

Farm Financial Conditions

25th Annual Crop Insurance Conference

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Andrew Swenson

Extension Farm Management Specialist

Department of Agribusiness and Applied Economics

North Dakota State University

Revenue Components

- Price

Unprecedented prices 2007-2012

Strong demand – corn for ethanol and soybeans to China.

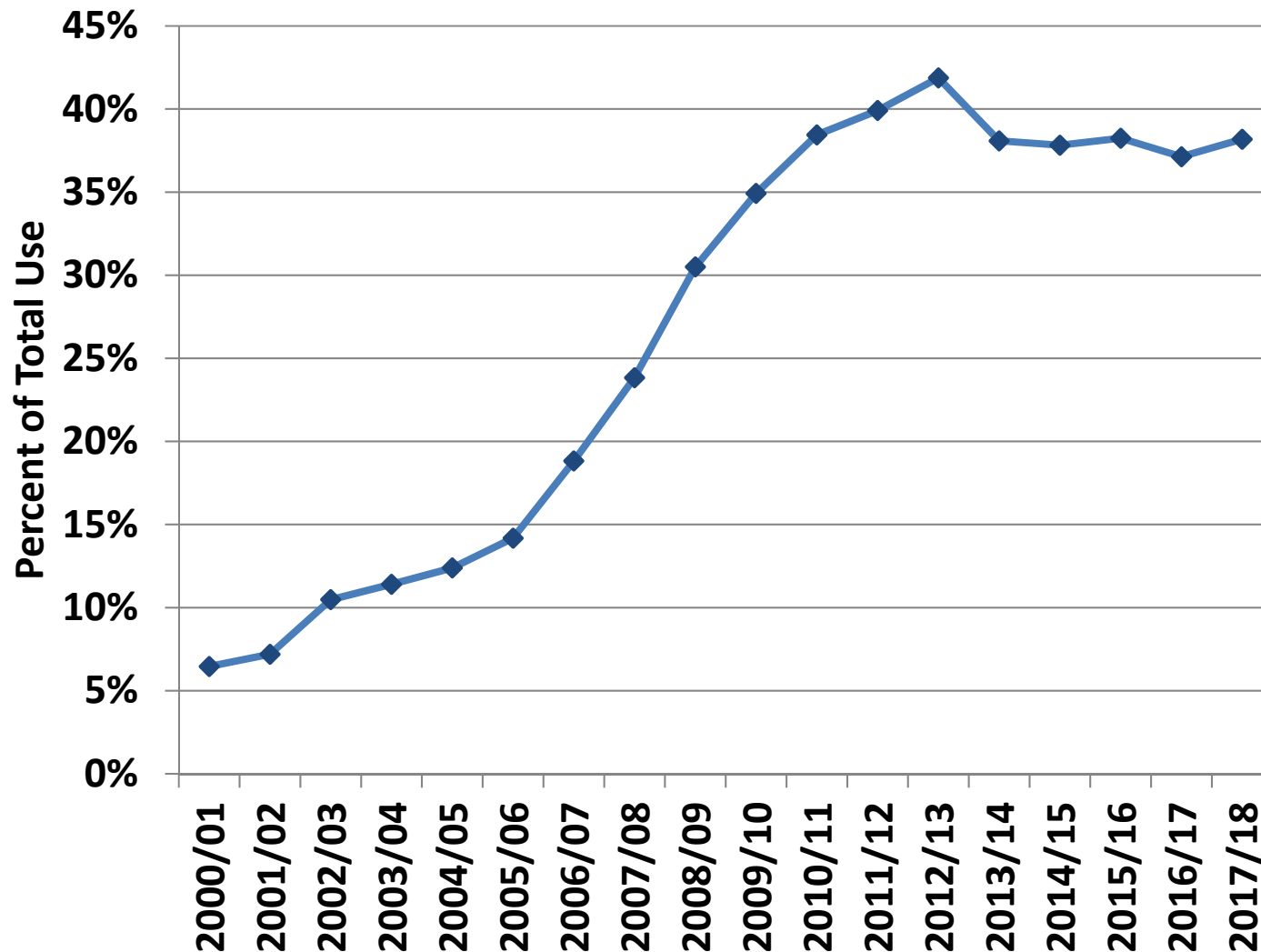
Supply shocks – 2010 drought in Black Sea region

2012 drought in U.S. Corn Belt

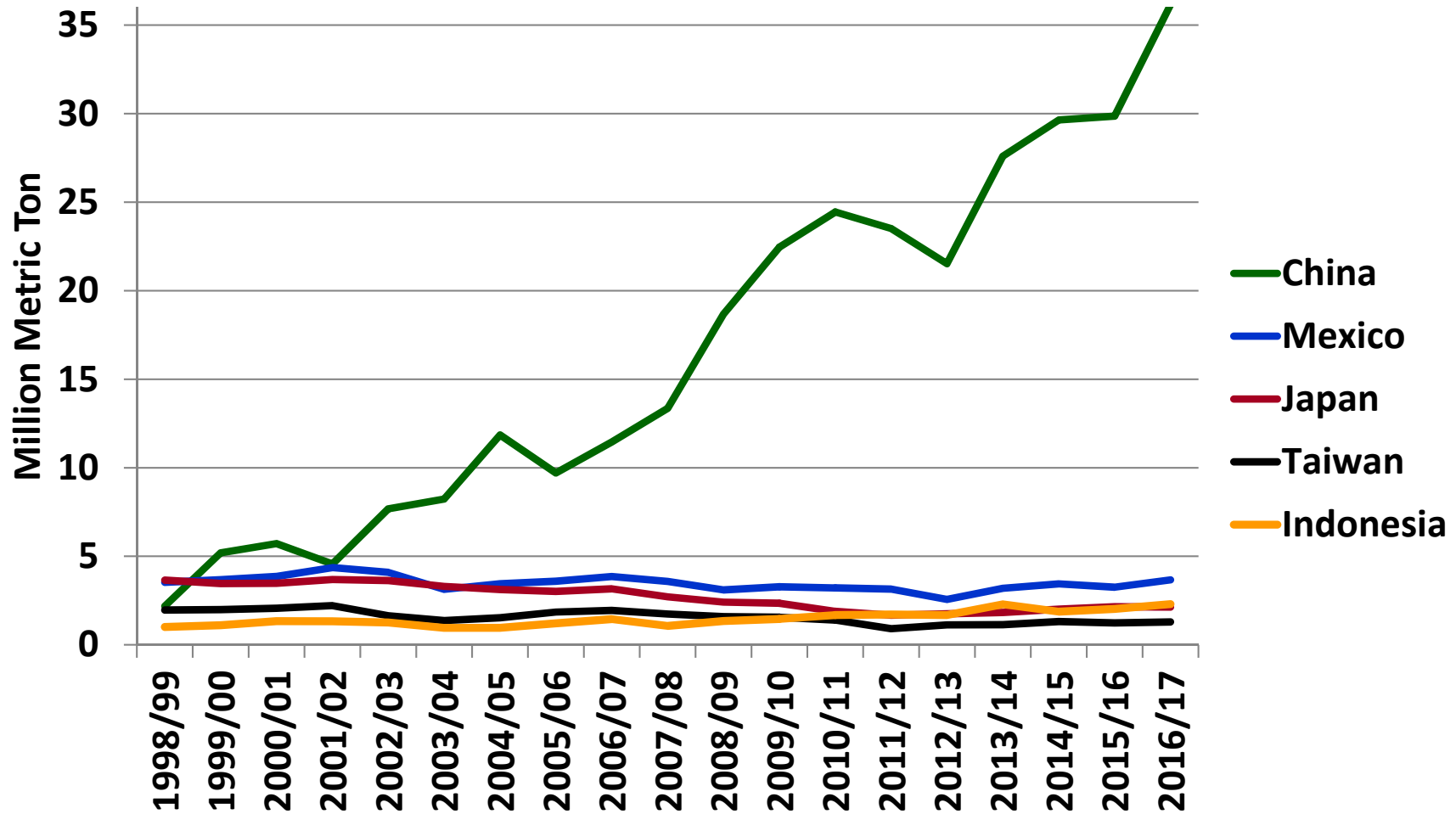
High prices cure high prices (supply response)

- Yield
- Government Programs
- Crop Insurance

U.S. Corn Use – Ethanol's Portion



Top Five Soybean Export Destinations



North Dakota Marketing Year Average Price: Range 1997-2006 and Years 2007-2016

| Year | Spring Wheat | Soybean | Corn |
|-----------|--------------|-------------|-------------|
| 1997-2006 | 2.76 - 4.49 | 4.05 – 6.62 | 1.59 – 2.77 |
| 2007 | 7.45 | 9.63 | 4.06 |
| 2008 | 7.19 | 9.71 | 3.74 |
| 2009 | 4.90 | 9.26 | 3.18 |
| 2010 | 6.78 | 10.90 | 5.01 |
| 2011 | 8.17 | 11.90 | 5.81 |
| 2012 | 8.19 | 14.00 | 6.46 |
| 2013 | -34% 6.50 | -32% 12.40 | -48% 3.91 |
| 2014 | 5.42 | 9.49 | 3.34 |
| 2015 | 4.59 | 8.49 | 3.28 |
| 2016 | 4.57 | 8.97 | 3.01 |

North Dakota Prices

| | Spring Wheat | Soybean | Corn |
|-------------------------------|-----------------|---------|-------|
| 2016 Marketing Year Avg. | 4.57 | 8.97 | 3.01 |
| | | | |
| 2017 Marketing Year (partial) | | | |
| June 2017 | 5.26 | | |
| July 2017 | 6.08 | | |
| Aug 2017 | 5.90 | | |
| Sept 2017 | 5.62 | 8.79 | 2.85 |
| Oct 2017 | 5.46 | 8.82 | 2.86 |
| Nov 2017 | 5.87 | 8.81 | 2.77 |
| | | | |
| 2018 New Crop Bids (1/17/18) | ~5.50 | ~8.90 | ~3.10 |

Revenue Components

- Price

- Yield

Generally strong yields in recent years

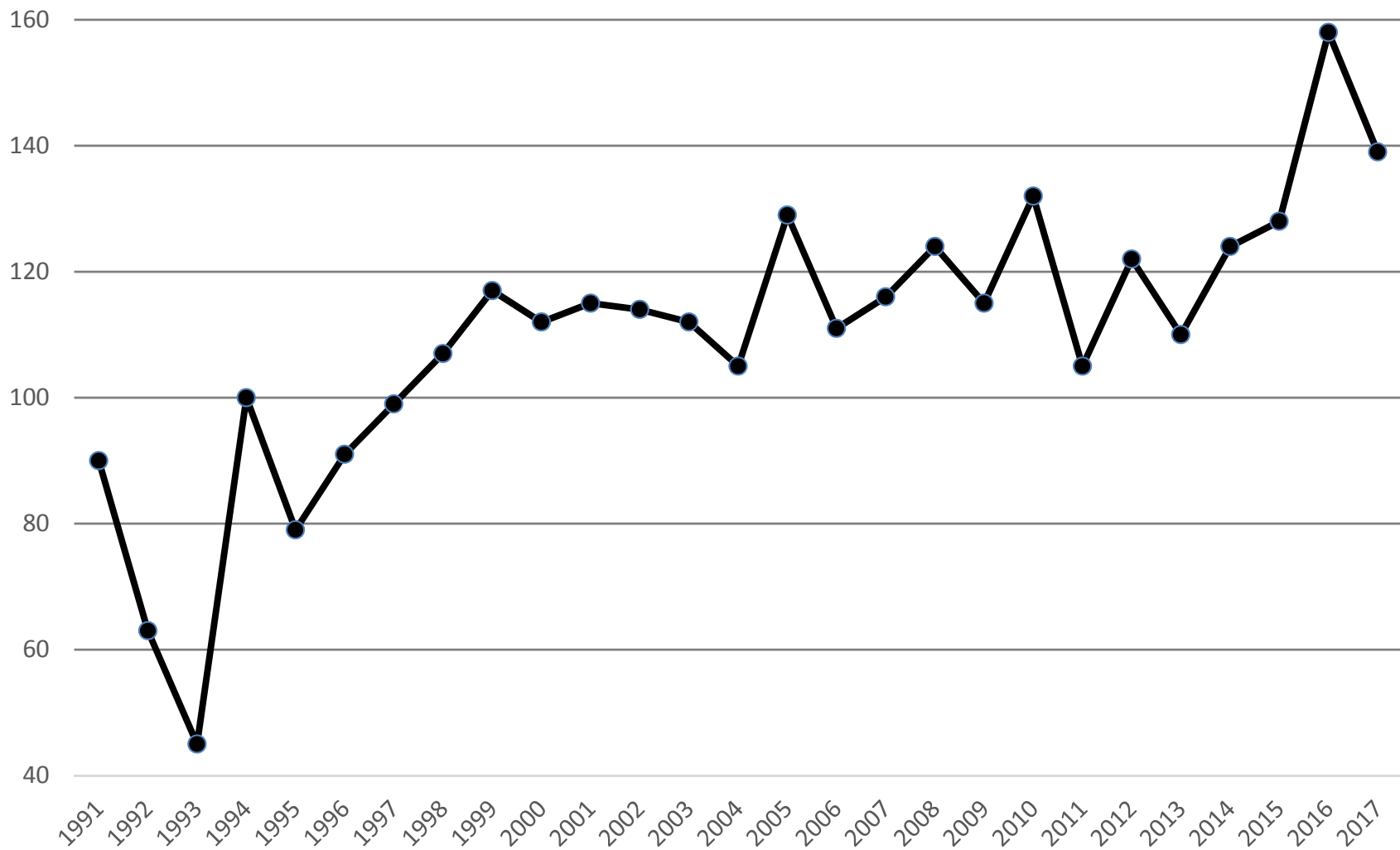
Drought conditions some years

(particularly in western North Dakota)

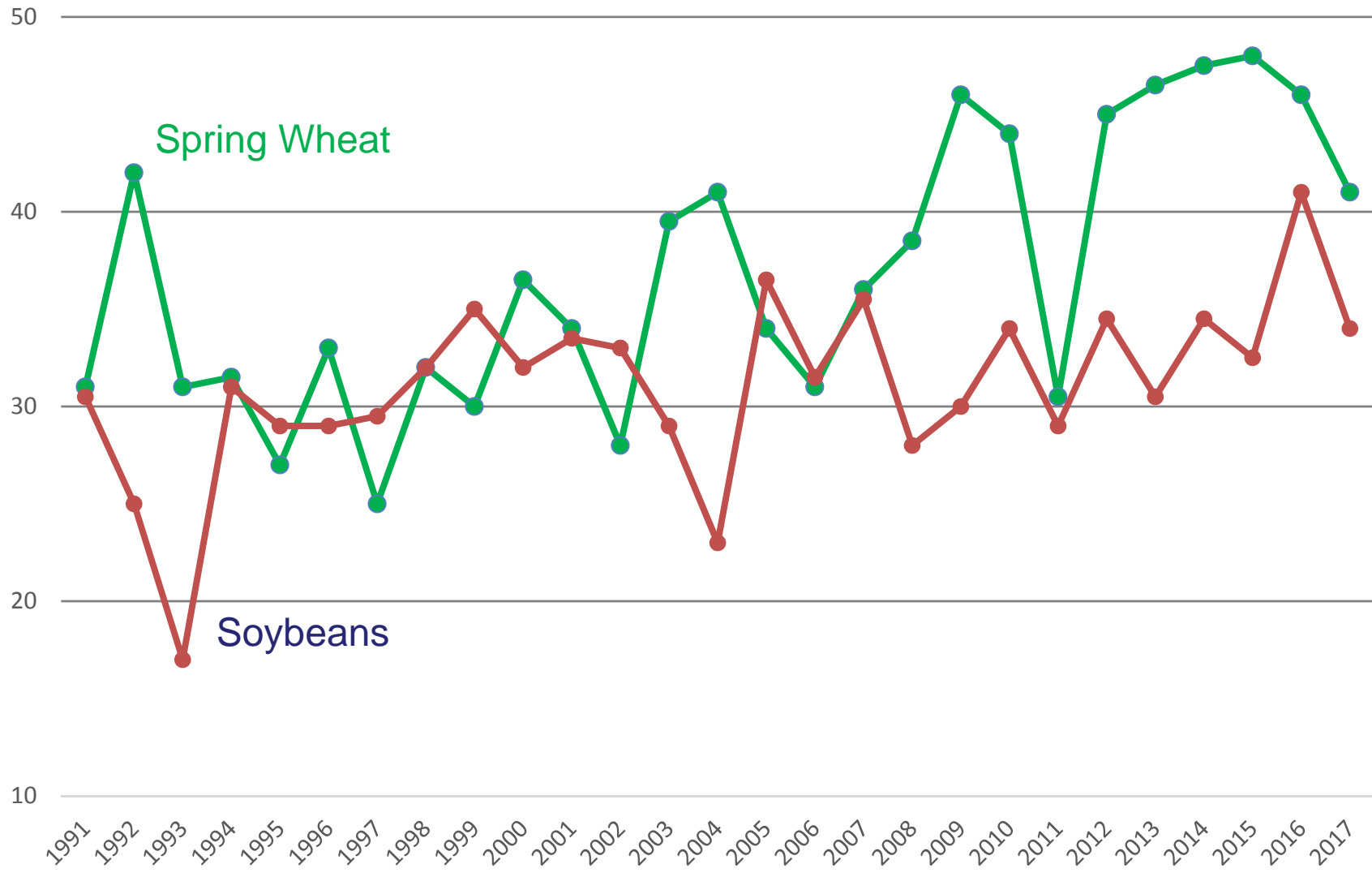
Unusually cool summer in 2011

- Government Programs
- Crop Insurance

North Dakota Average Corn Yields, 1991-2017



North Dakota Average Yields, 1991-2017



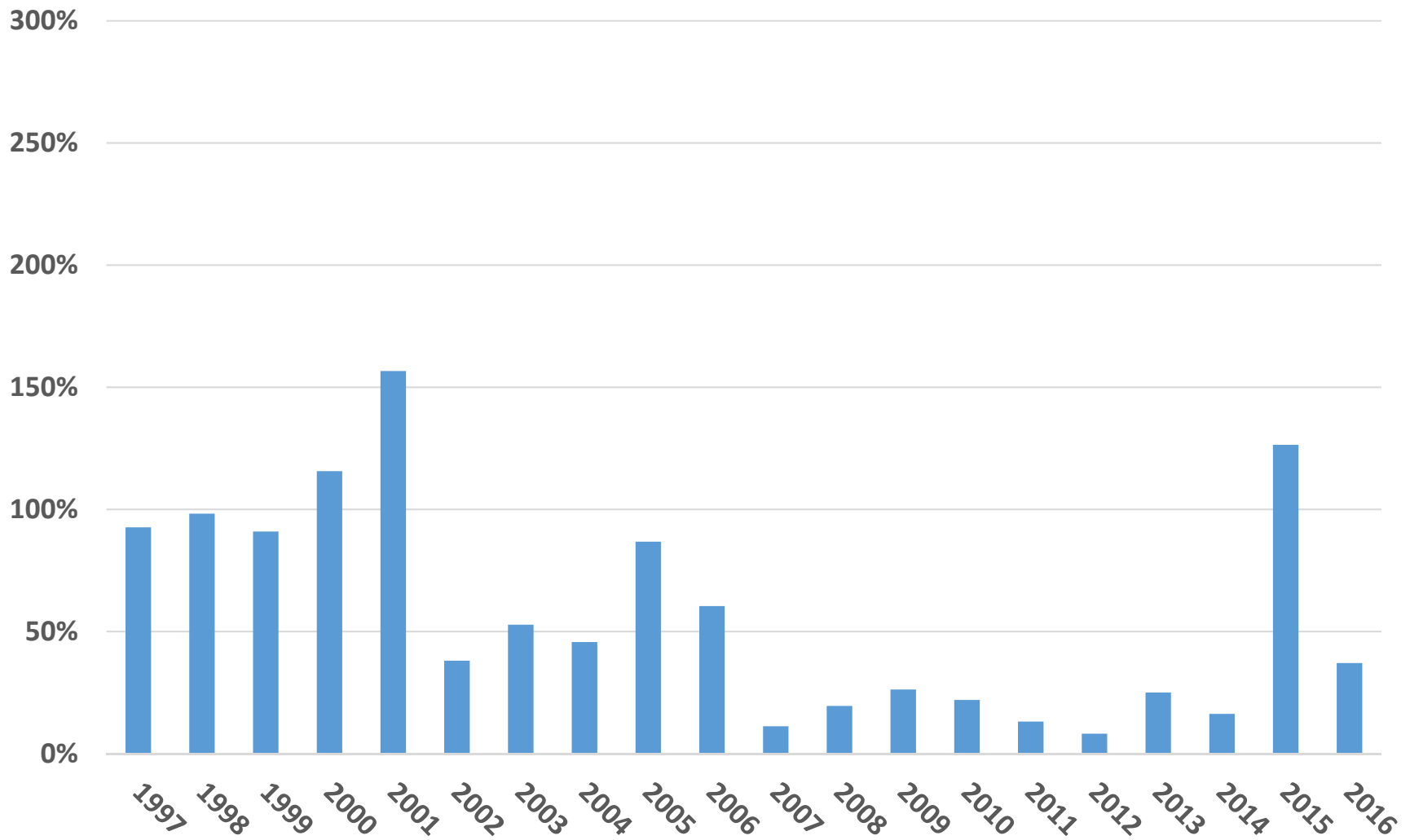
Revenue Components

- Price
- Yield
- Government Programs
- Crop Insurance

Government payments and crop insurance indemnities have been a significant source of revenue for North Dakota farmers, particularly in low yield/price years.

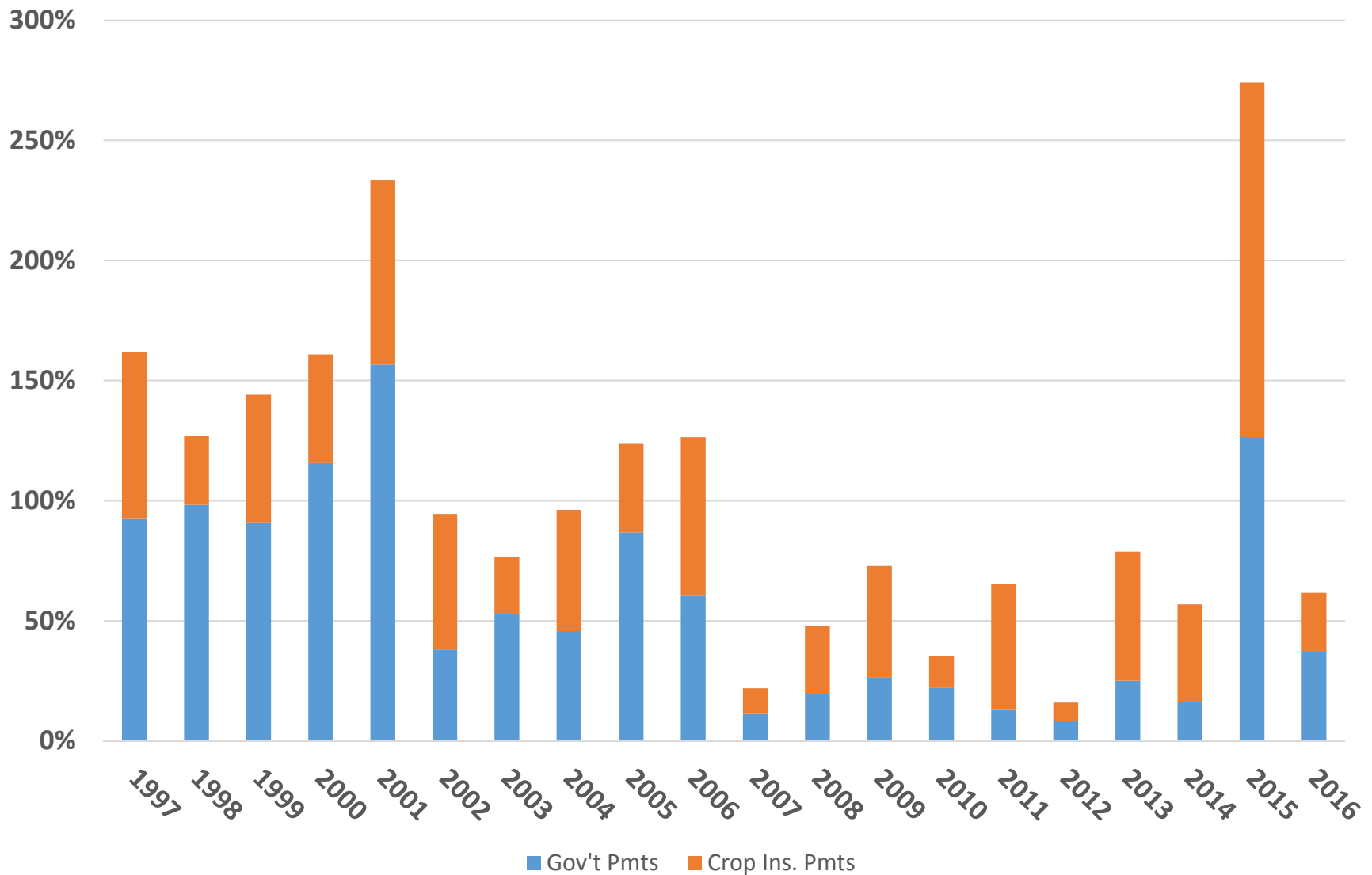
Percent of Net Farm Income From Government Payments

ND Farm Business Management Education Program, Excluding RRV



Percent of Net Farm Income from Government and Crop Insurance Payments

ND Farm Business Management Education Program, Excluding RRV



2014 Farm Bill Enrollment Options?

Agricultural Risk Coverage (ARC)

a) county option or b) Individual farm option

or

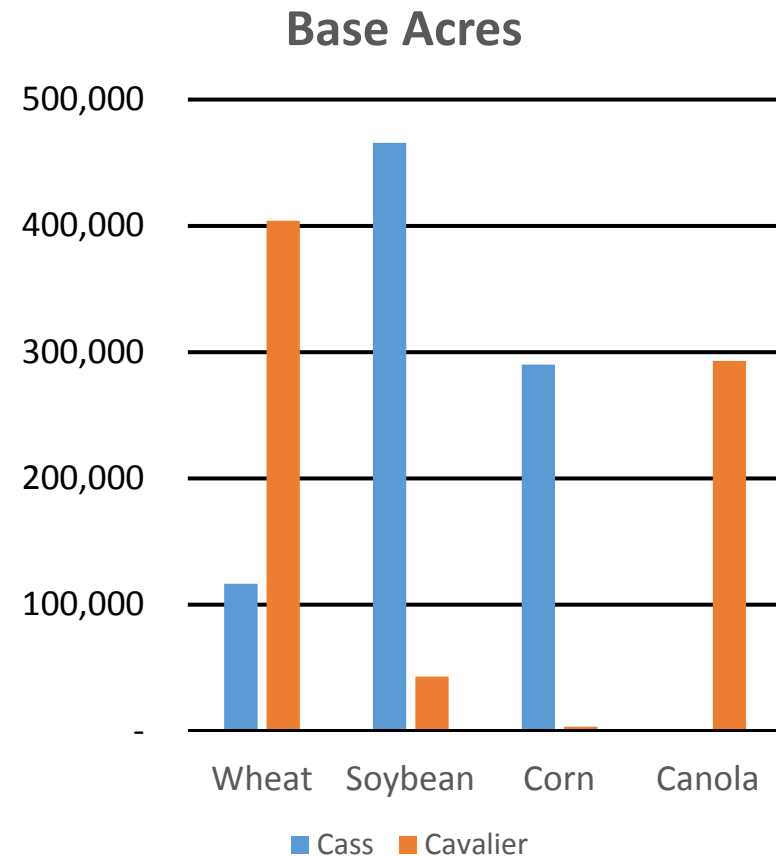
Price Loss Coverage (PLC)

* One-time selection was made crop by crop within FSA farm *

** BOTH PROGRAMS PAY ON CROP BASE ACRES, NOT
ON PLANTED ACRES or CURRENT PRODUCTION **

Base Acres (and payments) Vary by County

| Crop | Cass | Cavalier |
|-----------|---------|----------|
| Wheat | 116,498 | 404,026 |
| Soybean | 465,763 | 42,928 |
| Corn | 290,057 | 3,319 |
| Canola | 49 | 292,974 |
| Barley | 10,054 | 40,044 |
| Sunflower | 8,010 | 8,015 |
| Oats | 438 | 779 |
| Flax | 14 | 9,337 |
| Peas | 42 | 1,338 |
| Mustard | 0 | 345 |



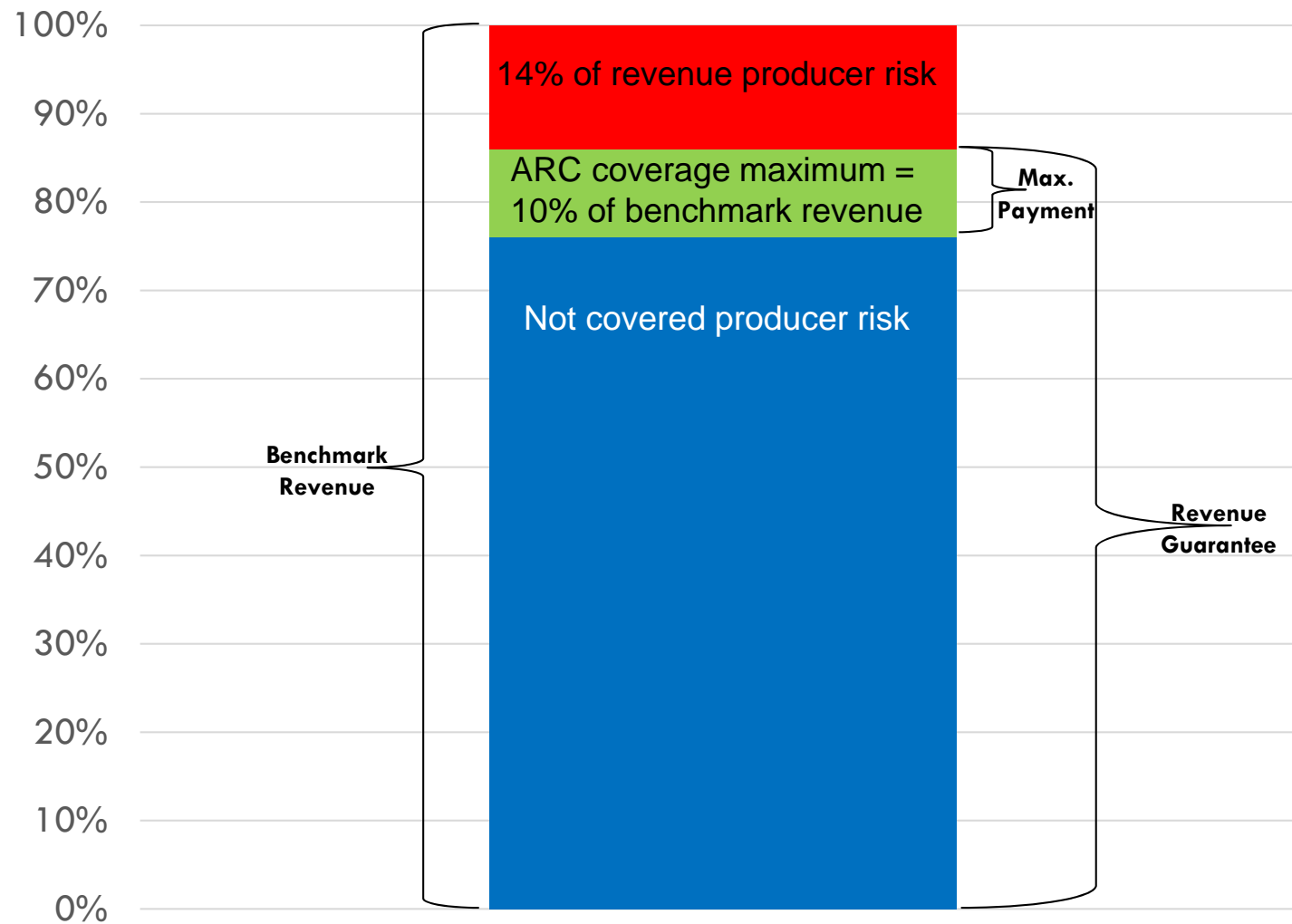
North Dakota ARC and PLC Payments Under the 2014 Farm Bill

| Crop Year | PLC | ARC | Total |
|-----------|---------------|---------------|---------------|
| 2014 | \$51,262,317 | \$140,236,396 | \$191,498,713 |
| 2015 | \$119,054,433 | \$331,221,160 | \$450,275,593 |
| 2016 | \$179,003,652 | \$186,681,249 | \$365,684,901 |
| 2017 | ? | ? | ? |
| 2018 | ? | ? | ? |

PLC Payment Rates for 2014, 2015, 2016 and estimate for 2017 (on 1/12/18)

| Crop | Unit | Reference | National MYA Price | | | | Payment Rate per PLC Yield | | | |
|-----------|------|-----------|--------------------|---------|---------|---------|----------------------------|---------|---------|---------|
| | | Price | 2014 | 2015 | 2016 | 2017est | 2014 | 2015 | 2016 | 2017est |
| Wheat | bu | \$ 5.50 | \$ 5.99 | \$ 4.89 | \$ 3.89 | \$ 4.60 | \$ - | \$ 0.61 | \$ 1.61 | \$ 0.90 |
| Soybean | bu | 8.40 | 10.10 | 8.95 | 9.47 | 9.30 | - | - | - | - |
| Corn | bu | 3.70 | 3.70 | 3.61 | 3.36 | 3.25 | - | 0.09 | 0.34 | 0.45 |
| Barley | bu | 4.95 | 5.30 | 5.52 | 4.96 | 4.50 | - | - | - | 0.45 |
| Oats | bu | 2.40 | 3.21 | 2.12 | 2.06 | 2.50 | - | 0.28 | 0.34 | - |
| Flax | bu | 11.28 | 11.80 | 8.95 | 8.00 | 9.20 | - | 2.33 | 3.28 | 2.08 |
| Sorghum | bu | 3.95 | 4.03 | 3.31 | 2.79 | 3.15 | - | 0.64 | 1.16 | 0.80 |
| Canola | lb | 0.2015 | 0.1690 | 0.1560 | 0.1660 | 0.1740 | 0.0325 | 0.0455 | 0.0355 | 0.0275 |
| Sunflower | lb | 0.2015 | 0.2170 | 0.1960 | 0.1740 | 0.1750 | - | 0.0055 | 0.0275 | 0.0265 |
| Dry Peas | lb | 0.1100 | 0.1200 | 0.1280 | 0.1100 | 0.1170 | - | - | - | - |
| Lentils | lb | 0.1997 | 0.2440 | 0.3100 | 0.2850 | 0.2700 | - | - | - | - |
| Safflower | lb | 0.2015 | 0.2500 | 0.2450 | 0.2070 | 0.2265 | - | - | - | - |
| Mustard | lb | 0.2015 | 0.3480 | 0.3180 | 0.3270 | 0.3200 | - | - | - | - |
| Lg.Ckpea | lb | 0.2154 | 0.2860 | 0.3060 | 0.3210 | 0.3000 | - | - | - | - |
| Sm.Ckpea | lb | 0.1904 | 0.2080 | 0.2510 | 0.2490 | 0.2500 | - | - | - | - |

ARC County Option



ARC-CO for 2017 Crop (paid in late 2018)

| Crop | Benchmark Price | USDA (1/12/18) 2017 MYA est | MYA Price as % of Benchmark Price |
|---------|-----------------|--------------------------------|--------------------------------------|
| Wheat | \$ 6.12 | \$ 4.60 | 75% |
| Corn | 3.95 | 3.25 | 82% |
| Soybean | 10.86 | 9.30 | 86% |

Payments are made if actual revenue is less than 86% of the benchmark revenue, with the maximum payment achieved at 76% or less of the benchmark revenue.

Therefore, in this price scenario If actual yields equal the benchmark yield, there would be a maximum ARC-CO payment on wheat, a middling payment on corn, and no payment (but “on-the-bubble”) for soybeans.

Payments will be highly variable from county to county, depending on 2017 yields.

If the 2017 benchmark and MYA price relationships hold there will be a maximum payment for wheat if actual yield is 101% or less of the benchmark yield, for corn if actual yield is 92% or less of the benchmark yield, for soybeans if actual yield is 89% or less of the county benchmark yield. **Therefore, maximum payments are probable in low yield counties at current 2017 MYA price projection.**

Conversely, if wheat, corn and soybean actual yields are 114%, 105% or 100% or more relative to the county benchmark yield, respectively, there would be \$0 payment.

Declining Benchmark Prices will cause lower
Revenue Guarantees unless Benchmark County
Yields increase in equal or greater magnitude.

Benchmark Prices for ARC Program

| Crop | Units | 2014 | 2015 | 2016 | 2017 | 2018 est. |
|---------|-------|-------|-------|-------|-------|-----------|
| Wheat | bu | 6.60 | 6.70 | 6.70 | 6.12 | 5.66 |
| Soybean | bu | 12.27 | 12.27 | 11.87 | 10.86 | 9.59 |
| Corn | bu | 5.29 | 5.29 | 4.79 | 3.95 | 3.70 |
| Oats | bu | 3.25 | 3.48 | 3.48 | 3.12 | 2.67 |

Main Source of Information

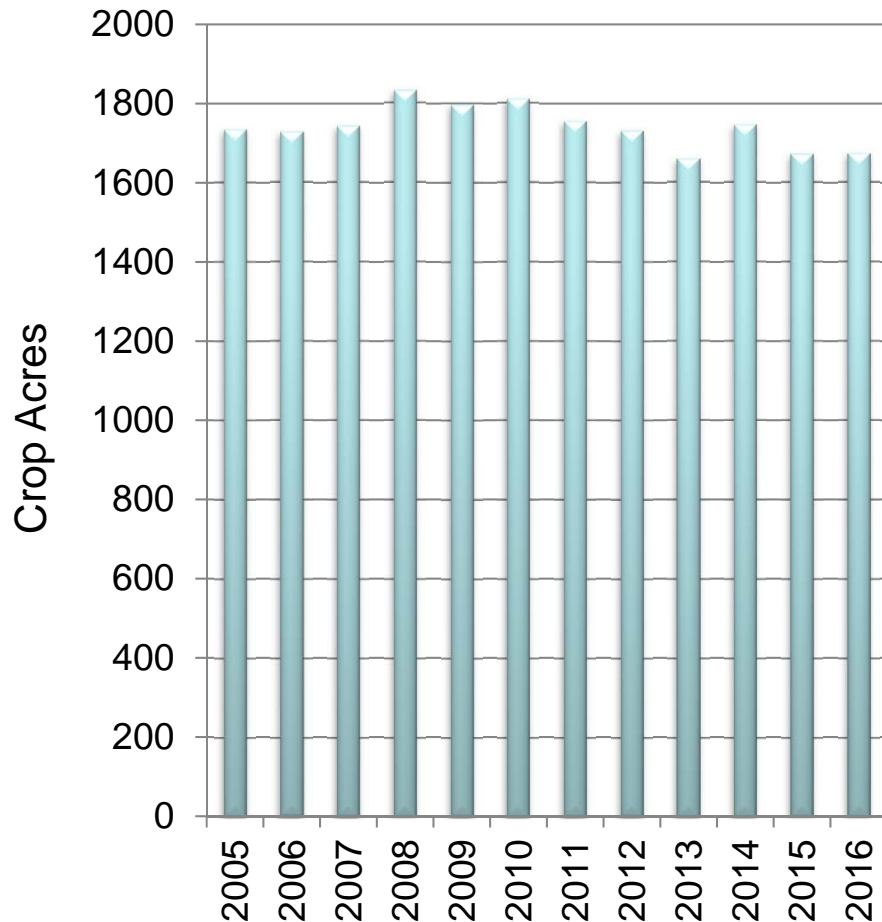
North Dakota and Minnesota Farm Business
Management Education Programs



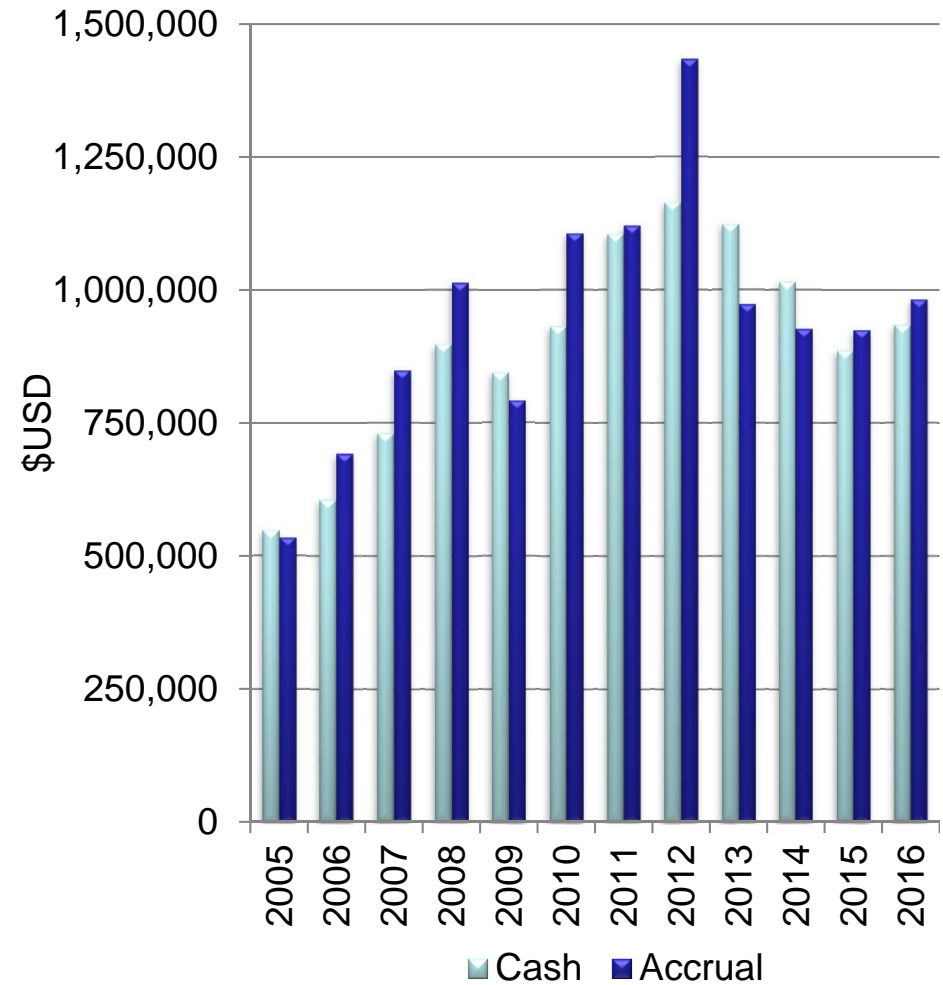
- Farm size increased rapidly from 2006 to 2012, **measured by gross revenue**, even though they may have remained at the same acreage.
- Producers were handling a lot more dollars, both in revenue and in costs.
- Grain inventories swelled and producers accepted the price risk.
- Machinery purchases and debt increased. Subsequently, producers have more interest rate risk.
- In recent years, machinery purchases have plummeted.

MN-ND Farm Business Mgmt., Red River Valley

Average Farm Size

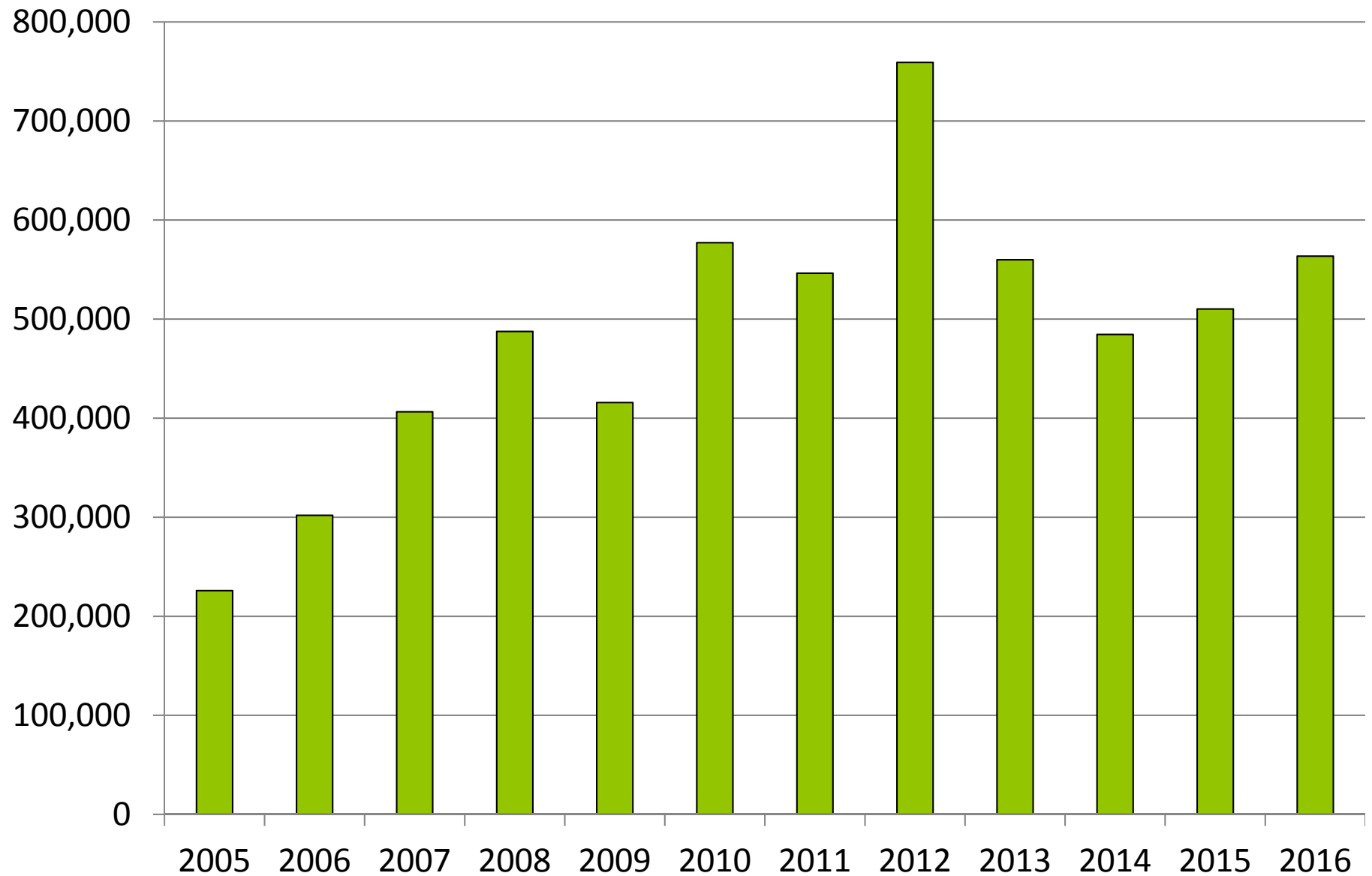


Average Gross Revenue



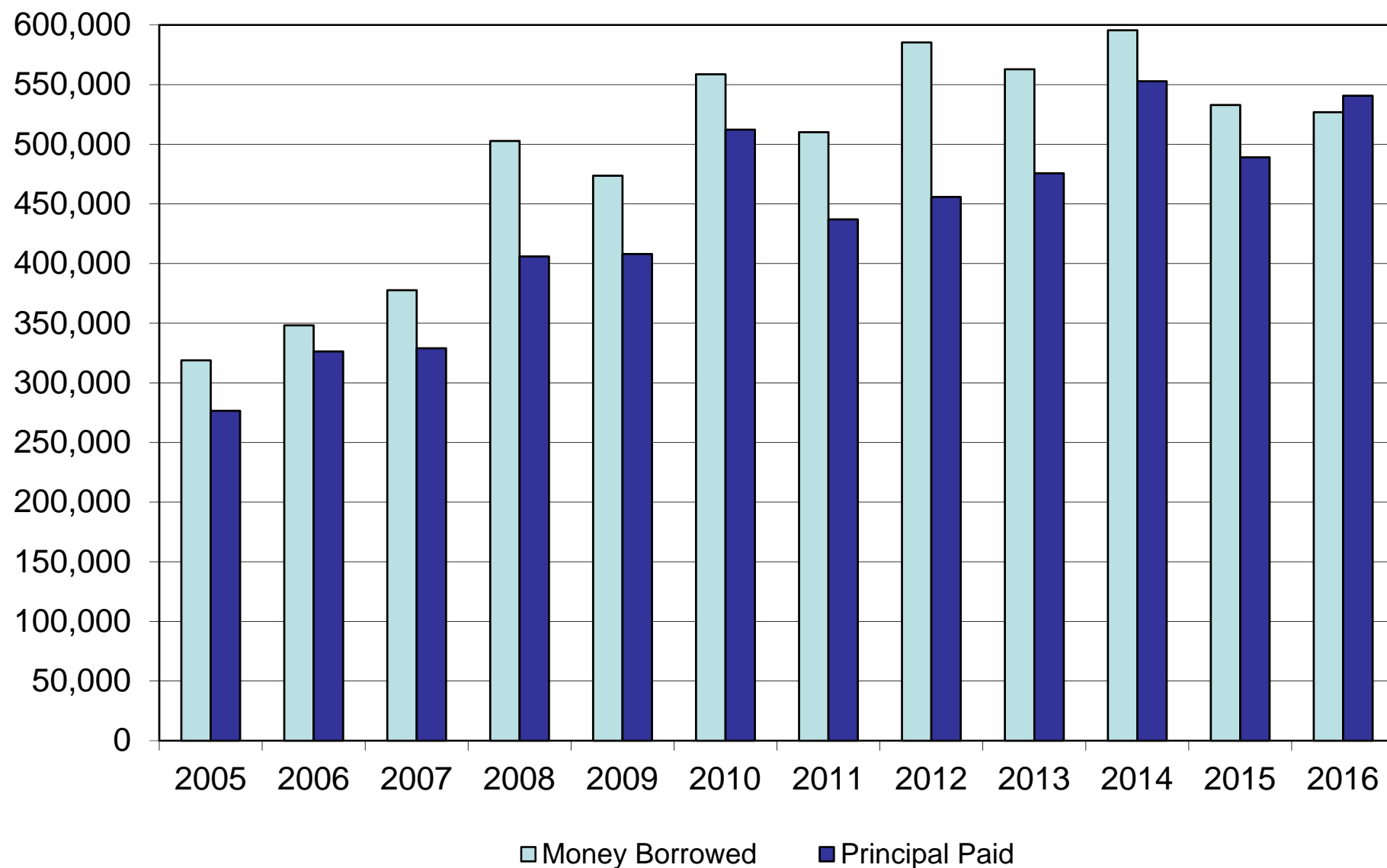
Value of Ending Crop Inventories

MN-ND Farm Business Management, Red River Valley

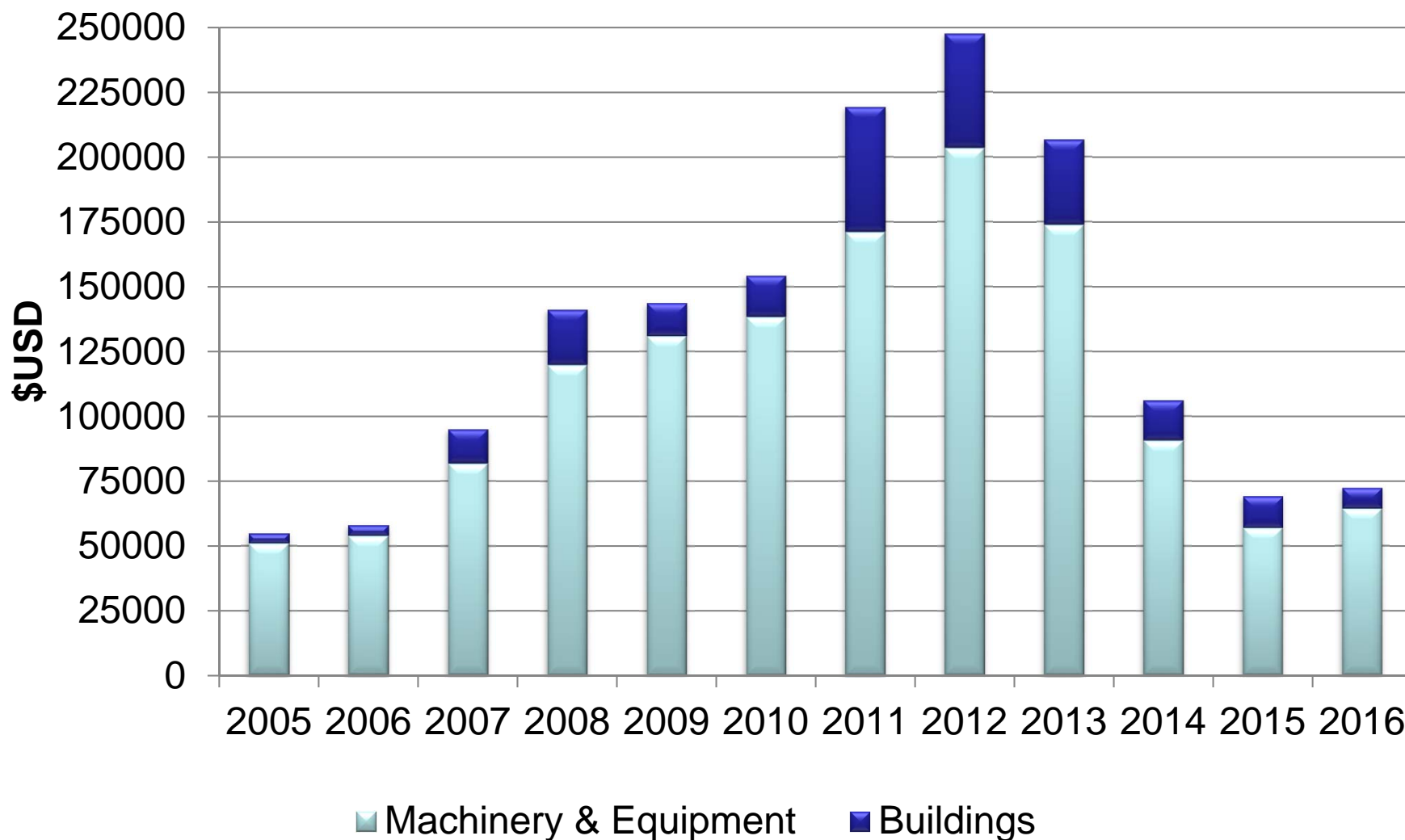


Money Borrowed and Principal Paid, per Farm

MN and ND Farm Business Mgmt. Education, Red RiverValley



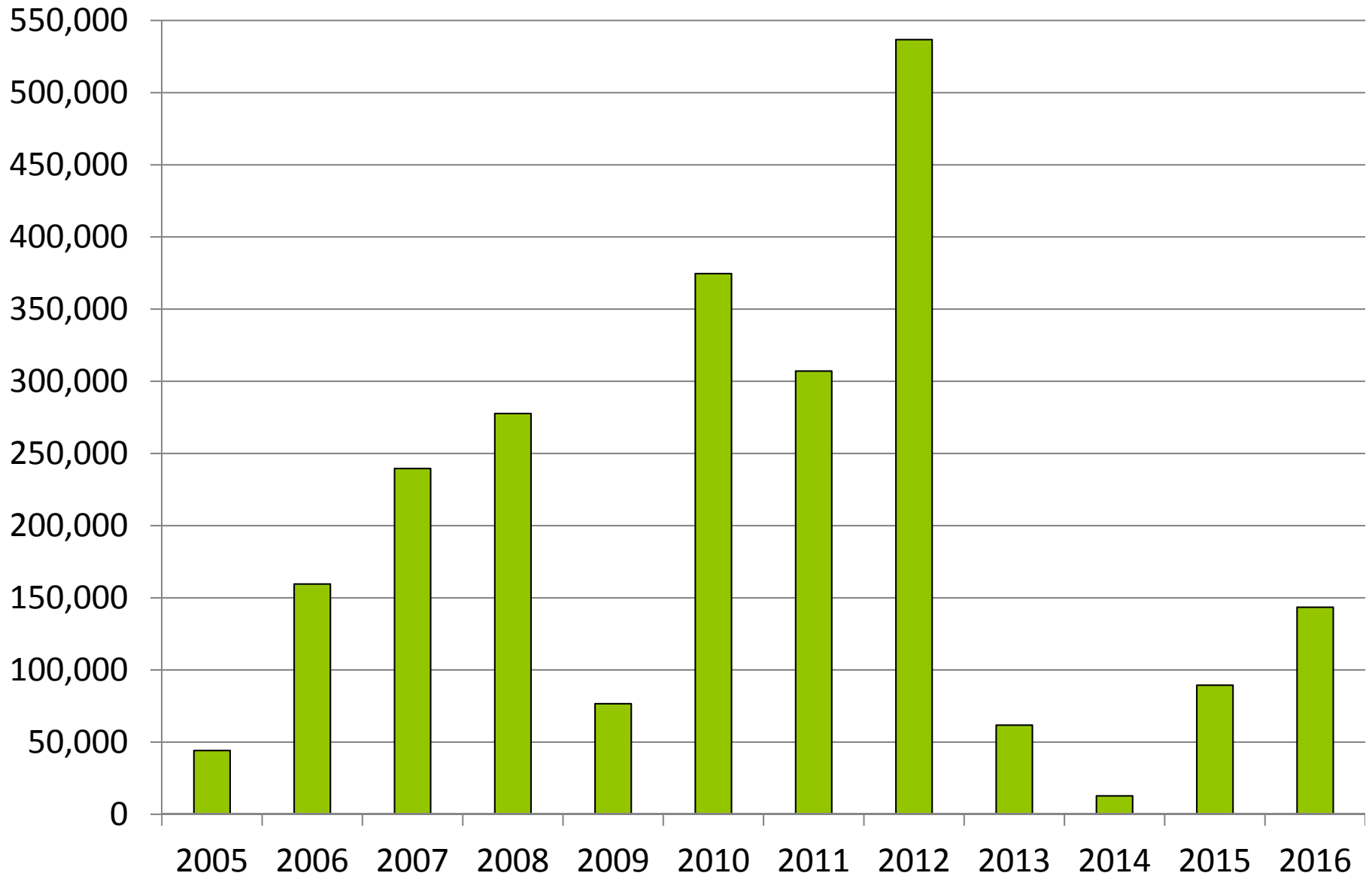
Purchases of Machinery, Equipment, and Buildings, per Farm MN-ND Farm Business Mgmt, Red River Valley



- Sharply higher revenues 2006 – 2012
- Costs followed revenue, doubling in about 7 years!
- Revenue stayed ahead of costs, resulting in strong net income
- A widening gap between high and low profit farms
- After 2012, crop prices drop, profit margins disappear and working capital erodes
- Producers struggle to make debt payments
- Costs peaked around 2013, but have not declined fast enough to offset the drop in crop prices
- Record 2016 corn and soybean yields provide relief

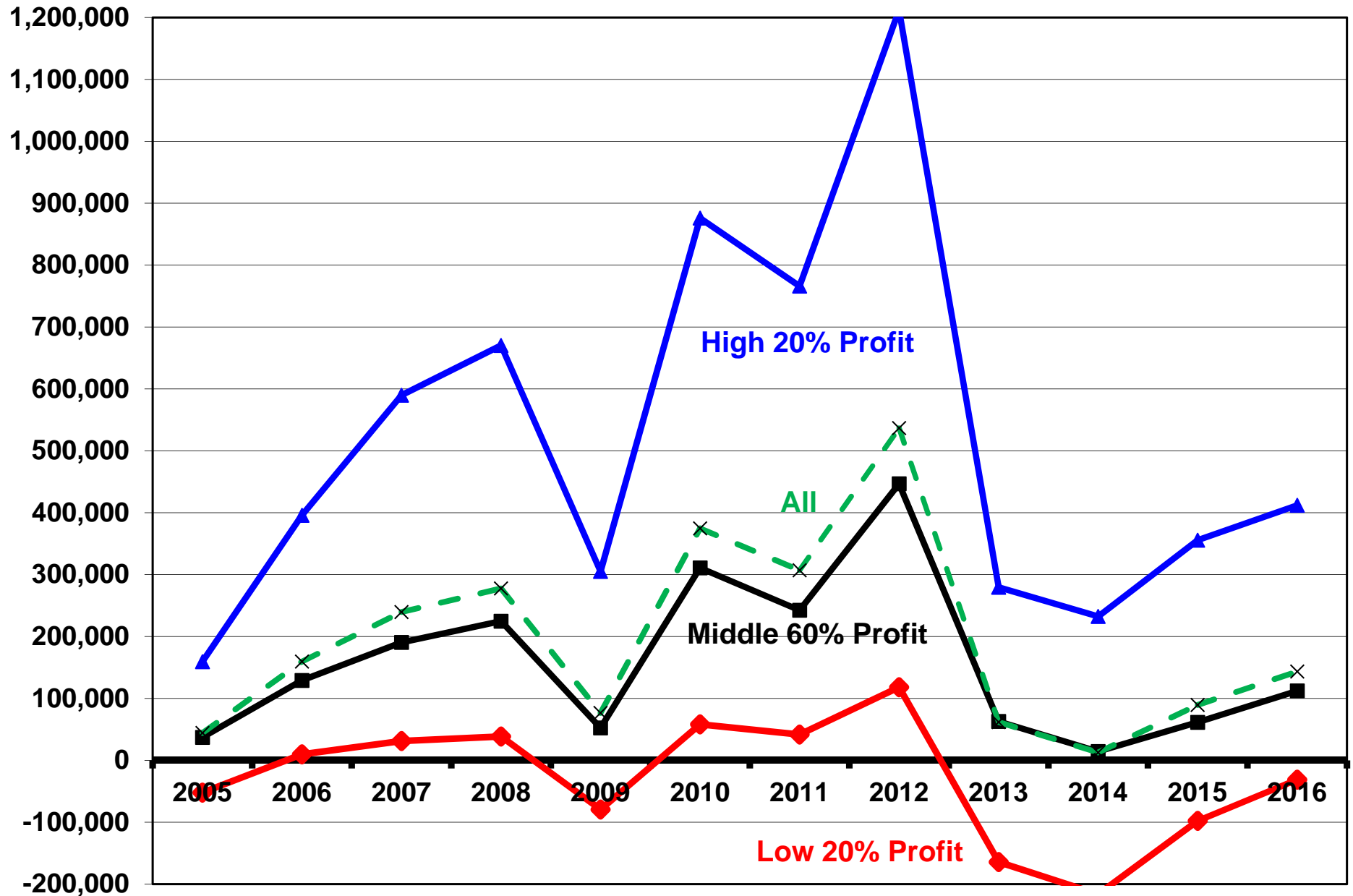
Net Farm Income

MN-ND Farm Business Management, Red River Valley



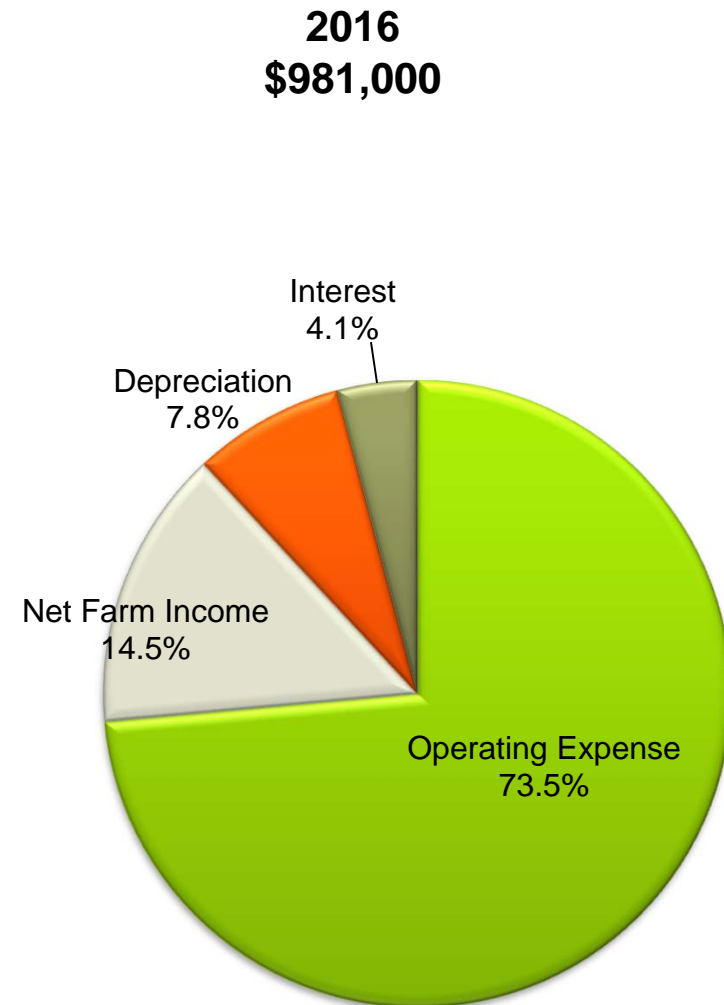
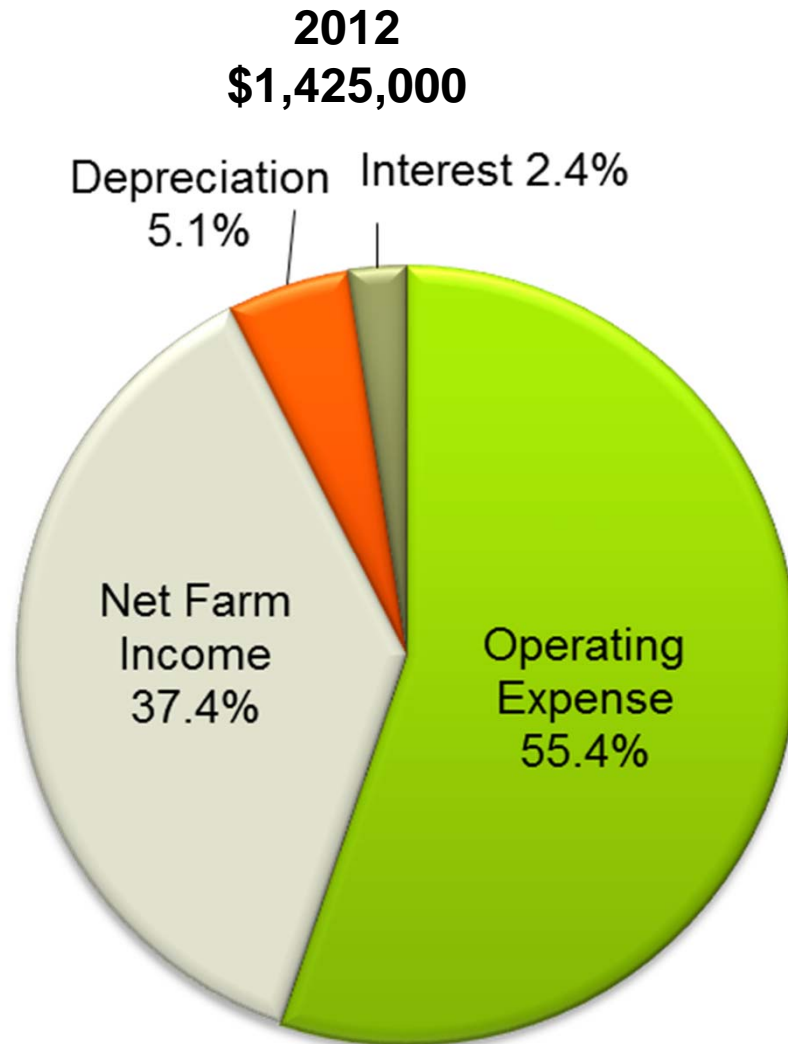
Average Net Farm Income Red River Valley, 2005-2016

MN-ND Farm Business Management, Red River Valley



Where Does the Gross Revenue (Accrual) Go?

Red River Valley Farms*



*Source: Minnesota and North Dakota Farm Business Management Education Programs

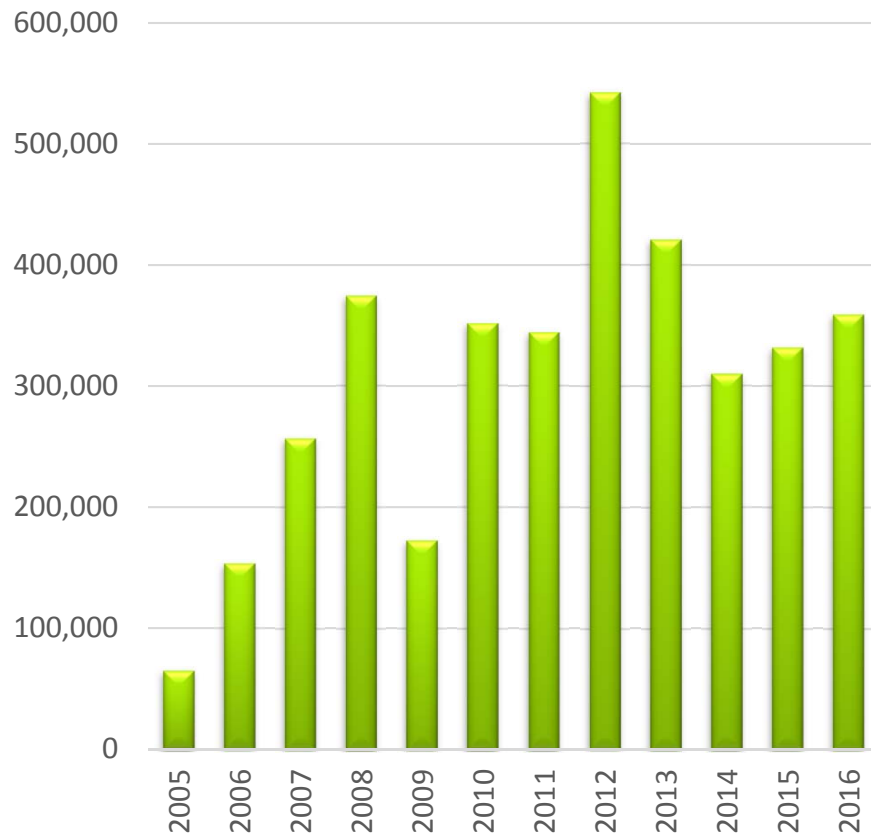
Farms Sorted By Gross Farm Income, 2016

| | 100,001- 250,000 | 250,001- 500,000 | 500,001- 1,000,000 | 1,000,001- 2,000,000 | Over 2,000,000 |
|---------------------------------|---------------------|---------------------|-----------------------|-------------------------|-------------------|
| Age | 39 | 48 | 49 | 52 | 50 |
| Total Crop Acres | 348 | 866 | 1,347 | 2,462 | 4,432 |
| Average Net Farm Income | 32,558 | 66,663 | 128,416 | 184,741 | 411,574 |
| Current Ratio | 1.77 | 1.76 | 1.93 | 1.92 | 1.73 |
| Farm Debt to Asset Ratio (cost) | 43% | 35% | 36% | 39% | 44% |
| Term Debt Coverage Ratio | 1.87 | 1.70 | 1.86 | 1.42 | 1.76 |
| Operating Expense Ratio | 73.4% | 71.8% | 70.6% | 75.5% | 74.4% |
| Depreciation Expense Ratio | 4.6% | 8.8% | 8.3% | 7.9% | 7.1% |
| Interest Expense Ratio | 3.7% | 4.0% | 4.0% | 3.8% | 4.6% |
| Net Farm Income Ratio | 18.2% | 15.2% | 17.0% | 12.8% | 13.8% |
| Machinery Value per Crop Acre | 279 | 432 | 441 | 429 | 426 |

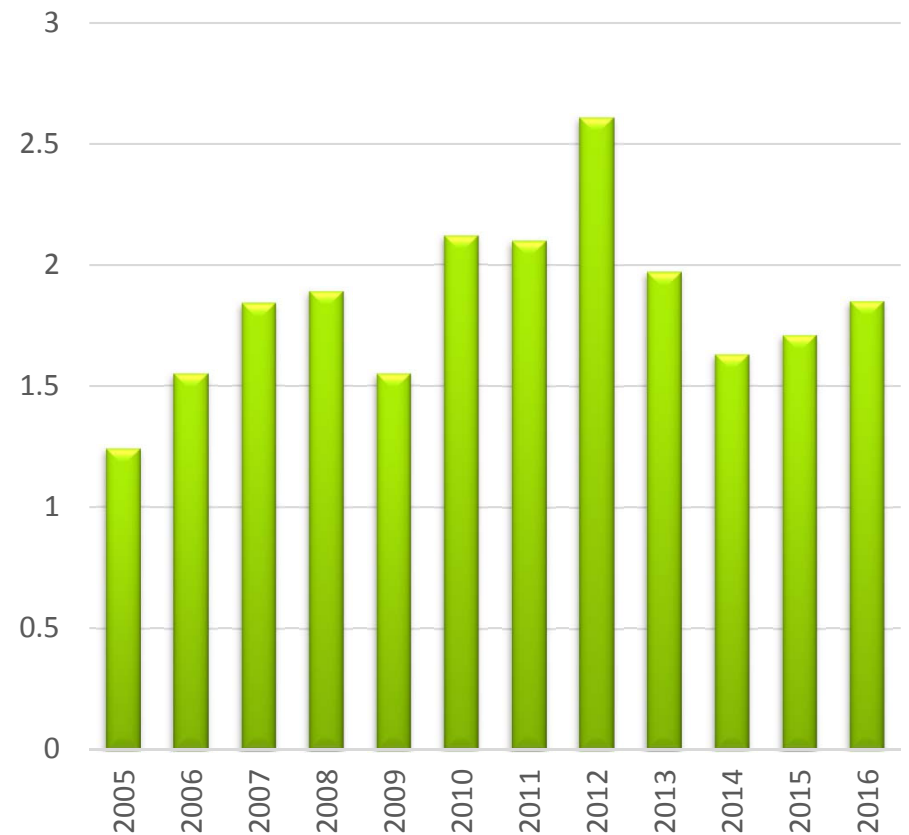
Liquidity, 2005-2016

Red River Valley, MN and ND Farm Management Education

Working Capital

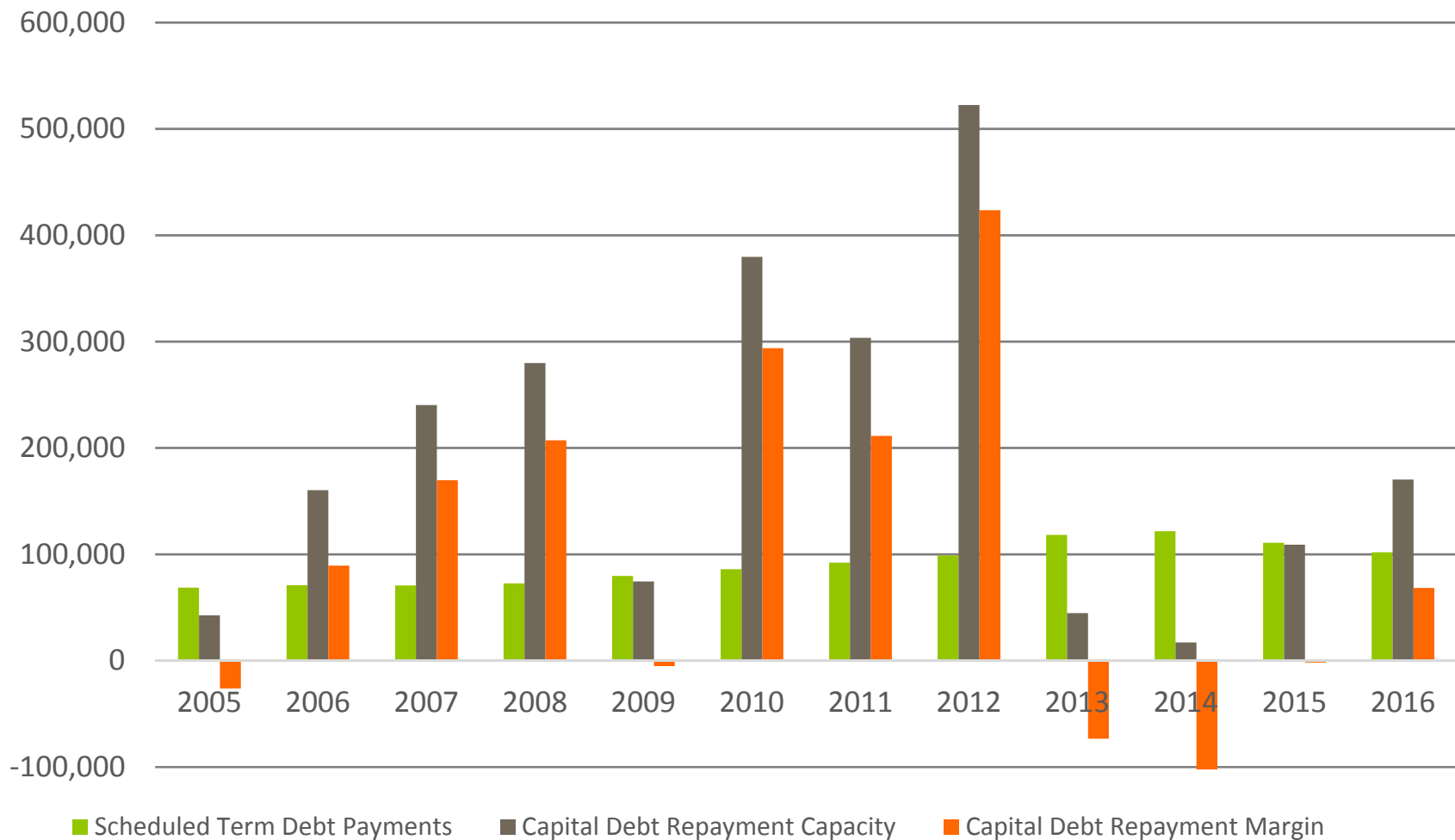


Current Ratio



Repayment Capacity, per Farm, 2005-2016

MN-ND Farm Business Management, Red River Valley



Capital Debt Repayment Margin, by Profit Group, 2016

MN-ND Farm Business Management, Red River Valley

| | Low 20% Profit | | High 20% Profit |
|---------------------------------|----------------|--|-----------------|
| Net farm income from operations | -29,313 | | 412,814 |
| Depreciation | 65,430 | | 128,870 |
| Personal income | 30,009 | | 12,694 |
| Family living/owner withdrawals | -59,877 | | -107,031 |
| Payments on personal debt | -2,652 | | -8,628 |
| Income taxes paid | -9,569 | | -43,083 |
| Interest on term debt | 28,369 | | 42,472 |
| Capital debt repayment capacity | 22,034 | | 437,939 |
| | | | |
| Scheduled term debt payments | -91,514 | | -167,445 |
| Capital debt repayment margin | -69,481 | | 270,494 |

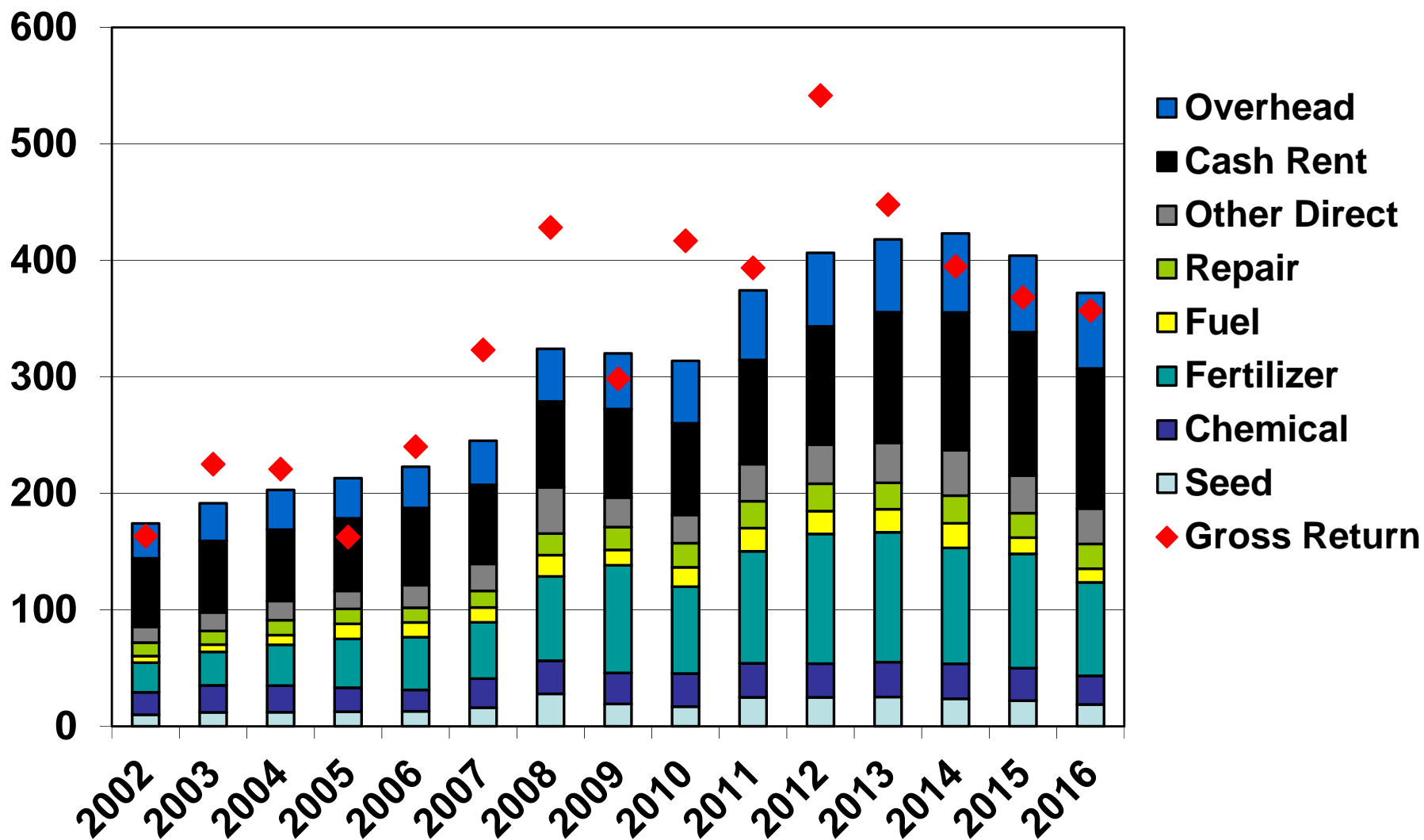
Comparison of High and Low 20% Profit Groups, 2016

MN-ND Farm Business Management, Red River Valley

| | Low Profit | | High Profit |
|--------------------------|------------|--|-------------|
| Age, Years Farming | 45.8 | | 49.8 |
| Crop acres | 1,301 | | 2,941 |
| Current Ratio | 1.35 | | 2.31 |
| Farm Debt to Asset (%) | 42.0 | | 36.0 |
| Asset Turnover Ratio (%) | 32.3 | | 38.4 |
| Soybean yield | 44.5 | | 48.4 |
| Corn yield | 189.0 | | 191.1 |
| Wheat yield | 60.4 | | 74.3 |
| Soybean sale price | \$8.95 | | \$8.99 |
| Corn sale price | \$3.16 | | \$3.36 |
| Wheat sale price | \$4.96 | | \$4.77 |

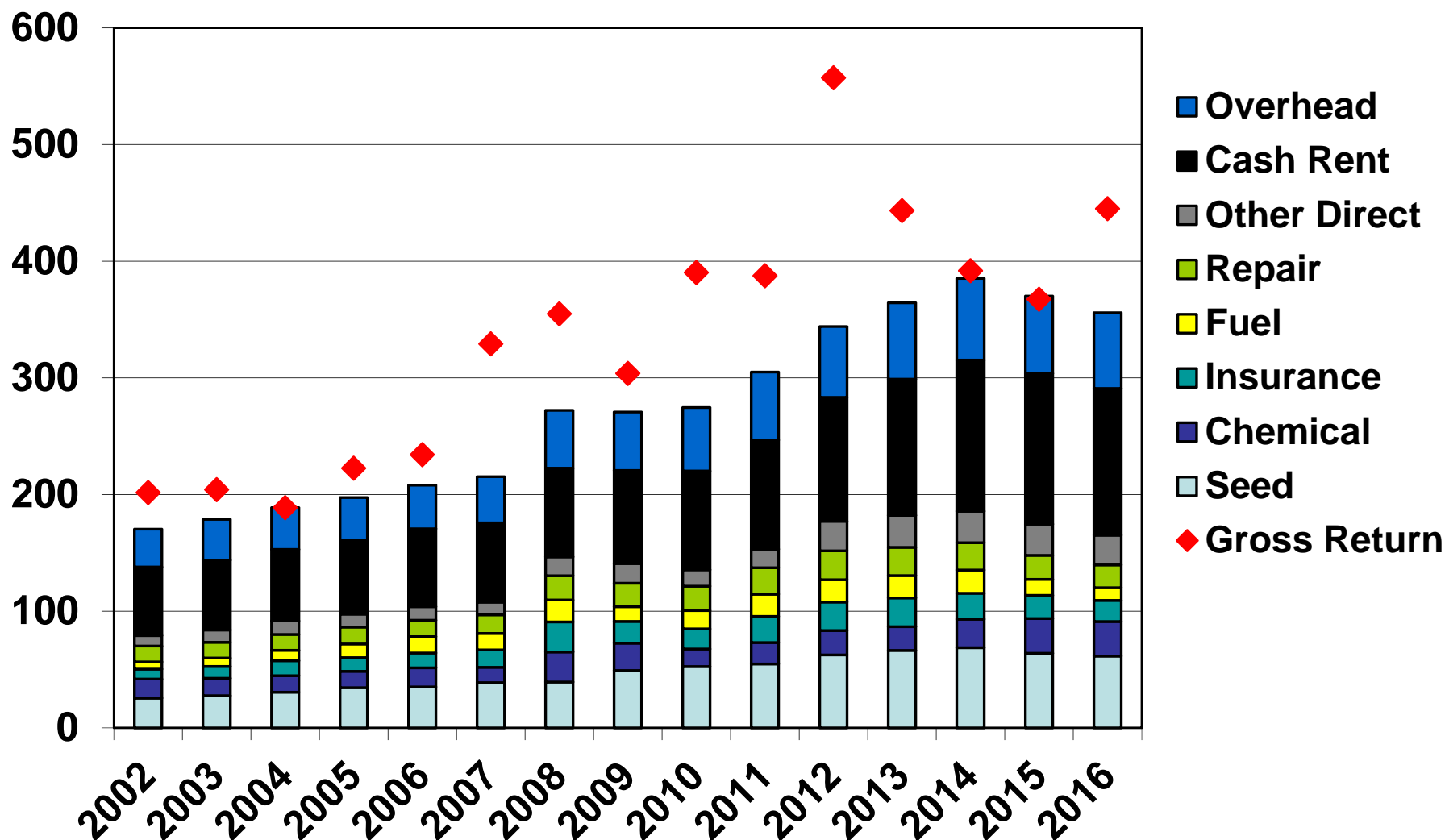
Spring Wheat Costs per Acre

Red River Valley, MN and ND Farm Management Education, 2002-2016



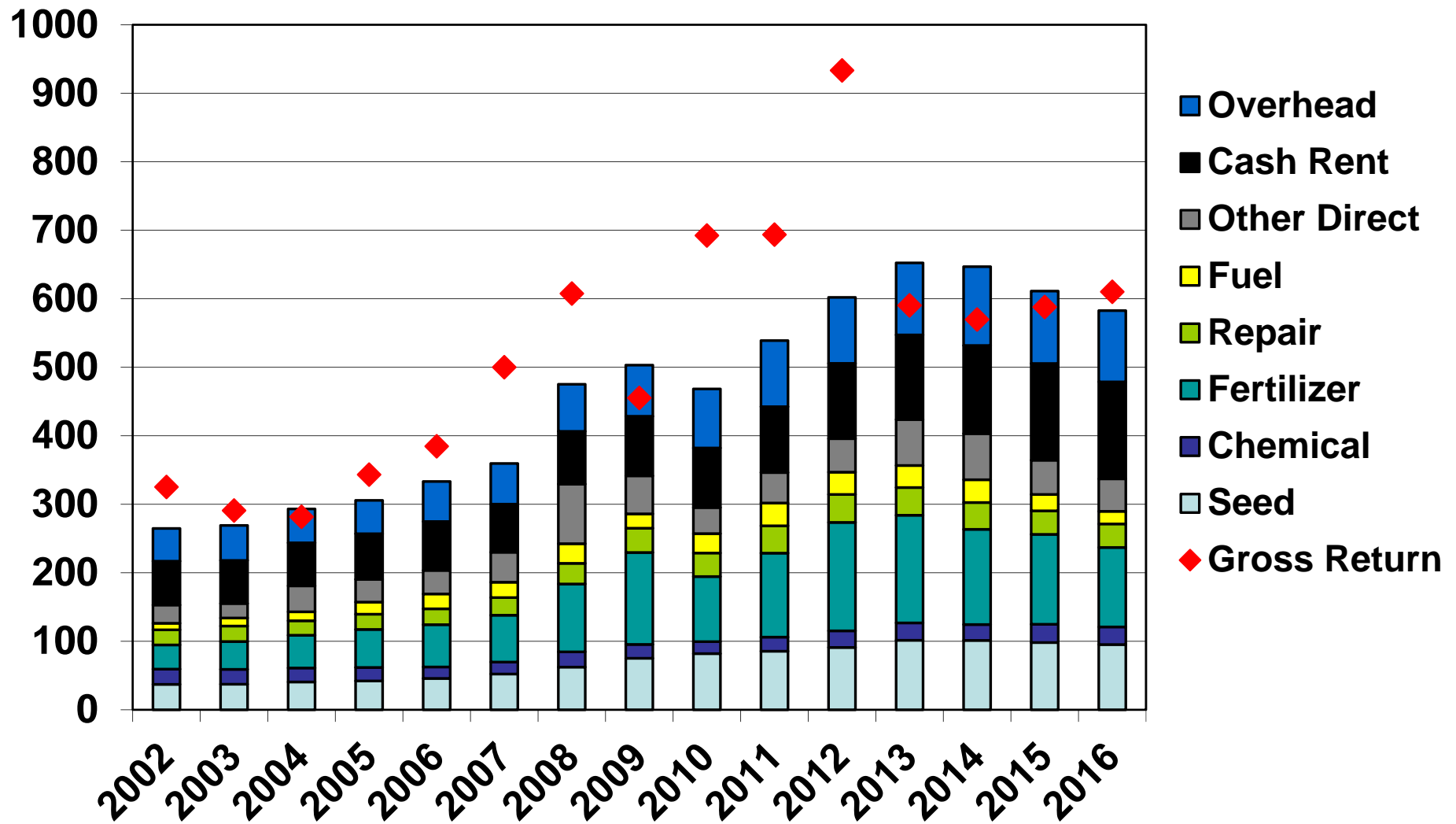
Soybean Costs per Acre

Red River Valley, MN and ND Farm Management Education, 2002-2016



Corn Costs per Acre

Red River Valley, MN and ND Farm Management Education, 2002-2016



Spring Wheat Enterprise Analysis, 2014-2016, and Projections for 2017-2018

MN-ND Red River Valley Farm Business Management

| | 2014 | 2015 | 2016 | 2017 est. | 2018 est. |
|---------------------|---------------|---------------|---------------|---------------|---------------|
| Yield | 66.36 | 72.01 | 68.44 | 67.00 | 68.00 |
| Price | 5.75 | 4.98 | 5.00 | 5.90 | 5.60 |
| Misc. Inc. | 13.24 | 9.58 | 14.65 | 10.00 | 10.00 |
| Gross | 394.81 | 368.19 | 356.85 | 405.30 | 390.80 |
| | | | | | |
| Seed | 23.70 | 22.00 | 18.71 | 18.90 | 21.35 |
| Fertilizer | 99.48 | 98.06 | 80.21 | 68.98 | 69.67 |
| Chemical | 29.98 | 27.96 | 24.64 | 25.01 | 25.38 |
| Insurance | 15.80 | 14.24 | 13.49 | 14.54 | 15.79 |
| Fuel & Lube | 21.18 | 14.02 | 11.79 | 13.09 | 14.40 |
| Repair | 23.69 | 20.91 | 21.22 | 21.43 | 21.65 |
| Other Direct | 23.26 | 18.19 | 16.84 | 17.09 | 17.35 |
| Cash Rent | 118.20 | 122.99 | 120.27 | 118.47 | 116.69 |
| Overhead | 67.87 | 65.75 | 64.86 | 65.18 | 65.51 |
| Listed Costs | 423.16 | 404.12 | 372.03 | 362.69 | 367.79 |
| | | | | | |
| Net Return | -28.35 | -35.93 | -15.18 | 42.61 | 23.01 |
| B/E Price | 6.18 | 5.48 | 5.22 | 5.26 | 5.26 |

Estimates: A. Swenson, NDSU, 10/11/17

Soybean Enterprise Analysis, 2014-2016, and Projections for 2017-2018

MN-ND Red River Valley Farm Business Management

| | 2014 | 2015 | 2016 | 2017 est. | 2018 est. |
|---------------------|---------------|---------------|---------------|---------------|---------------|
| Yield | 37.50 | 42.01 | 46.89 | 38.00 | 39.00 |
| Price | 9.85 | 8.47 | 9.23 | 8.90 | 8.90 |
| Misc. Inc. | 22.46 | 11.62 | 12.19 | 10.00 | 10.00 |
| Gross | 391.84 | 367.44 | 444.98 | 348.20 | 357.10 |
| | | | | | |
| Seed | 68.73 | 64.00 | 61.51 | 60.89 | 60.29 |
| Fertilizer | 12.26 | 14.00 | 11.75 | 10.11 | 10.21 |
| Chemical | 24.38 | 29.71 | 29.67 | 30.12 | 30.57 |
| Insurance | 22.31 | 19.90 | 18.08 | 20.12 | 19.62 |
| Fuel & Lube | 19.90 | 13.76 | 10.85 | 12.04 | 13.25 |
| Repair | 23.44 | 20.54 | 19.59 | 19.79 | 19.98 |
| Other Direct | 14.63 | 12.77 | 13.69 | 13.90 | 14.10 |
| Cash Rent | 129.68 | 129.12 | 125.85 | 123.96 | 122.10 |
| Overhead | 69.92 | 66.33 | 64.92 | 65.24 | 65.57 |
| Listed Costs | 385.25 | 370.13 | 355.91 | 356.17 | 355.69 |
| | | | | | |
| Net Return | 6.59 | -2.69 | 89.07 | -7.97 | 1.41 |
| B/E Price | 9.67 | 8.53 | 7.33 | 9.11 | 8.86 |

Estimates: A. Swenson, NDSU, 10/11/17

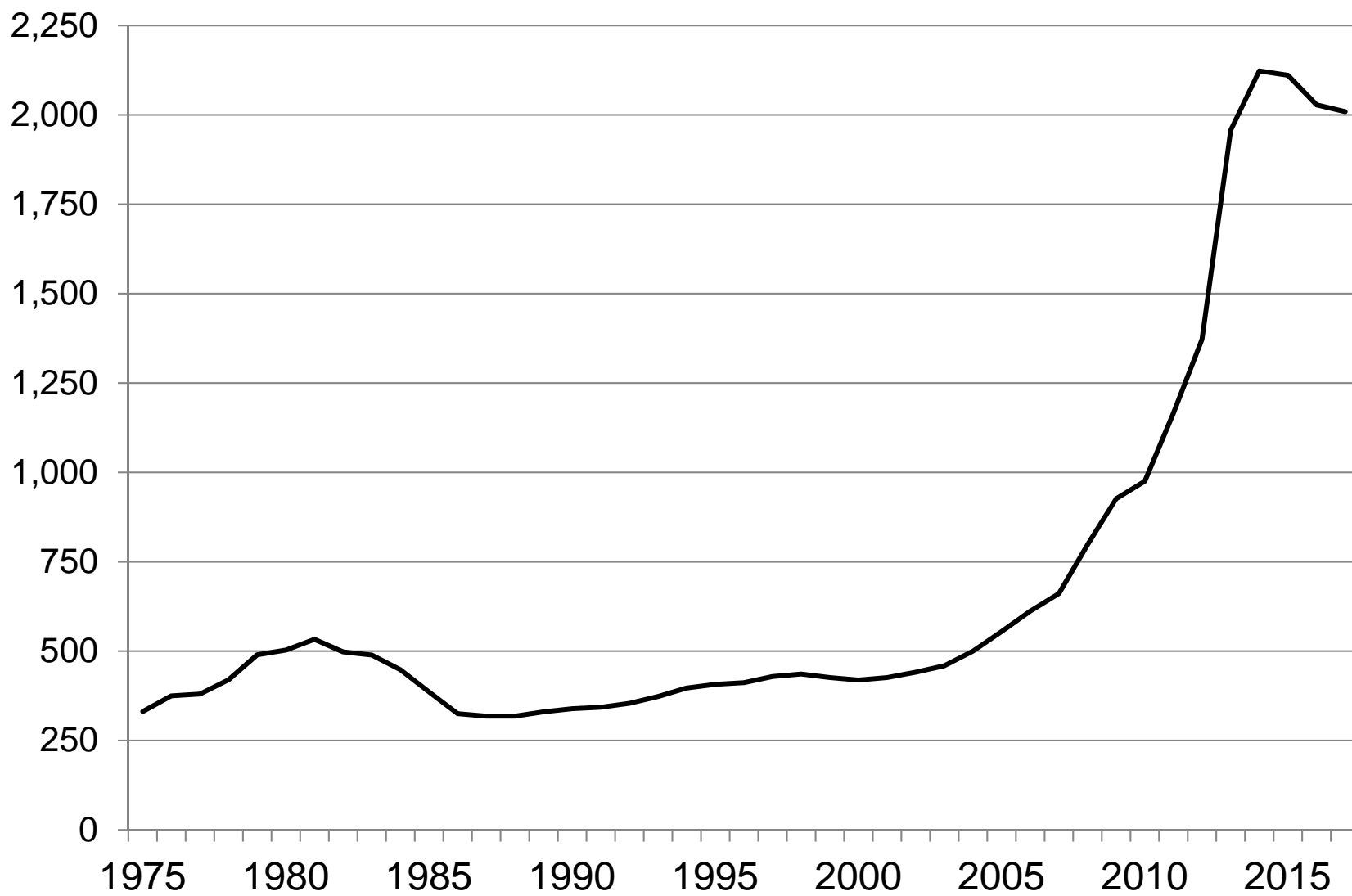
Corn Enterprise Analysis, 2014-2016, and Projections for 2017-2018

MN-ND Red River Valley Farm Business Management

| | 2014 | 2015 | 2016 | 2017 est. | 2018 est. |
|---------------------|---------------|---------------|---------------|---------------|---------------|
| Yield | 131.56 | 166.72 | 189.71 | 172.00 | 162.00 |
| Price | 3.66 | 3.44 | 3.14 | 2.95 | 3.20 |
| Misc. Inc. | 88.28 | 14.52 | 14.58 | 25.00 | 15.00 |
| Gross | 569.79 | 588.04 | 610.27 | 532.40 | 533.40 |
| | | | | | |
| Seed | 101.23 | 98.07 | 95.26 | 94.31 | 93.36 |
| Fertilizer | 138.88 | 131.29 | 115.87 | 99.65 | 100.64 |
| Chemical | 23.26 | 26.68 | 25.73 | 26.24 | 26.51 |
| Insurance | 25.98 | 22.04 | 19.28 | 19.67 | 19.67 |
| Fuel & Lube | 33.25 | 23.93 | 18.37 | 20.39 | 22.43 |
| Repair | 39.14 | 34.36 | 34.43 | 34.77 | 35.12 |
| Other Direct | 41.31 | 27.87 | 28.16 | 28.58 | 29.01 |
| Cash Rent | 128.78 | 141.21 | 141.60 | 139.48 | 137.38 |
| Overhead | 115.15 | 105.69 | 103.99 | 104.51 | 105.03 |
| Listed Costs | 646.98 | 611.14 | 582.69 | 567.60 | 569.16 |
| | | | | | |
| Net Return | -77.19 | -23.10 | 27.58 | -35.20 | -35.76 |
| B/E Price | 4.25 | 3.58 | 2.99 | 3.15 | 3.42 |

Estimates: A. Swenson, NDSU, 10/11/17

N.D. Cropland Values, 1975-2017



Average Cropland Values

N.D. Chapter of American Society of Farm Managers and Rural Appraisers

| County | 2013 | 2016 | Change |
|--------------------|-------|-------|--------|
| Pembina | 5,627 | 4,670 | -17% |
| Walsh (east) | 5,296 | 3,590 | -32% |
| Grand Forks (east) | 4,274 | 3,209 | -25% |
| Traill | 4,737 | 4,342 | -8% |
| Cass (east) | 6,034 | 4,615 | -24% |
| Richland | 5,295 | 4,405 | -17% |

Cropland Cash Rent Range, Years 2013 & 2016

N.D. Chapter of American Society of Farm Managers and Rural Appraisers

| County | Low | | | High | | |
|--------------------|------|------|--------|------|------|--------|
| | 2013 | 2016 | Change | 2013 | 2016 | Change |
| Pembina | 50 | 75 | 50% | 250 | 200 | -20% |
| Walsh (east) | 75 | 106 | 41% | 250 | 200 | -20% |
| Grand Forks (east) | 60 | 65 | 8% | 250 | 200 | -20% |
| Traill | 75 | 70 | -7% | 250 | 214 | -14% |
| Cass (east) | 100 | 100 | 0% | 310 | 216 | -30% |
| Richland | 75 | 75 | 0% | 250 | 200 | -20% |

Higher Capitalization Rates Drive Land Values Lower

| | | |
|---------|--------------|------------|
| Assume: | \$125 | land rent |
| | <u>-\$15</u> | RE tax |
| | \$110 | Net Return |

| Return / "Cap. Rate" | | = | Land Value |
|----------------------|------|---|------------|
| \$110/ | 2.5% | = | \$4,400 |
| \$110/ | 3.0% | = | \$3,667 |
| \$110/ | 3.5% | = | \$3,143 |