

# The Shifting Nexus of Global Agriculture

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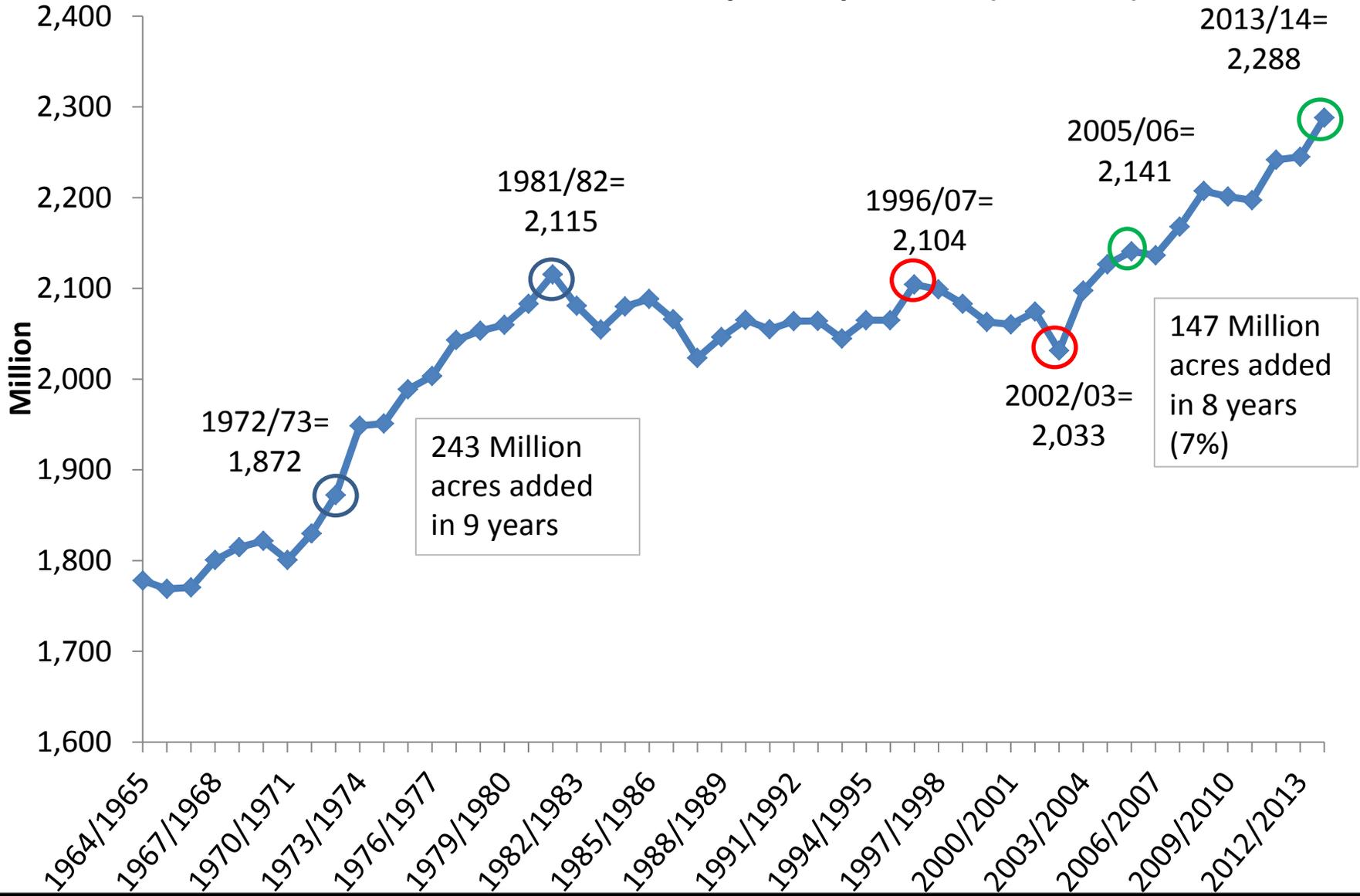
# Shifts

- Production
- Utilization
- Transportation/Logistics
- Investment/Capital Flows

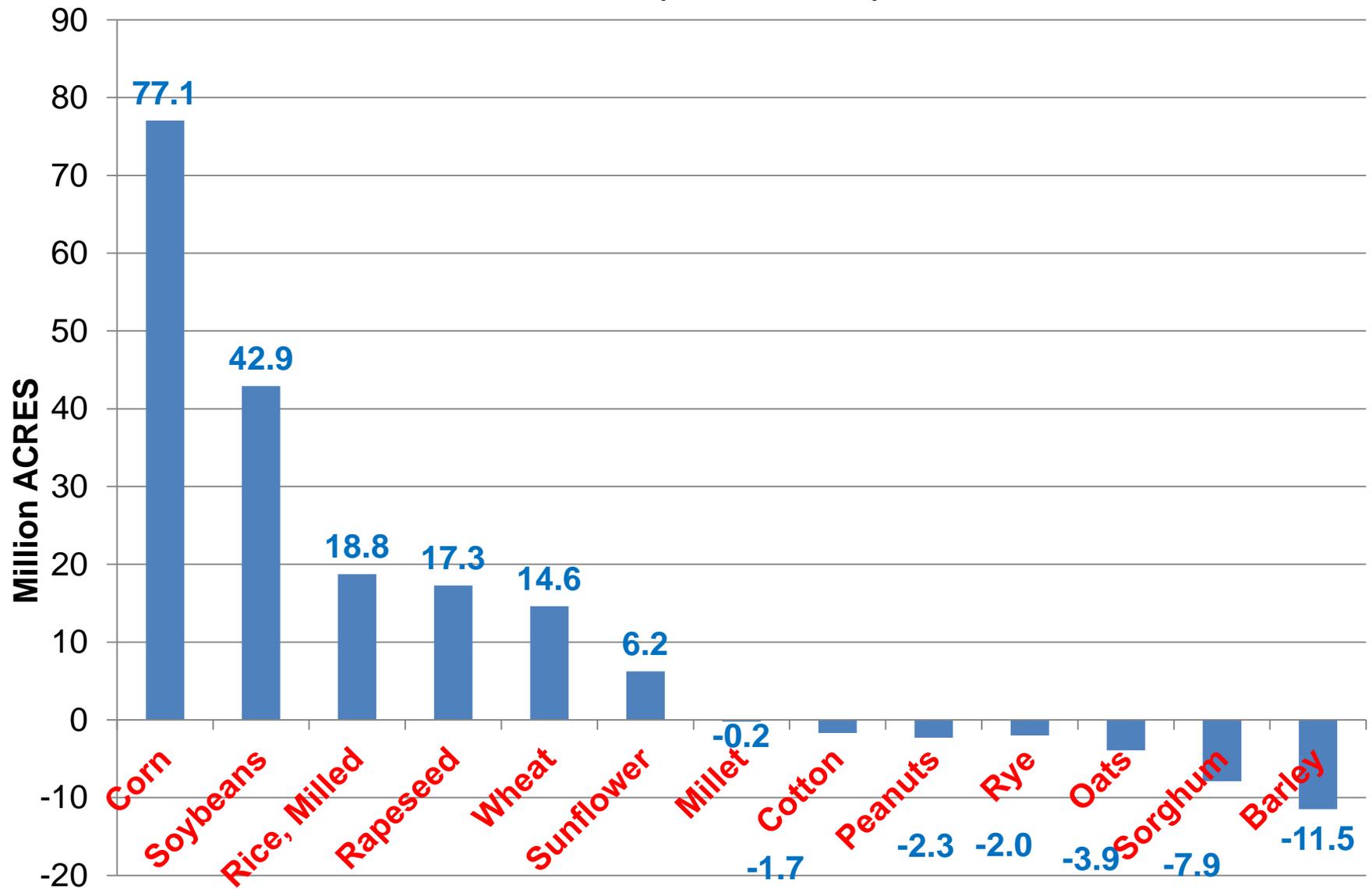
# Crop Land Expansion

- 147 million acres in 8 years

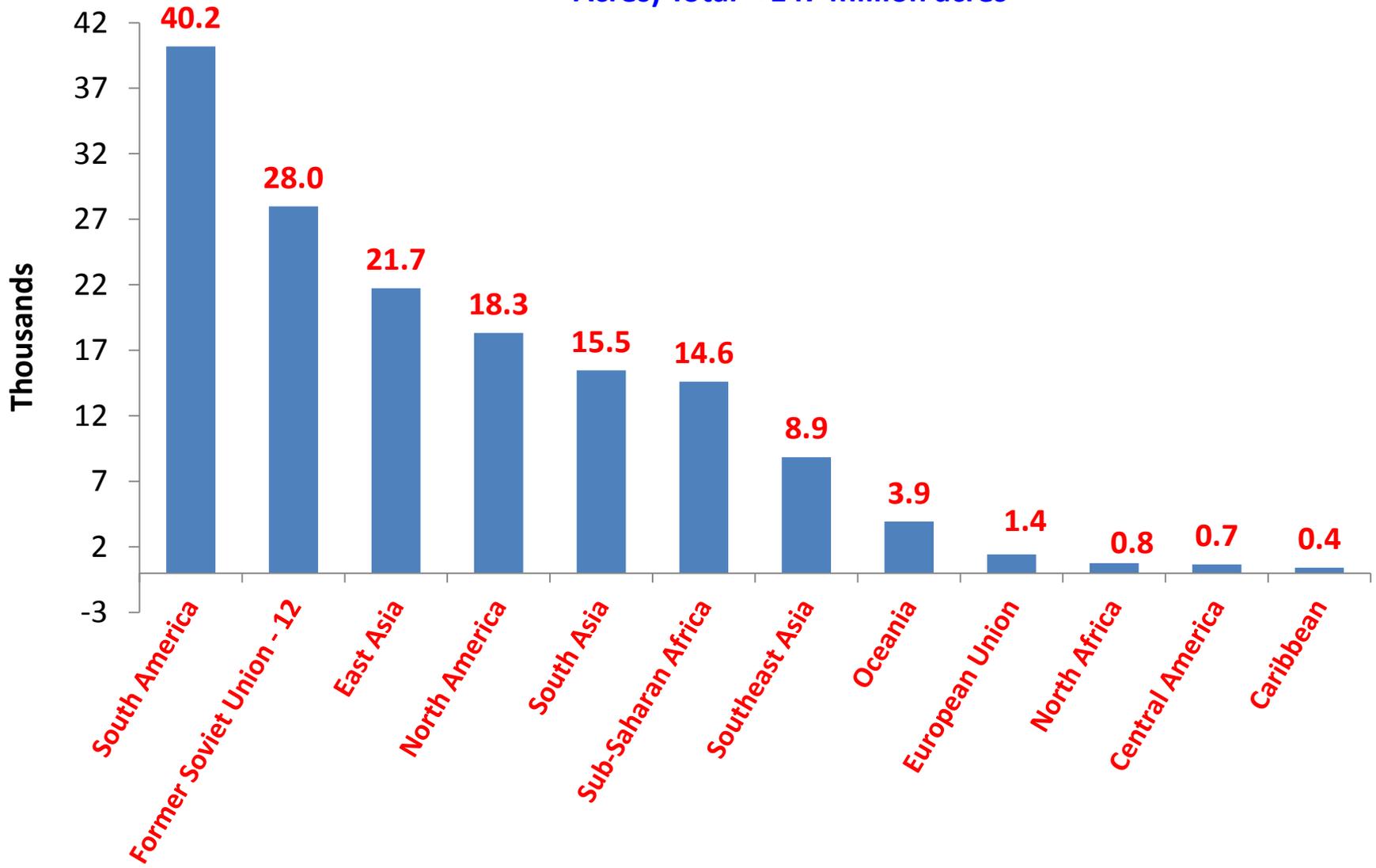
# World Harvested ACRES 13 Major Crops Total: (Millions)



## Change in World Harvested Area 2013/14 vs. 2005/06 (Million Acres)



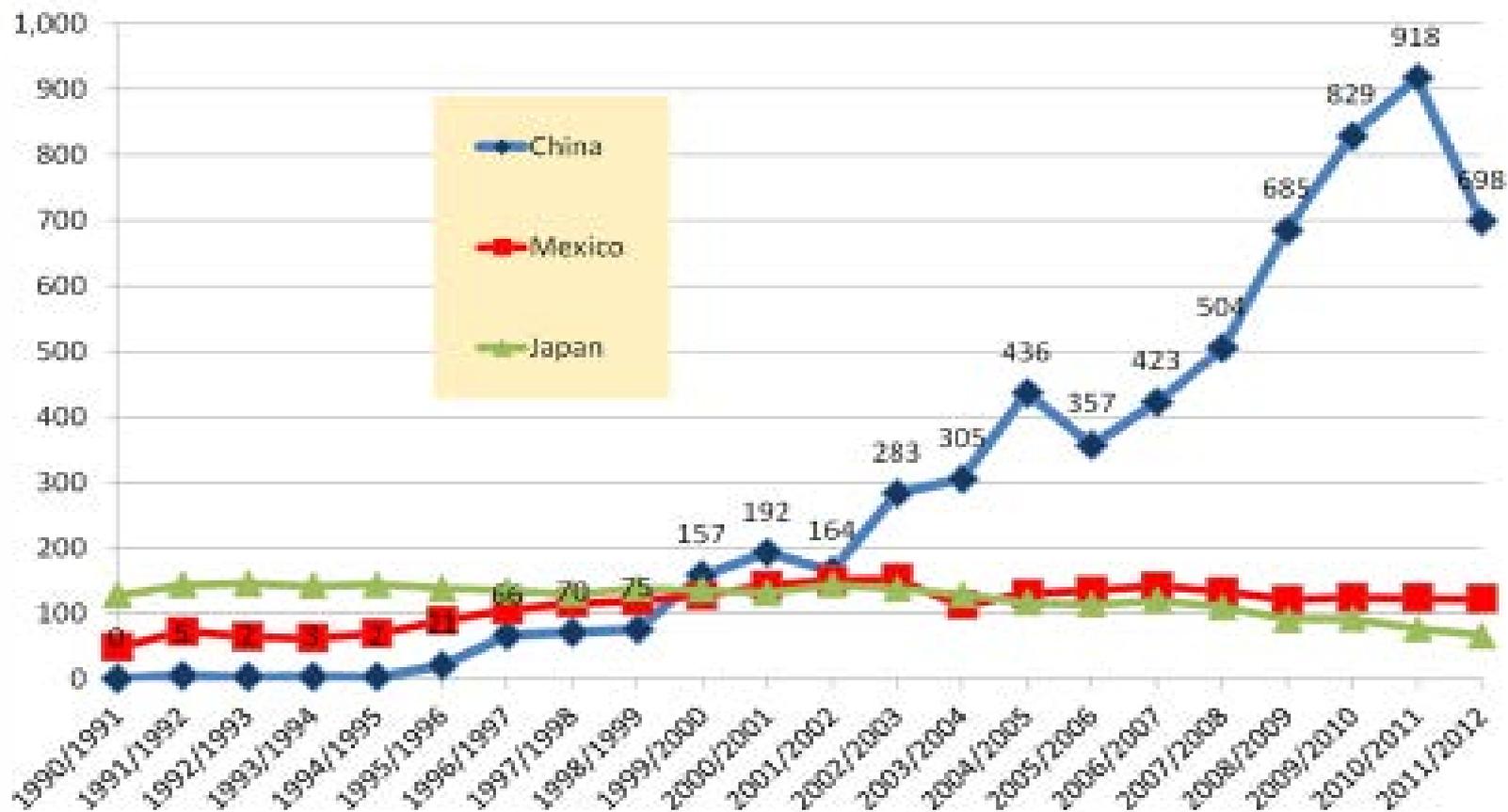
Change in Area Harvested in 13 major World crops 2013/14 vs. 2005/06 (Million Acres) Total +147 million acres



# Demand/Utilization Growth

- China/Asia
- Biofuels

# Soybean Imports from the U.S.: 1990/91-2010/11 (Mil. Bu.) 2/8/12



# Corn to Meet RFS2



# Shipments/Logistics

- Rail from Western Corn Belt/Great Plains to West Coast
- East Coast imports from South America/Mexico
- Exports from Black Sea to Asia and elsewhere
- Expanded Local Markets(ethanol)
- Exports from South America

# Investment/Capital Flows

- International/global banks
- China acquisitions of resources (timber, minerals, fertilizer, farmland)
- China investment in livestock production(Smithfield and in-country)
- Investment funds in commodities and land
- New N plants in the U.S.
- Energy production(shale oil and natural gas) in North America

# Implications for Producers

- Income/asset value shocks
- Land prices and cost competitiveness

# Table 4. Comparison of Farm Size with 50% Land Owned and 25% Debt-to-Asset Ratio

	Size of Farm (acres)		
	550	1200	2500
Annual Net Farm Income (Mean)	\$49,800	\$37,600	\$166,200
Change in Net Worth (3 year) – (Mean)	\$36,800	\$114,900	\$926,900
Working Capital/Value of Farm Production			
Mean	33.0%	45.5%	49.5%
Percent < 35%	57.0%	3.9%	0.1%
Debt-to-Asset Ratio			
Mean	21.5%	15.8%	13.0%
Percent > 55%	0.0%	0.0%	0.0%
Term Debt Coverage Ratio			
Mean	0.9	1.2	1.5
Percent < 1.1	73.1%	23.9%	2.1%
Percent Positive Cash	24.6%	83.8%	98.4%
Percent ROE > 10%	0.4%	7.6%	20.1%

## Table 5. Comparison of Land Tenure for 550 Acre Farms with 25% Debt-to-Asset Ratio

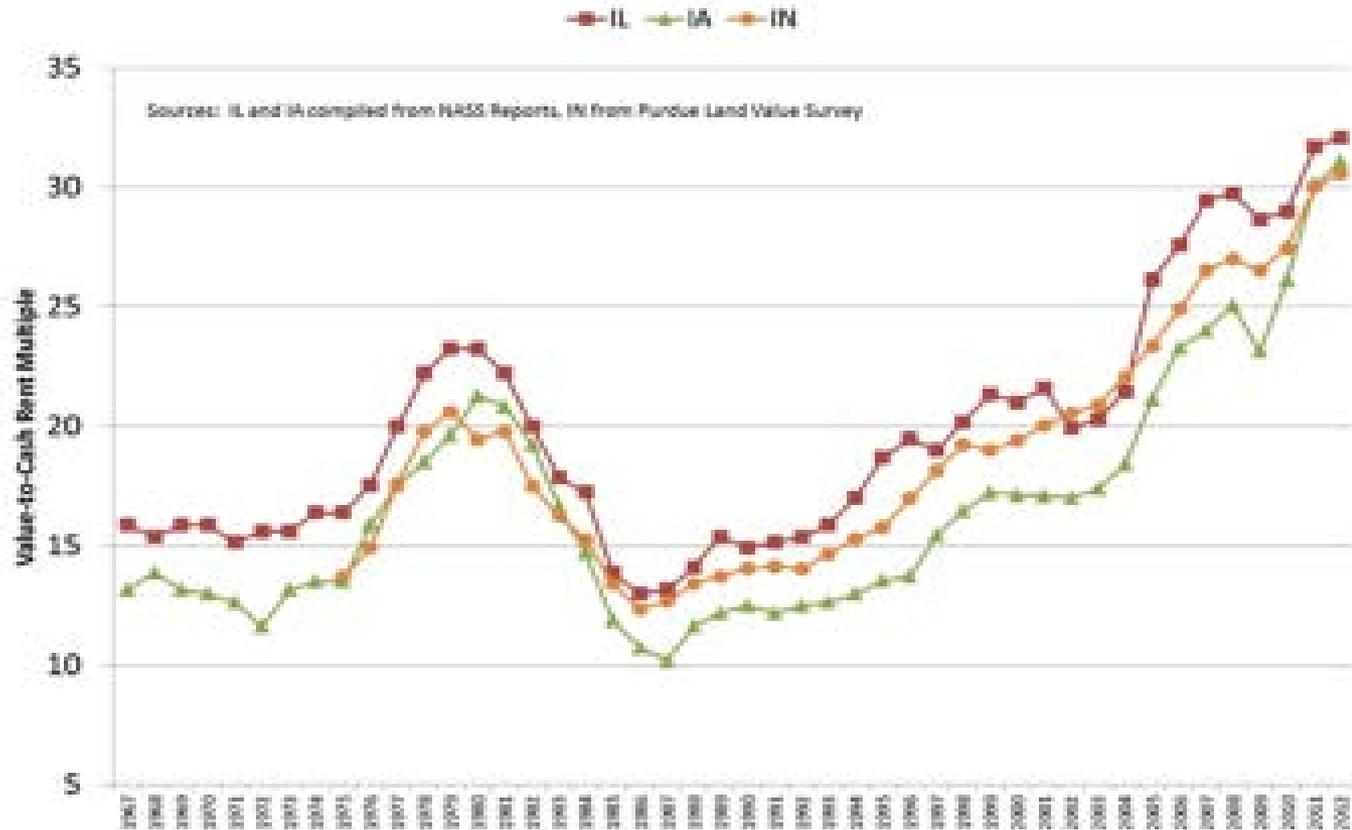
	% of Land Owned		
	85%	50%	15%
Annual Net Farm Income (Mean)	\$98,900	\$49,800	\$2,100
Change in Net Worth (3 year) (Mean)	\$76,000	\$32,300	\$130,400
Working Capital/Value Of Farm Production			
<i>Mean</i>	49.6%	32.9%	17.3%
<i>Percent &lt; 35%</i>	9.2%	56.9%	99.5%
Debt to Asset Ratio			
<i>Mean</i>	17.1%	22.1%	32.6%
<i>Percent &gt; 55%</i>	0.0%	0.0%	0.0%
Term Debt Coverage Ratio			
<i>Mean</i>	1.7%	0.9%	0.6%
<i>Percent , than 1.1%</i>	16.2%	76.8%	99.5%
Percent Positive Cash	74.8%	24.3%	0.3%
Percent ROE > than 10%	11.7%	0.5%	0.1%

## Table 6. Comparison of Debt-to Asset Ratio for 2500 Acre Farms with 50% of Land Owned

	Debt-to-Asset Ratio	
	25%	50%
Annual Net Farm Income (Mean)	\$160,500	\$134,800
Change In Net Worth (3 Year) (Mean)	\$459,100	\$474,900
Working Capital/Value of Farm Production		
<i>Mean</i>	49.5%	30.1%
<i>Percent &lt; 35%</i>	0.1%	54.4%
<b>Debt-to-Asset Ratio</b>		
<i>Mean</i>	13.0%	35.6%
<i>Percent &gt; than 55%</i>	0.0%	0.0%
Term Debt Coverage Ratio		
<i>Mean</i>	1.5%	1.1%
<i>Percent &lt; 1.1</i>	2.6%	38.2%
Percent Positive Cash	98.1%	53.7%
Percent ROE > 10%	21.1%	41.7%

# Land Values

Value-to-Cash Rent Multiple for IA, IL, IN Cropland, 1967-2012



# Per Bushel Costs at Differing Land Values and Land Return Percentages

		180 bu/acre Yield		
		Return		
		4%	5%	6%
Land Value (\$/acre)	8,000	1.78	2.22	2.67
	10,000	2.22	2.78	3.33
	12,000	2.67	3.33	4.00
	15,000	3.33	4.17	5.00

		200 bu/acre Yield		
		Return		
		4%	5%	6%
Land Value (\$/acre)	8,000	1.60	2.00	2.40
	10,000	2.00	2.50	3.00
	12,000	2.40	3.00	3.60
	15,000	3.00	3.75	4.50

**Gross Revenue Comparison**  
**\$1.75/bu** if 35%  
of Gross Revenue  
given \$5 corn