



Cost Management – Lease, Buy, Custom Work, Equipment Size



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Unprecedented Risks



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The screenshot shows the AgManager.info website in a browser window. The page title is "AgManager: providing agricultural economic information on crops, livestock, marketing and outlo". The URL is "www.agmanager.info". The website features a navigation menu with categories like "Agribusiness", "Crops", "Energy", "Farm Management", "Human Resources", "Income Tax & Law", "Livestock & Meat", and "Policy". A "Recent Updates" section lists various articles and reports, including "KSH-FertCalc - Excel spreadsheet for calculating per unit fertilizer costs", "Commodity Program Decisions in the 2008 Farm Bill", "Livestock Outlook Radio Program", "Livestock and Hay Charts", "Grain Outlook Radio Program", "Crop Basis Maps", "Updated Crop Basis Tool", "In The Cattle Markets", "Future-Based Price Forecasts for Diesel Fuel", "Current Grain Outlook Newsletter", "Kansas Grain Price Spread-Transportation Returns", "World Grain Supply and Demand Estimates (WASDE)", "US Ethanol Production, Imports and Stock (Updated)", "Seasonal Grain and Cattle Price Spreadsheets (Excel)", "KEMA Monthly Newsletter", "Biofuels: The Environment and the Economy", "Grain Market Outlook Presentation", "2002 & 2006 Fence Construction Cost Survey in Kansas", and "Pasture Leasing Arrangement in Kansas".

Click on Terry Kastens or Kevin Dhuyvetter and then slide presentations...

Machinery cost categories

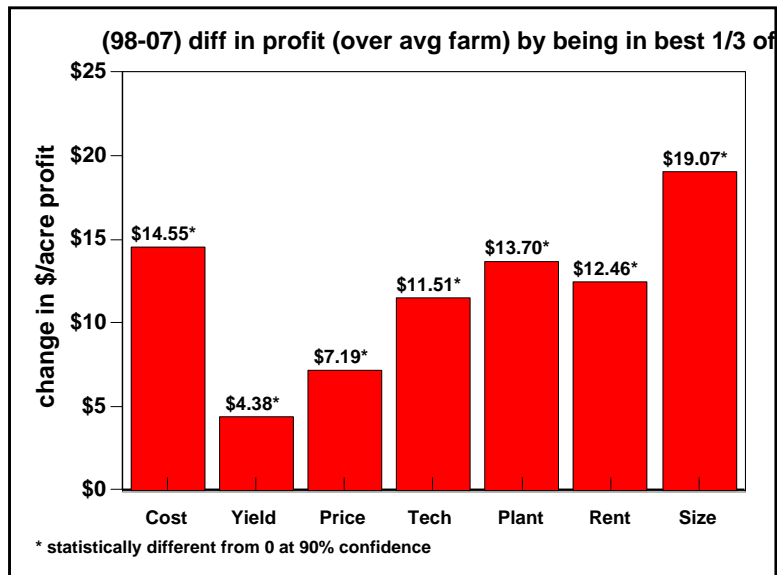
- Repair and maintenance
- Labor
- Depreciation (market, not tax depreciation)
- Interest (opportunity interest)
- Fuel and lubrication
- Taxes, insurance, and shelter
- Custom hire

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Why Producers Need to Know

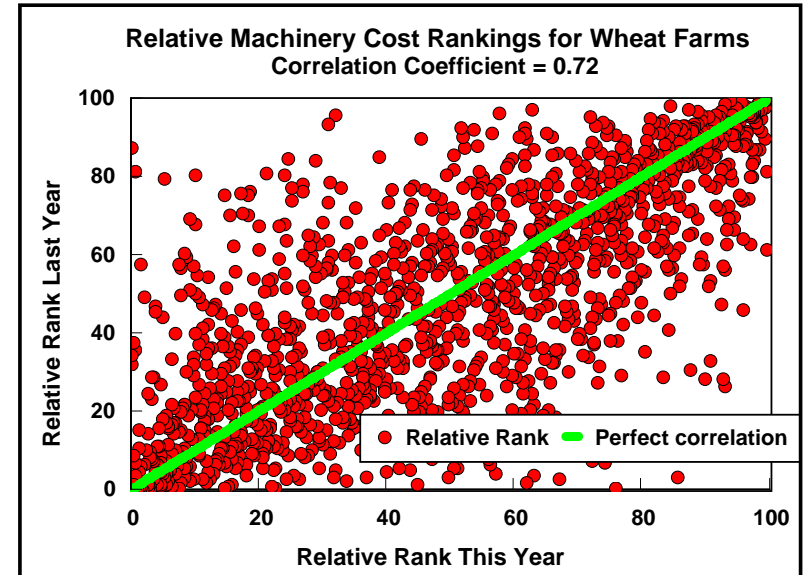
- Selecting Profit-maximizing Crop Mix
 - must prorate to crops
- Dealing with Technological Change (no-till)
 - alternative systems use machinery less intensively
- Benchmarking
- Banking (tracking market value & deprec.)
- Minimizing Costs of Production
 - owning vs. leasing vs. custom hire
 - optimal trade decisions

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Machinery large part of costs & size, but other stuff matters too

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Relative machinery costs are somewhat repeatable

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How important are farm machinery costs for farmers?

Kansas Farm Management Association Enterprise Analysis Nonirrigated Crops -- State Averages, 2002-2006						
	Corn	Irr Corn	Sorghum	Wheat	Soybean	Alfalfa
Number of Farms	45	15	85	178	74	34
Average Acres	366	571	328	648	346	58
Costs, \$ per Acre						
Seed	\$29.31	\$42.81	\$11.31	\$6.70	\$24.23	\$7.05
Fertilizer	38.27	46.20	27.48	22.15	5.00	9.45
Herb-Ins	22.76	37.38	21.99	5.58	15.68	11.22
Crop Ins	7.14	12.14	5.05	4.29	5.96	0.41
Machinery	70.89	87.08	61.45	60.88	64.33	87.35
Other	18.01	82.52	17.16	15.73	17.46	19.92
Land	36.89	52.23	20.27	23.16	29.44	41.94
Interest	18.66	31.48	14.43	12.66	15.48	15.75
Total Cost	\$241.93	\$391.84	\$179.14	\$151.15	\$177.57	\$193.10
Machinery, %	29.3%	22.2%	34.3%	40.3%	36.2%	45.2%

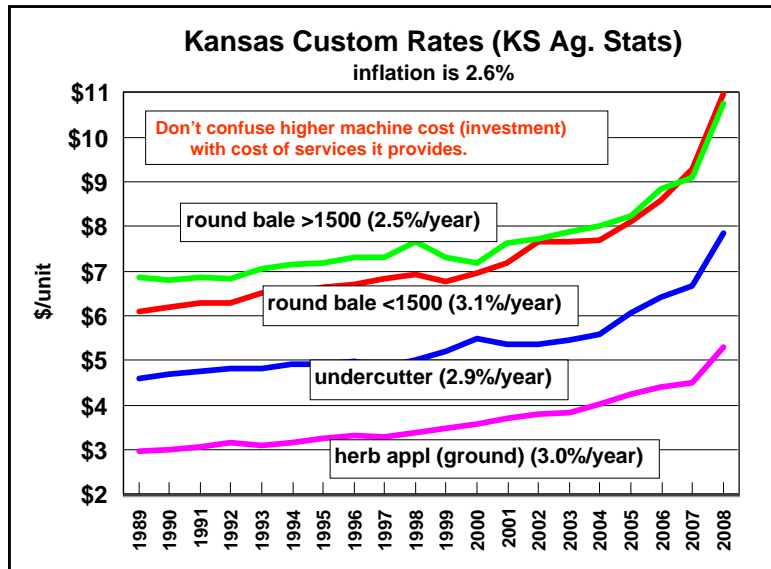
Note – A portion of interest cost should also be allocated to machinery costs
Costs reflect operator's costs on owned and rented land

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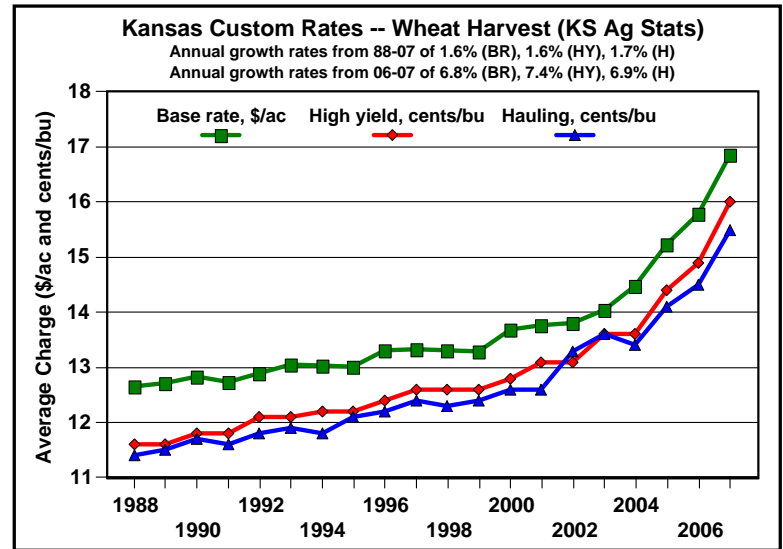
Machinery cost categories

- Repair and maintenance
- Labor
- Depreciation (market, not tax depreciation)
- Interest (opportunity interest)
- Fuel and lubrication
- Taxes insurance and shelter
- Custom hire
 - Leads to published and “accepted” custom rates
 - Proxy for how costs are changing over time?

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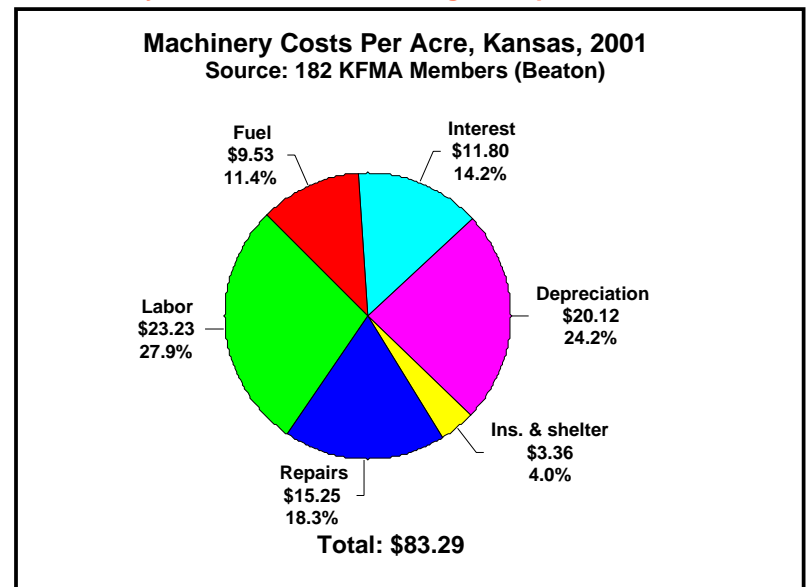
2008 estimated (Sep08) from expected change in fuel price (up 18.2% from 2007)



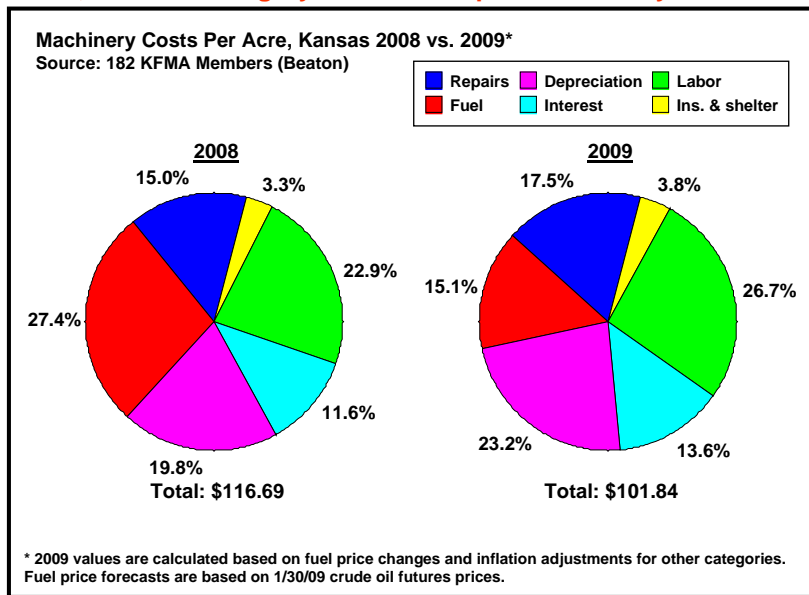
Harvest rates some of the best reported custom rates in Kansas

Fuel price and machinery costs

Historically, fuel has not been a large component of cost

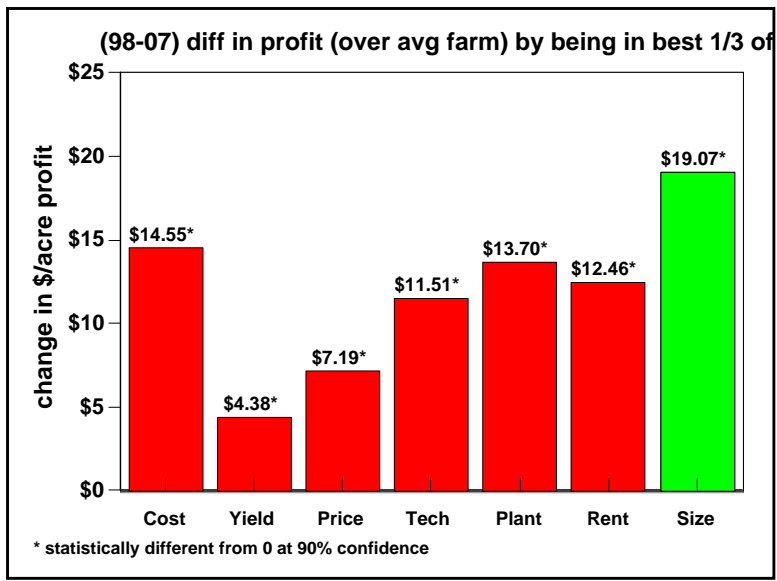


... but, fuel cost category was more important recently



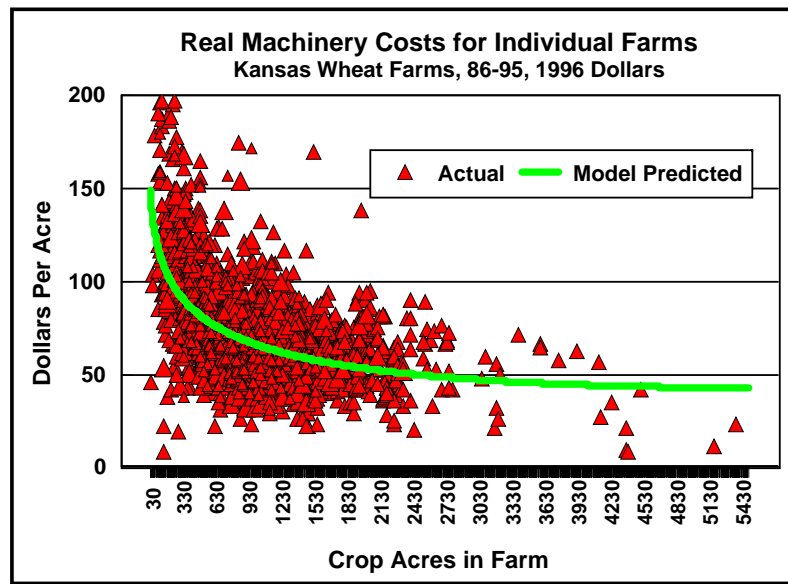
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Economies of Size and Machinery



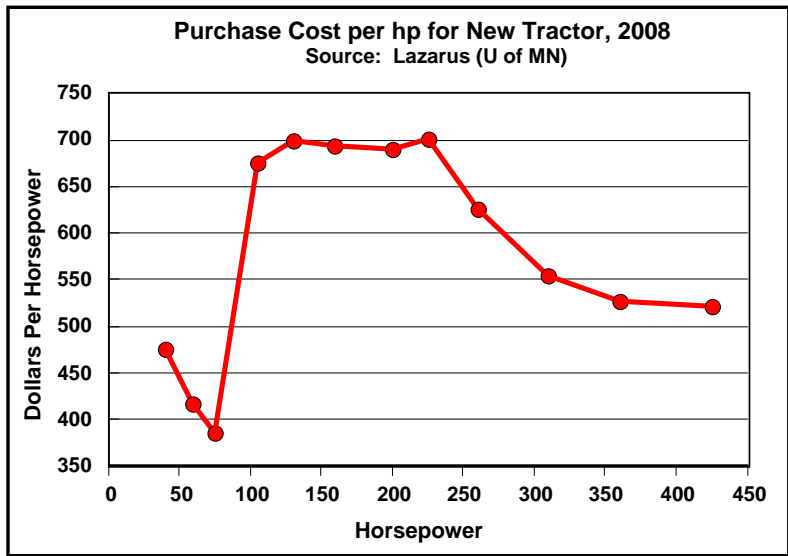
Machinery large part of costs & size, but other stuff matters too

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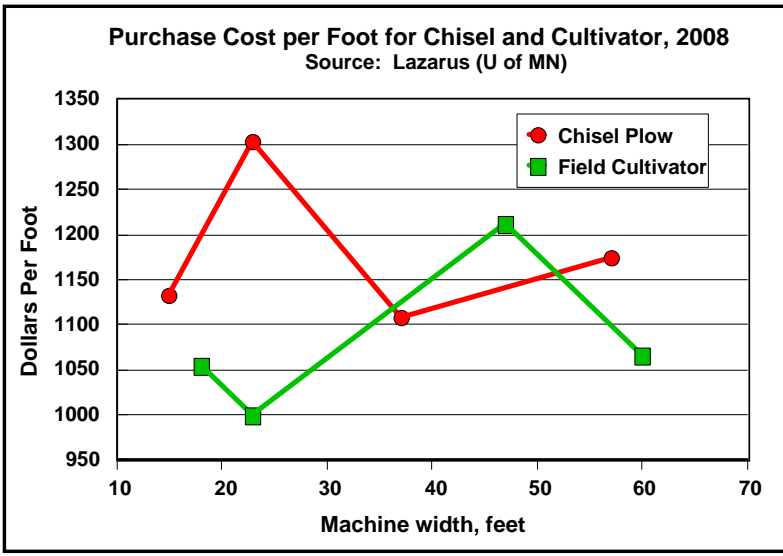


Though size economies continue increasing at ever larger farm size, most of the machinery size economies play out at more modest farm sizes

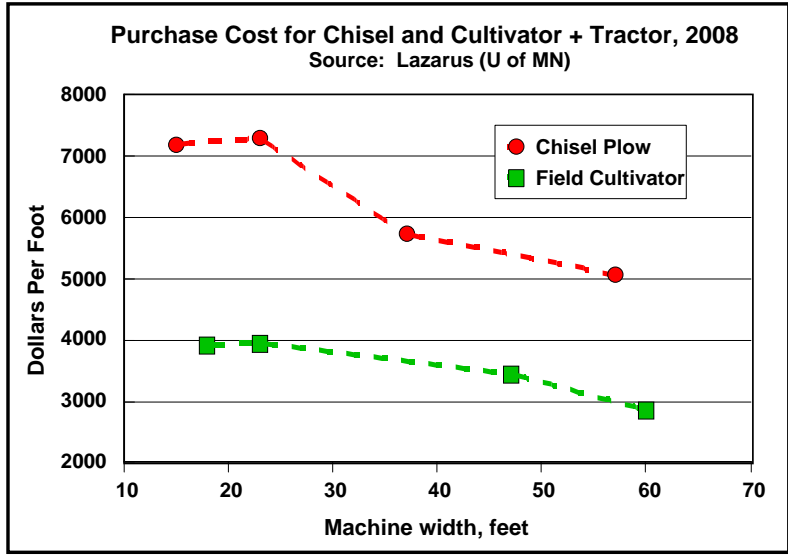
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A part of machinery size economies comes also from reduced labor, especially high-quality machinery operation labor during critical field operations

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Benchmarking Machinery Costs

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Machinery costs are highly variable across farms ...

Kansas Farm Management Association Enterprise Analysis						
Nonirrigated Crops -- State Averages, 2002-2006						
	Corn	Irr Corn	Sorghum	Wheat	Soybean	Alfalfa
Number of Farms	45	15	85	178	74	34
Average Acres						Total Ac
High profit farms	458	975	407	743	424	112
Mid profit farms	342	284	332	775	328	185
Low profit farms	298	455	246	425	286	107
						1,817
Machinery Costs, \$/acre						Wtd Avg
High profit farms	\$59.28	\$73.77	\$51.08	\$51.54	\$54.10	\$74.13
Mid profit farms	\$62.57	\$82.49	\$60.09	\$55.48	\$62.84	\$79.48
Low profit farms	\$90.82	\$104.98	\$73.22	\$75.72	\$75.98	\$109.15
						\$87.20
High less low, \$	-\$31.53	-\$31.21	-\$22.14	-\$24.18	-\$21.88	-\$35.02
High less low, %	-34.7%	-29.7%	-30.2%	-31.9%	-28.8%	-32.1%
						-\$26.47

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Machinery costs are important in explaining profitability differences across farms ...

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	Corn	Irr Corn	Sorghum	Wheat	Soybean	Alfalfa
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High less low, %	-34.7%	-29.7%	-30.2%	-31.9%	-28.8%	-32.1%
						-\$26.47
Differences between high profit farms and low profit farms in ...						
Net returns	\$91.30	\$138.74	\$81.43	\$65.74	\$73.87	\$133.79
Total costs	-\$93.54	-\$125.79	-\$50.96	-\$53.84	-\$53.15	-\$65.86
Cost/net returns	102.5%	90.7%	62.6%	81.9%	72.0%	49.2%
Mach/total costs	33.7%	24.8%	43.4%	44.9%	41.2%	53.2%
Mach/net returns	34.5%	22.5%	27.2%	36.8%	29.6%	26.2%

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Research comparing whole-farm costs with custom rates...

- Master's thesis – Aaron Beaton
- Based on KFMA database and cooperator surveys for the year 2001
- Excel spreadsheet (*KSU-MachCost*) that can be used to estimate and benchmark farm specific machinery costs

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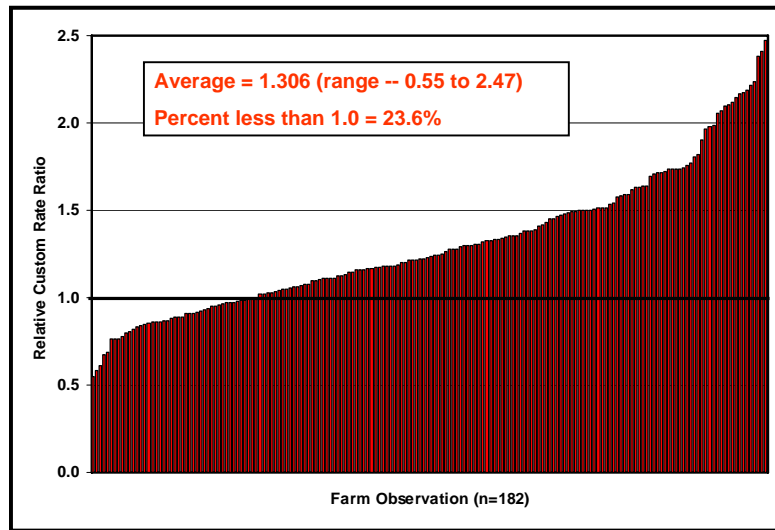
Farm costs vs. custom rates

Expected crop machinery cost at custom rates

- Sum of all operations performed on the farm multiplied by their respective custom rates
- Relative custom rate ratio developed
 - If > 1, then per unit costs are greater than custom rates
 - If = 1, then per unit costs are equal to custom rates
 - If < 1, then per unit costs are less than custom rates

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Relative custom rate ratio



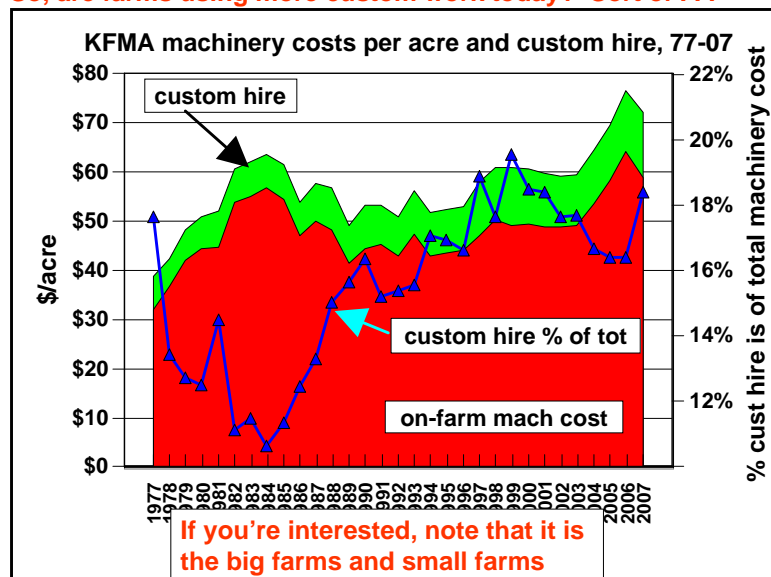
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Conclusions of Beaton study

- To represent machinery costs, published custom rates need to be increased by approximately 25% (for a farm with 1,000 harvested acres)
- Economies of size exist (i.e., scale factor adjustment decreases as farm size increases)
- Procedure developed to find farm-specific, per unit machinery costs
- Results are useful for benchmarking costs and have been incorporated into *KSU-MachCost.xls*

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So, are farms using more custom work today? Sort of . . .



Maybe a slight

e . . .

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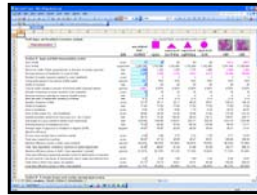
Machinery Ownership



Machinery Decision Tools at www.agmanager.info



OwnCombine.xls



KSU-GPSguidance.xls



OwnBaler.xls



OwnSprayer.xls



KSU-MachCost.xls



OwnTractor.xls

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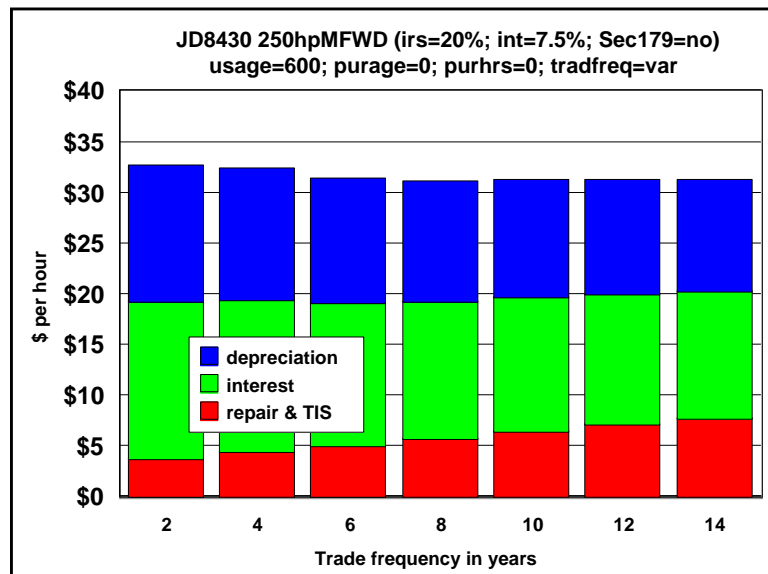
Own... series of decision tools

- Can I afford new or should I buy used?
- When should I trade?
- How does intensity of use impact cost?

- Always will get back to a comparison with renting machinery
- Often allows for a comparison to custom services

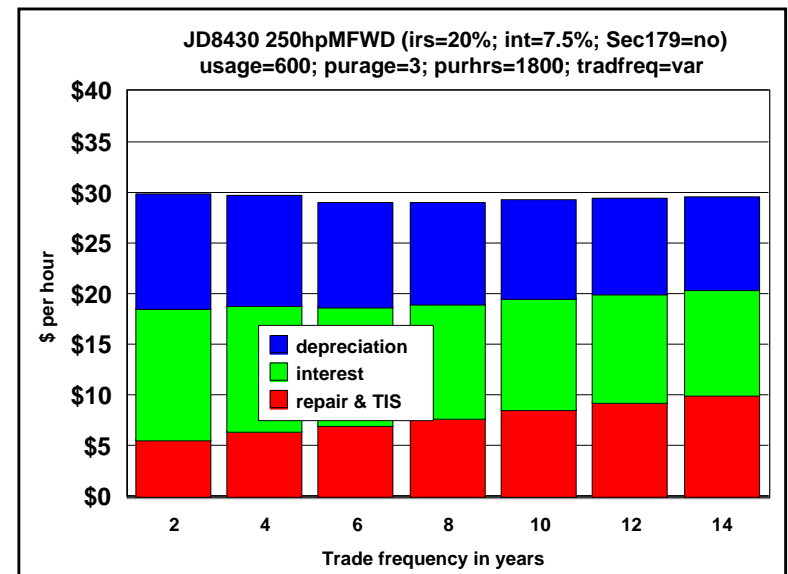
... A few examples follow

30



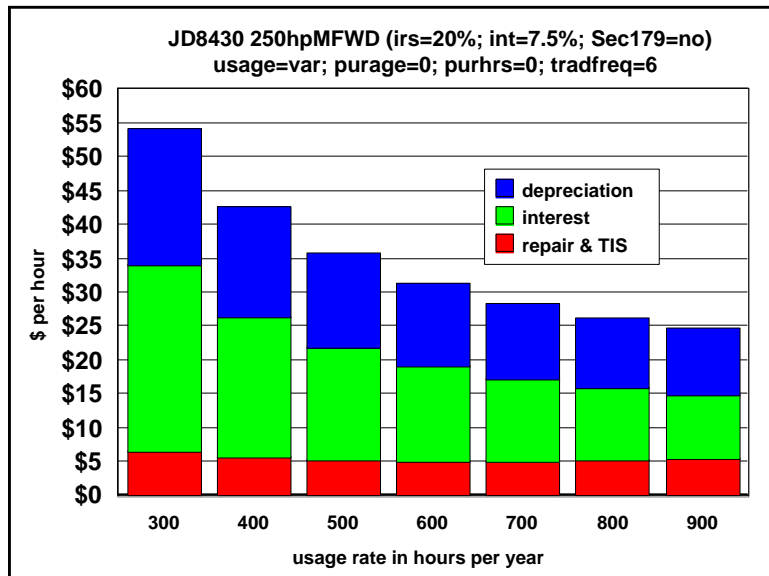
The market is fairly efficient when buy NEW and with a variable holding period

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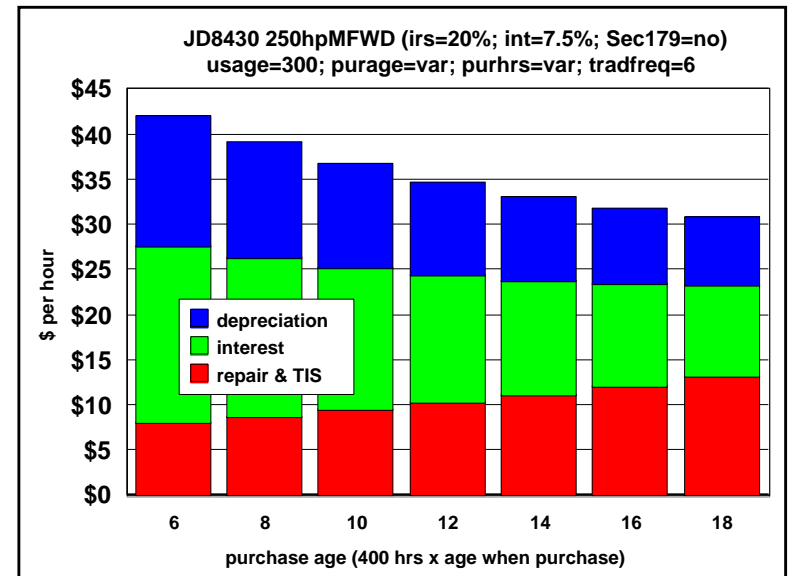
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Not a trading strategy, but putting more hours on per year really pays off

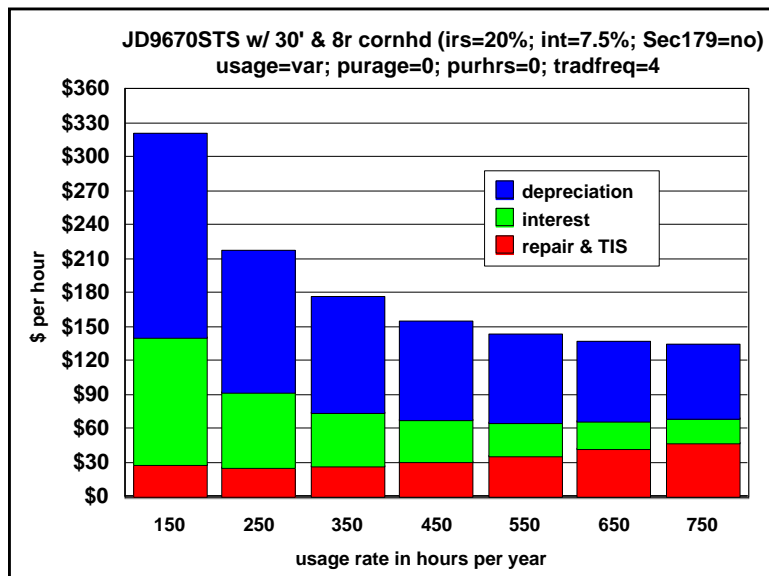
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Less intensive users can hold down costs by buying older tractors, but must be able to handle high repairs and do without newer technologies

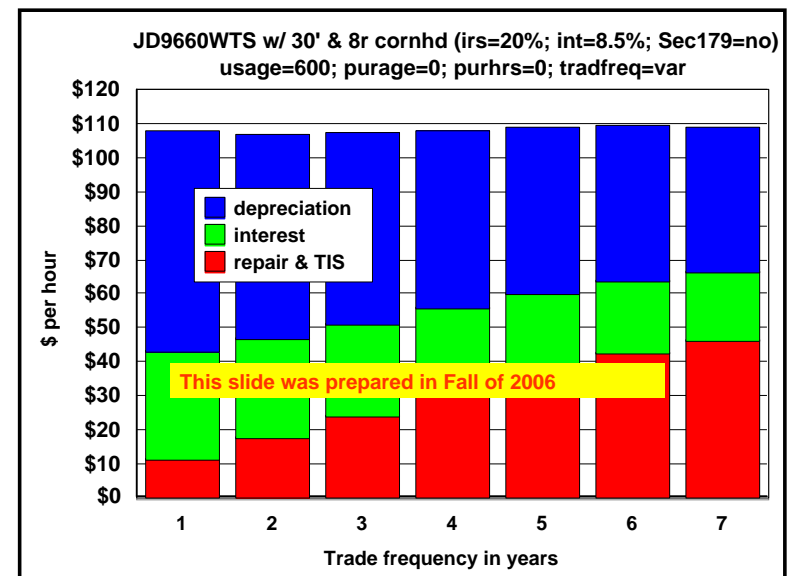
34

Switch to combines



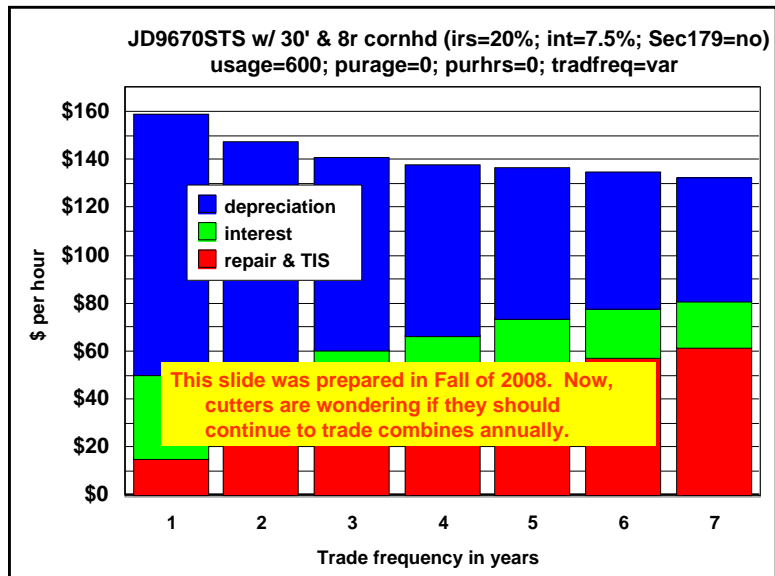
Less-intensive users likely cannot afford new combines

35



Sort of the custom cutter's situation. See why they have difficulty deciding when to trade?

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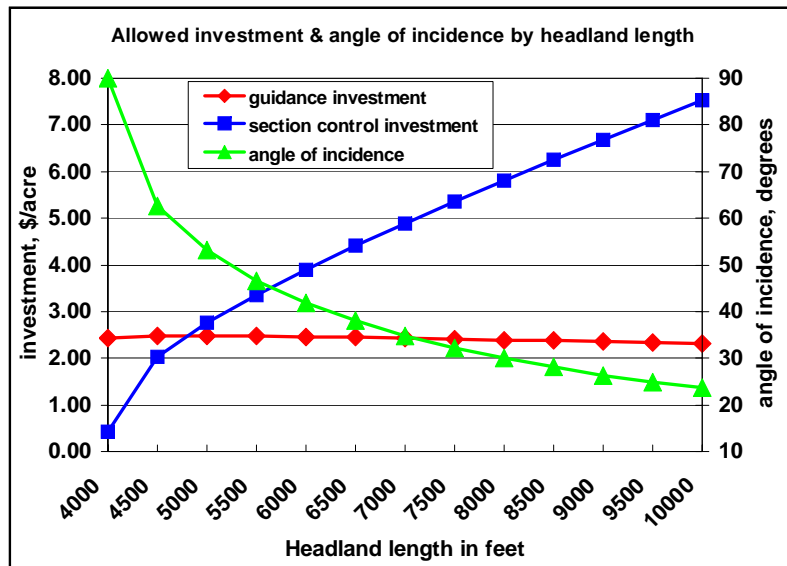


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Some machinery technologies can be especially good investments (use *KSU-GPSguidance.xls*)

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Field shape has little impact on economics of guidance systems, but large impact on economics of section control...



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- Consider GPS-based autoguidance
 - Direct economic impact okay but not fantastic
 - Indirect economic impact often huge (personal comfort; allows other activities)
- Unless:
 - you farm nice square/rectangle fields,
 - your farm is really small, or
 - you farm with small equipment,
- consider GPS-based boom and section shutoff controls in headlands
 - The direct economic returns often are large

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Leasing as an alternative to ownership



Why Do Producers Lease? Farm Credit Leasing Surveys (early 1990s)

	<u>producers</u>	<u>lenders</u>
• less money up front	48%	24%
• helps cash flow	45%	24%
• don't need tax benefit of ownership	26%	16%
• several choices at end of lease	10%	-----
• lower interest rates	9%	20%
• cheaper than bank loan	3%	-----
• to gain tax advantages	-----	34%

Lease vs. Purchase ...

- Lease type
 - Operating lease vs. capital lease (buyout)
- Assuming a true operating lease, then the lease vs. purchase decision basically becomes a tax and time value of money decision, with all the usual finance mathematics that go with such decisions.
- We regularly observe misrepresentations around the lease vs. purchase decision.

Lease vs. purchase example ...

Comparing The Options			
New John Deere Sprayer 4720			
Selling Price	\$160,000.00		
Amount Financed	\$128,000.00		
	Installment	Lease Program	Lease Program
Finance Option	Note**		
Term	60 months	60 months	36 months
Hrs	N/A	600	600
Down Payment	\$32,000.00	N/A	N/A
Amount Financed	\$128,000.00	\$160,000.00	\$160,000.00
Advance Payment	N/A	\$29,083.00	\$34,841.00
Purchase Option	N/A	\$51,000.00	\$79,500.00
Rate (fixed)	6.60%	N/A	N/A
Payment	\$30,890.00	\$29,083.00	\$34,841.00
Total Operating Cost	\$186,450.00	\$196,415.00	\$184,023.00
Difference In Operating Cost From Installment Note		(\$9,965.00)	\$2,427.00
*The above example is for illustration only. Always discuss your equipment financing with a qualified professional.		5 payments of \$30,890+\$32,000 downpayment	5 payments of \$29,083+\$51,000 purchase
** Equipment ownership through a lease agreement.		3 payments of \$34,841+\$79,500 purchase	
SOURCE: John Deere Credit			

In the Nov. 2005 issue of *CropLife*, a chart in the "Buy vs. Lease" story on p. 40 had incorrect numbers in some columns. Here are the correct figures.

Lease vs. purchase example ...

Comparing The Options

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 **Equipment ownership through a lease program is not a true lease.
 Always discuss your equipment acquisition plans with a qualified accountant or tax consultant.
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5 payments of \$30,890+\$32,000 downpayment

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45

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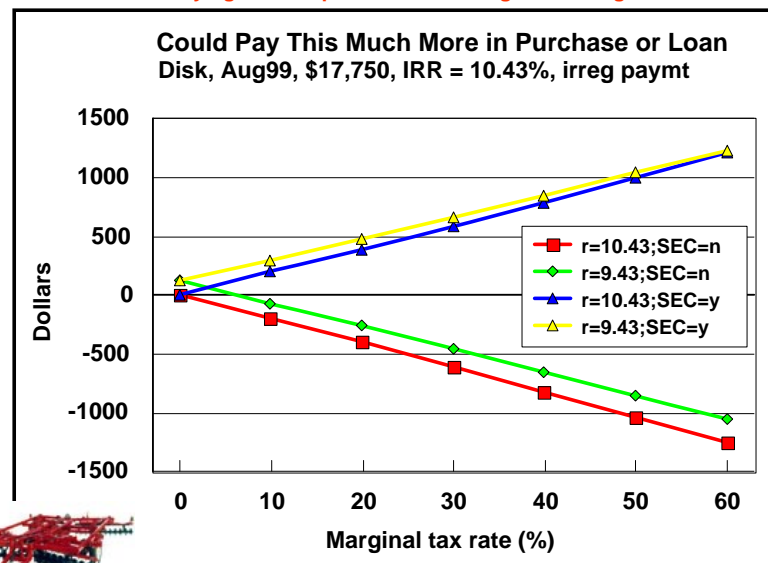
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NPV advantage (relative to cash or loan) (\$7,742)

(\$4,480)

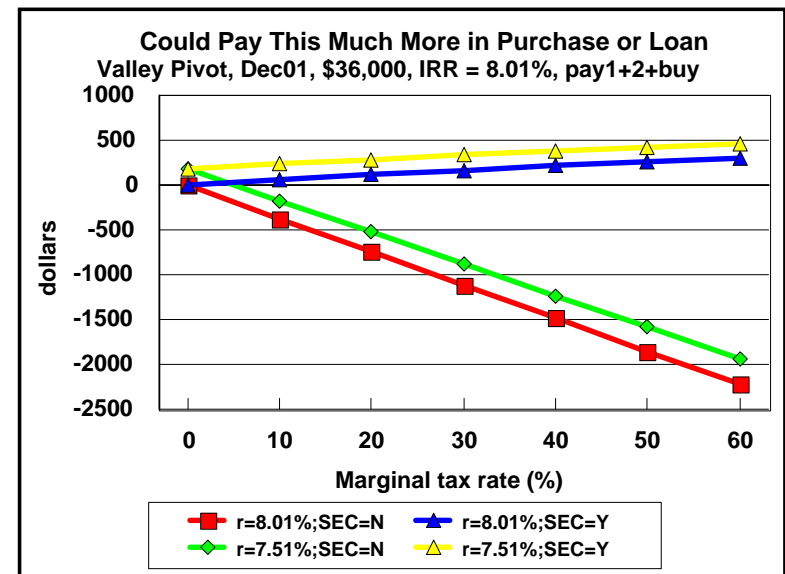
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Paying more implies a disadvantage to leasing



Decision often turns on Section 179 selection

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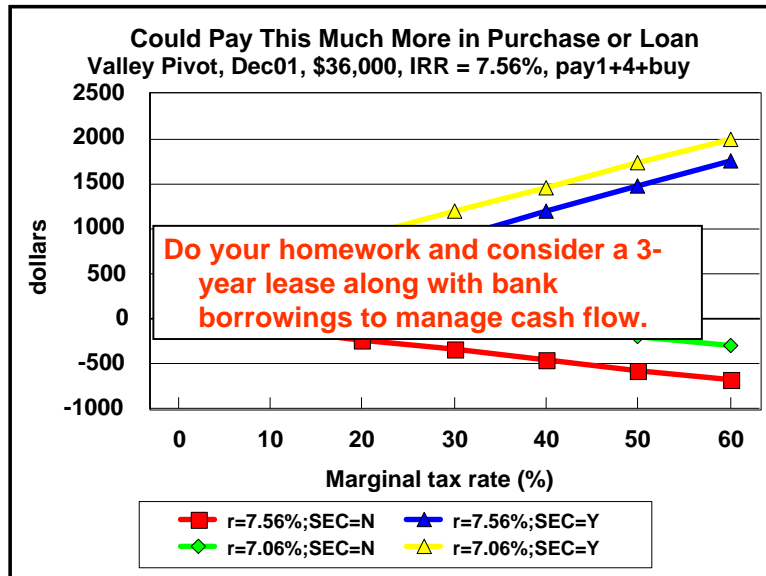


Leasing a sprinkler in a 3-year lease was often an advantage

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Observations

- A large percentage of farm machinery is owned rather than leased (if you have one rule, then own rather than lease)
 - Assuming you make good ownership decisions
- But, it could be worthwhile making the comparison if you're willing to do the math
- Be careful about trusting a salesman's take on lease vs. purchase
- Typically, the tax decision is most important



5-year leases generally not that great . . . But, that is what people do!

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Questions ???

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