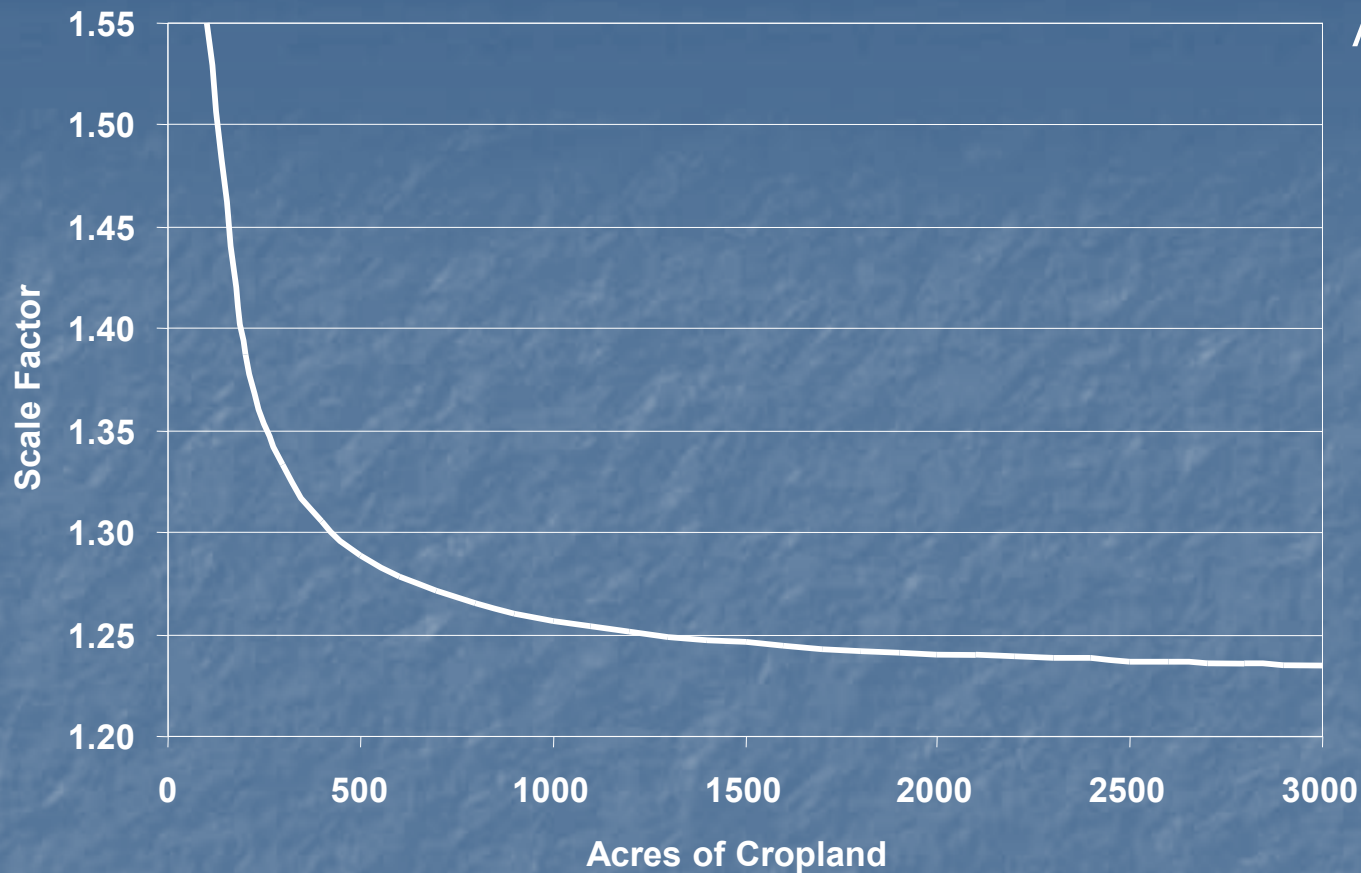
- Ron Shuler (UWEX/BSE): Updated A3510 “Estimating Ag. Field Machinery Costs”
- Print copy with worksheets, spreadsheet
- Estimate costs when no records
- Recommends using actual data to determine your actual machinery costs

Why not just use Custom Rates?

- Custom rates not good estimates of typical farmer costs—usually too low as well
 - Run over more acres, spread fixed costs
 - Volume discounts or search for best price, so lower purchase price
 - More efficient operators
 - Family/friends not charge enough
 - Discounted because not perfect timing

Converting Custom Rates to your Cost

- Adjusting custom rates is an easy way to estimate typical machinery costs
- K. Dhuyvetter and T. Kastens at Kansas State University developed a formula using KFMA cost data and custom rates
- $\text{Scale Factor} = 1.241 + (33.026/\text{acres})$
- $\text{Your Cost} = \text{Scale Factor} \times \text{Custom Rate}$
- Acres is annual acres operated



Acres	Scale Factor
100	1.571
200	1.406
300	1.351
400	1.324
500	1.307
600	1.296
700	1.288
800	1.282
900	1.278
1000	1.274
1100	1.271
1200	1.269
1300	1.266
1400	1.265
1500	1.263
1600	1.262
1700	1.260
1800	1.259
1900	1.258
2000	1.258

1 – Scale Factor = % increase
 (as decimal) that your costs
 exceed the Custom Rate

Caveats

- Custom rates have wide ranges—call around, use WI publication and those from other states
- Formula to adjust custom rates not perfect
- Use these machinery costs as a guide, not gospel
- Need good records to estimate your costs
- Returns to land and Management does not include Farm Program payments
- Government Payment Calculator at <http://www.afpc.tamu.edu/> to estimate

Irrigation Summary

SUMMARY

ANNUAL OWNERSHIP COSTS	\$/irg ac
Depreciation Pivot & Well	\$31.17
Interest/Opportunity Cost	\$51.80
Insurance	\$3.70
TOTAL ANNUAL OWNERSHIP COST	\$86.67

OPERATING COSTS	\$/irg ac
Electric Power	\$29.68
Labor run/manage pivot	\$1.33
Maintenance	\$11.10
TOTAL ANNUAL OPERATING COST	\$42.11
TOTAL COST	\$128.78

Irrigated Corn Summary

SUMMARY	\$/ac
Total Machinery Costs	\$101.99
Total Variable Input Costs	\$165.16
Total Irrigation Costs	\$128.78
Total Variable Harvest Costs	\$44.88
TOTAL COST	\$440.81

Average Yield (bu/ac)	220
Expected Price (\$/bu)	\$2.00
Expected Revenue (\$/ac)	\$440.00

Net Returns to Land & Management - \$0.81

Summary

- Can make money on irrigated field corn
- Keep costs low (inputs, irrigation, machinery)
- Get good price — good marketing

- Crop insurance (GRP/GRIP + Hail) and forward pricing to remove some of the yield & price risk

Questions ???

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