

Agribusiness and Applied Economics

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Legislative Revenue Advisory Committee

July 27, 2017

Bismarck, ND

Presentation Outline

- Overview of Agriculture
- Departmental Expertise and Focus
- Revenue Forecasting

Determinants of Crop Profitability

Revenue

Yield

Price

Government Programs

Crop Insurance

Costs

Input Quantity

Price

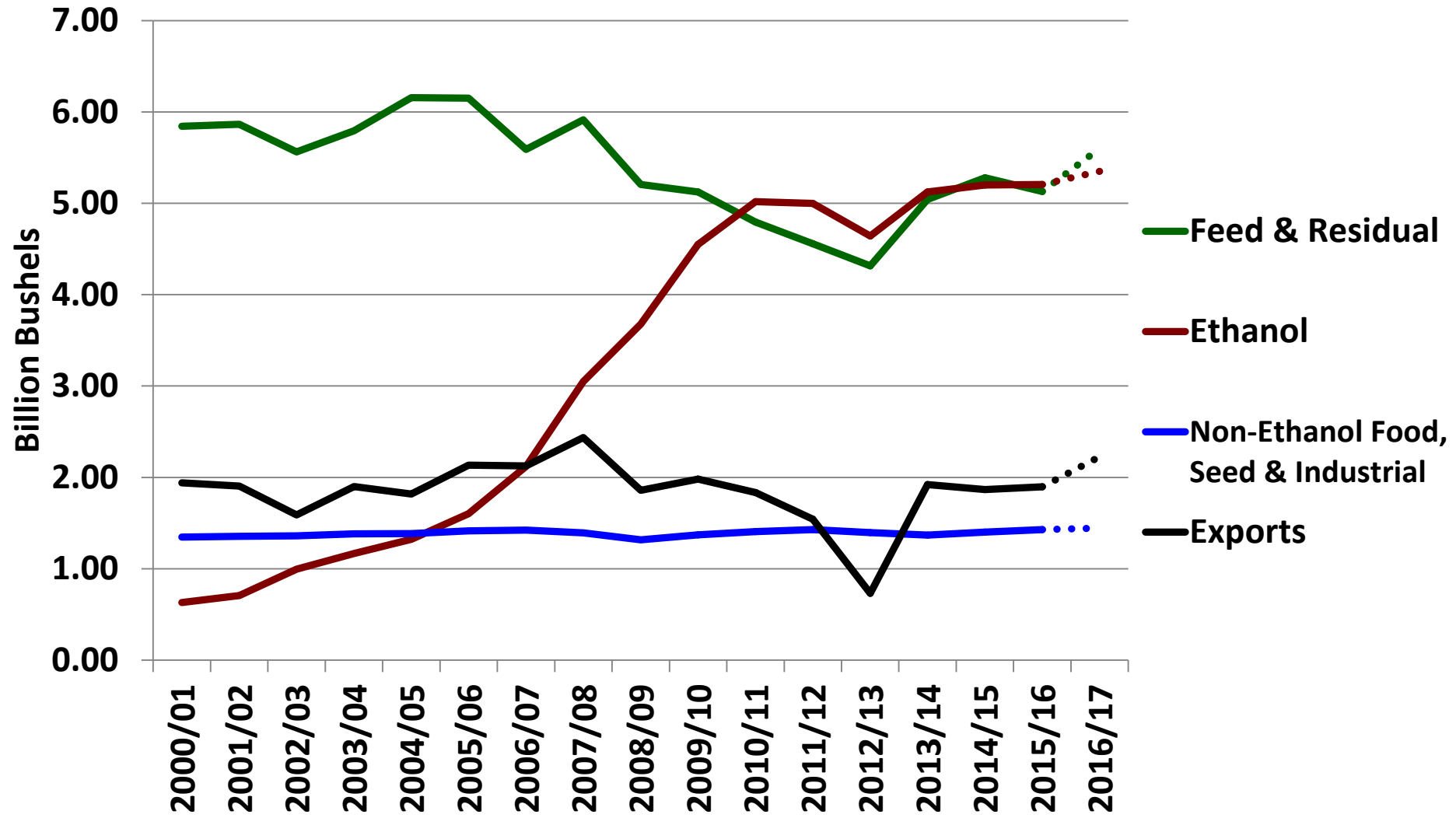


North Dakota Marketing Year Average Price: Range 1997-2006 and Years 2007-2016

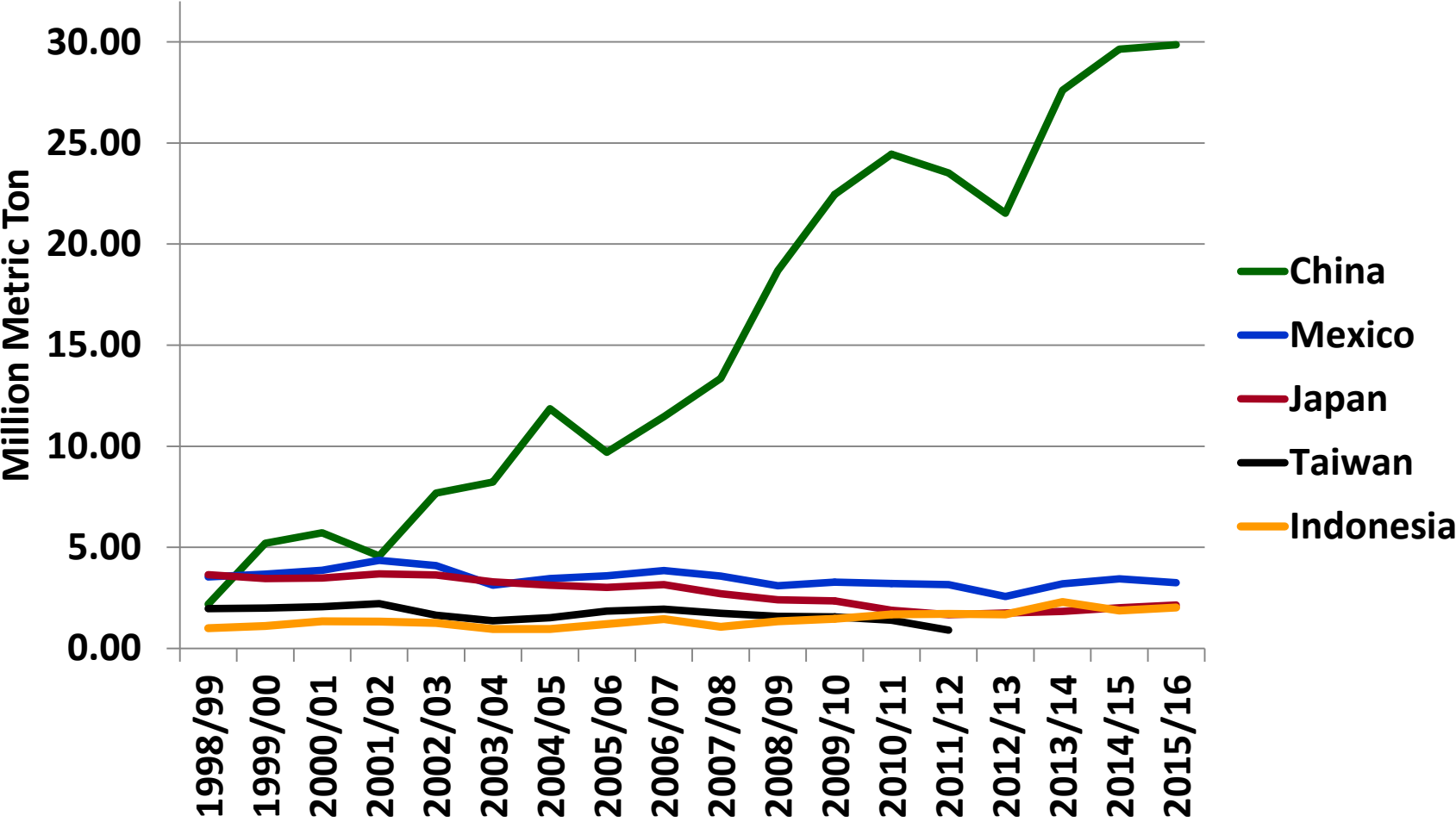
| Year | Spring Wheat | Soybean | Corn |
|-----------|--------------|---------------|--------------|
| 1997-2006 | 2.76 - 4.49 | 4.05 – 6.62 | 1.59 – 2.77 |
| 2007 | 7.45 | 9.63 | 4.06 |
| 2008 | 7.19 | 9.71 | 3.74 |
| 2009 | 4.90 | 9.26 | 3.18 |
| 2010 | 6.78 | 10.90 | 5.01 |
| 2011 | 8.17 | 11.90 | 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 est. | 4.40e | 9.05e | 3.15e |

U.S. Corn - Total Use

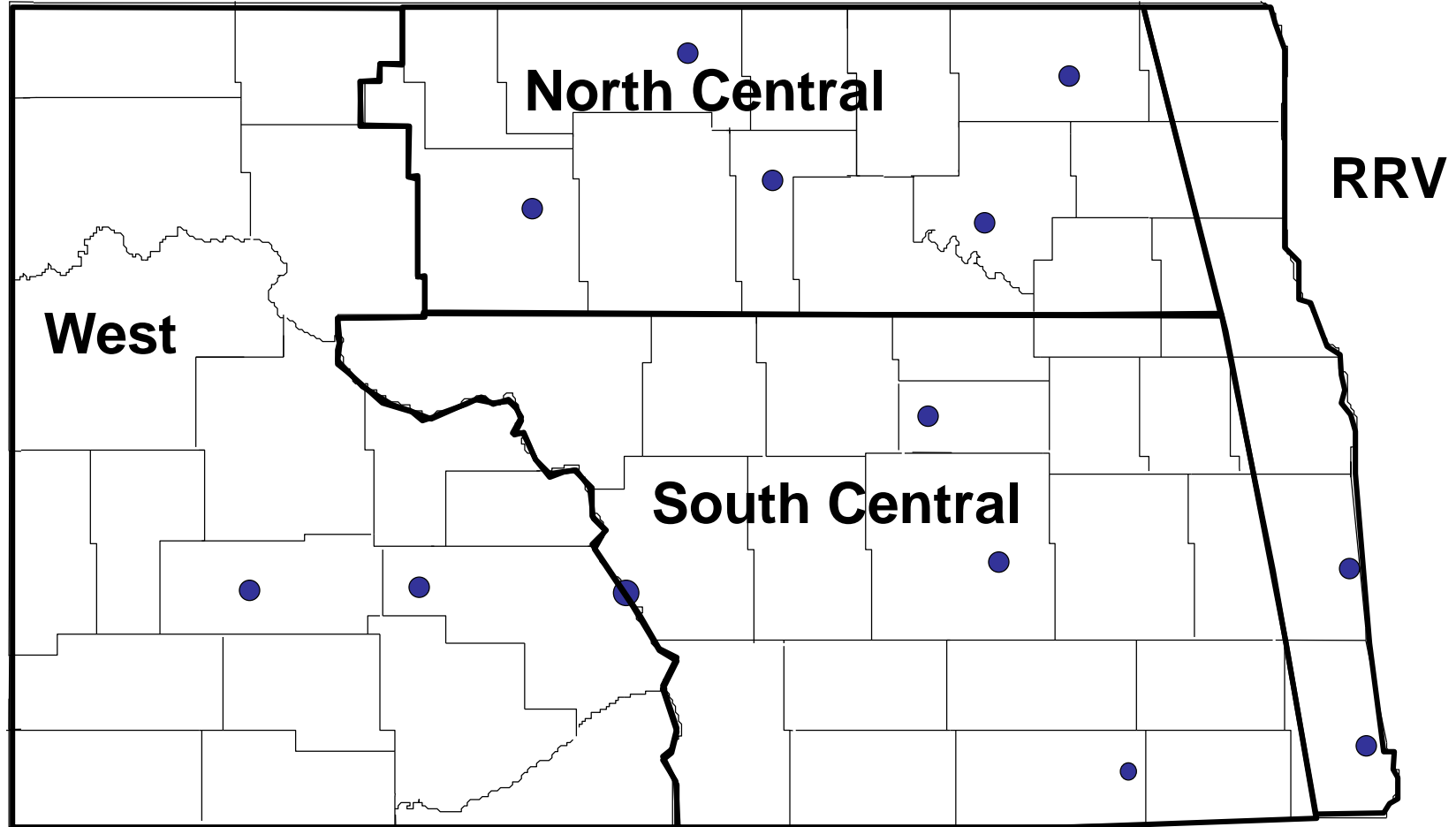
(Billion Bushels)



Top Five S.B. Export Destinations

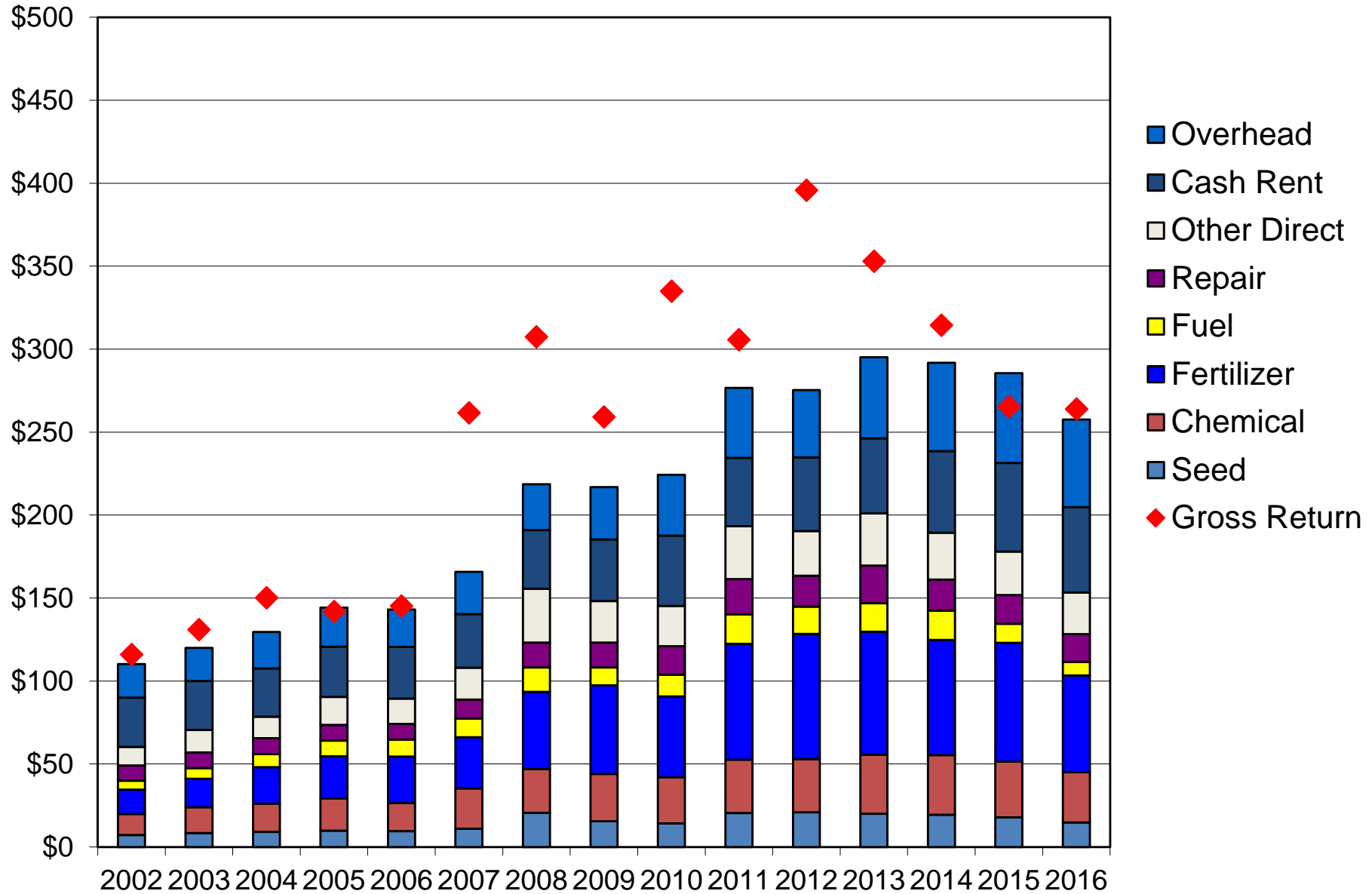


Main source of information:
**North Dakota Farm Business
Management Education Program**



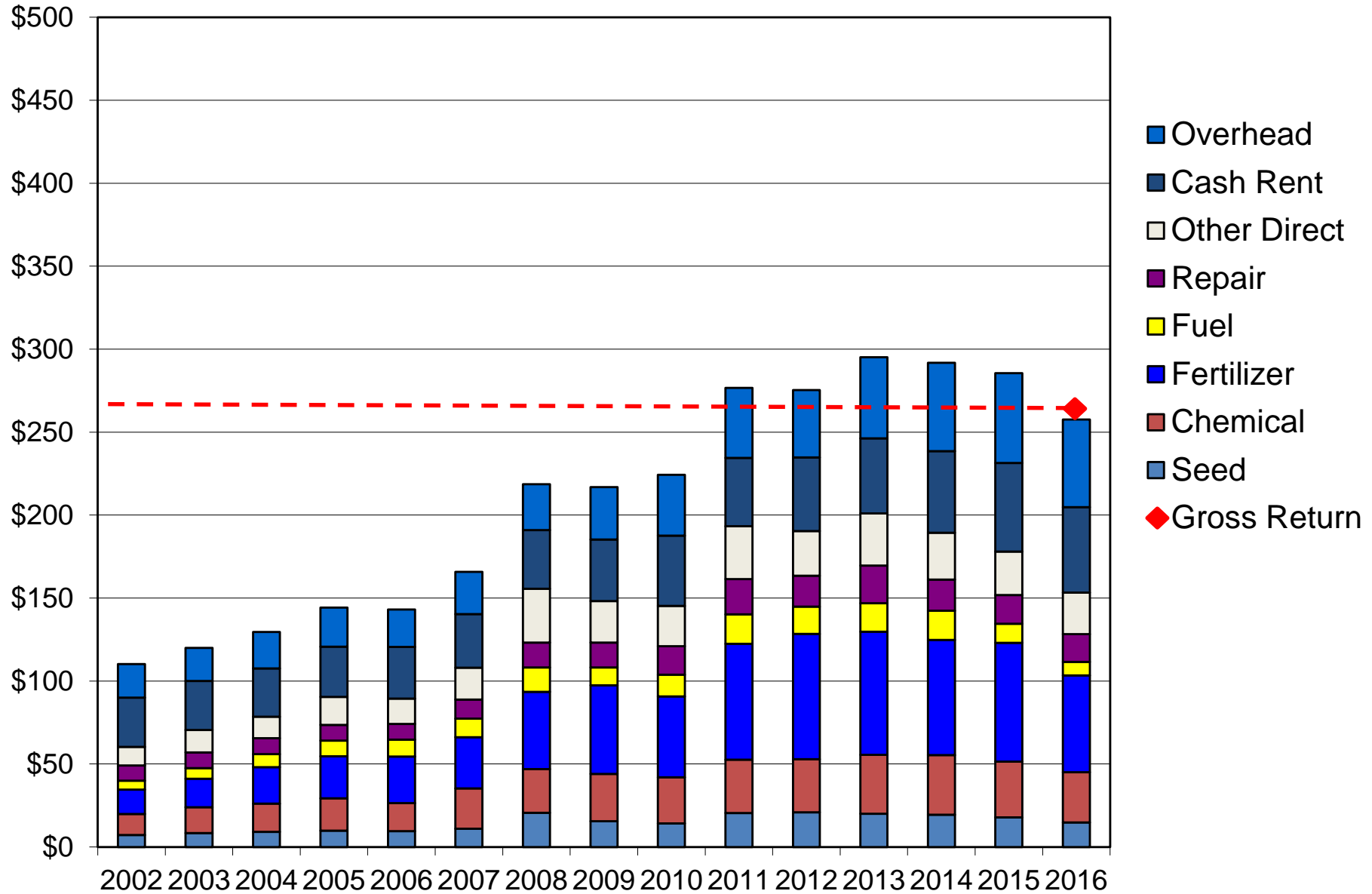
Spring Wheat Costs per Acre

ND Farm Business Management, Excluding RRV



Spring Wheat Costs per Acre

ND Farm Business Management, Excluding RRV



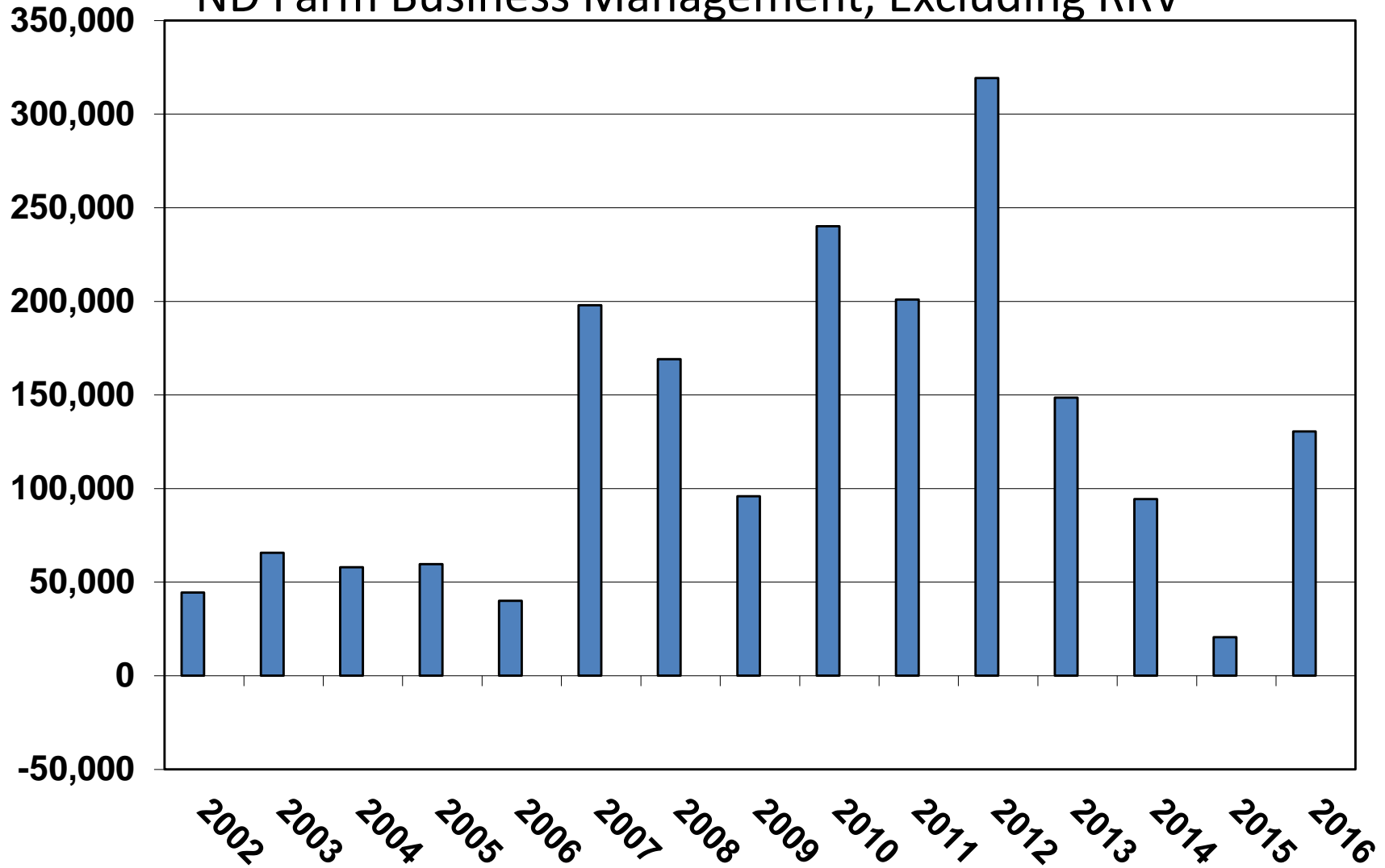
The general theme, 2007 – 2012 was high crop prices, due to ethanol expansion and China soybean imports, and escalating costs. Fortunately revenue was rising faster than costs.

Costs doubled from 2004 to 2012. After 2012, crop prices dropped because of supply response and producers saw margins disappear. In general, costs per acre peaked in 2013, but have not declined fast enough to offset the drop in crop prices.

Fortunately, yields have generally been strong.

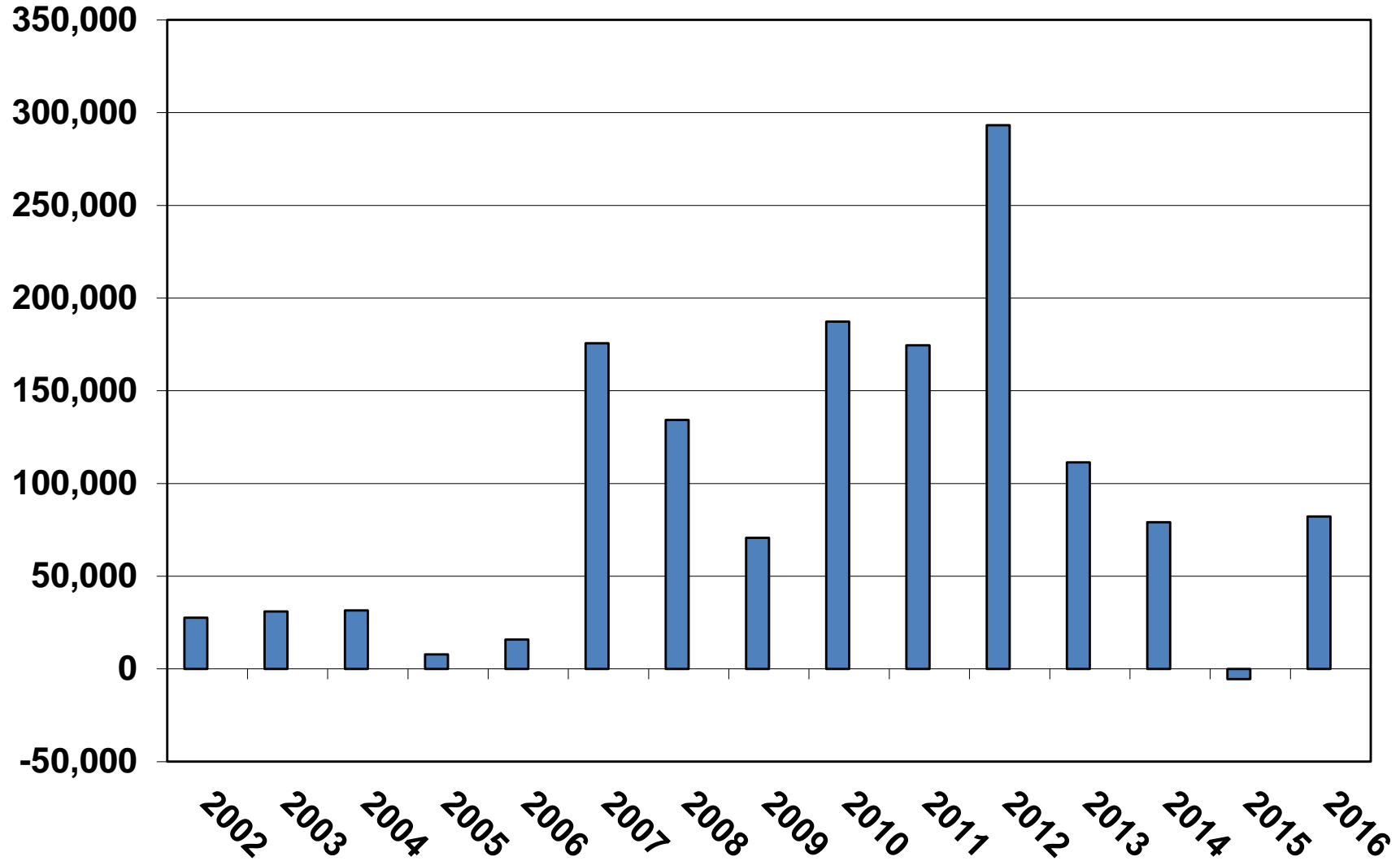
Average Net Farm Income

ND Farm Business Management, Excluding RRV



Net Farm Income Excluding Gov't Pymts.

ND Farm Business Management, Excluding RRV



Farm Income Statement, 2016

North Dakota Farm Business Management Program (excluding RRV)

Cash Farm Income

| | |
|---------------------------|----------------|
| Soybeans | 149,384 |
| Wheat | 103,191 |
| Corn | 70,763 |
| Barley | 37,002 |
| Canola | 34,031 |
| Sunflowers | 17,806 |
| Beans, Dry Edible | 16,539 |
| Peas, Field | 8,759 |
| Flax | 4,092 |
| Lentils | 2,342 |
| Hay | 2,742 |
| Other Crops | 1,935 |
| Beef Cattle | 76,320 |
| Dairy | 21,000 |
| Cull breeding livestock | 8,085 |
| Other livestock | 3,776 |
| Crop government payments | 38,560 |
| Crop insurance income | 32,056 |
| Custom work income | 14,458 |
| Other government payments | 9,864 |
| Patronage dividends | 7,561 |
| Property insurance income | 3,844 |
| Other farm income | 12,031 |
| Total Cash Income | 676,144 |

Cash Farm Expense

| | |
|-----------------------------|----------------|
| Land Rent | 81,066 |
| Fertilizer | 78,706 |
| Seed | 78,682 |
| Crop Chemicals | 56,561 |
| Repairs | 46,879 |
| Interest | 34,517 |
| Crop Insurance | 26,691 |
| Hired Labor | 22,806 |
| Fuel & Oil | 22,098 |
| Feed | 21,354 |
| Custom Hire | 17,508 |
| Feeder Livestock | 16,028 |
| Farm Insurance | 9,888 |
| Machinery & Bldg Leases | 9,267 |
| Other Livestock Expense | 9,607 |
| Utilities | 7,887 |
| Other Crop Expense | 5,608 |
| Real Estate Taxes | 4,277 |
| Other Farn Expense | 12,150 |
| Total Cash Expense | 561,584 |
| Net Cash Farm Income | 114,560 |

Farm Income Statement, 2016 (continued)

North Dakota Farm Business Management Program (excluding RRV)

Inventory Changes

| | |
|------------------------|---------|
| Prepays and Supplies | -1,552 |
| Accounts Receivable | 764 |
| Crops and Feed | 85,687 |
| Livestock | -6,995 |
| Other Assets | 80 |
| Accounts Payable | 2,336 |
| Accrued Interest | -84 |
| Total Inventory Change | 80,236 |
| Net operating profit | 194,797 |

Depreciation

| | |
|---------------------------|---------|
| Machinery and equipment | -58,386 |
| Building and improvements | -5,642 |
| Total depreciation | -64,028 |

| | |
|---------------------------------|---------|
| Net farm income from operations | 130,768 |
| Gain or loss on capital sales | -191 |
| Net Farm Income | 130,577 |

North Dakota farms got much larger from 2006 to 2012, as measured by gross revenue, even though they may have remained at the same acreage.

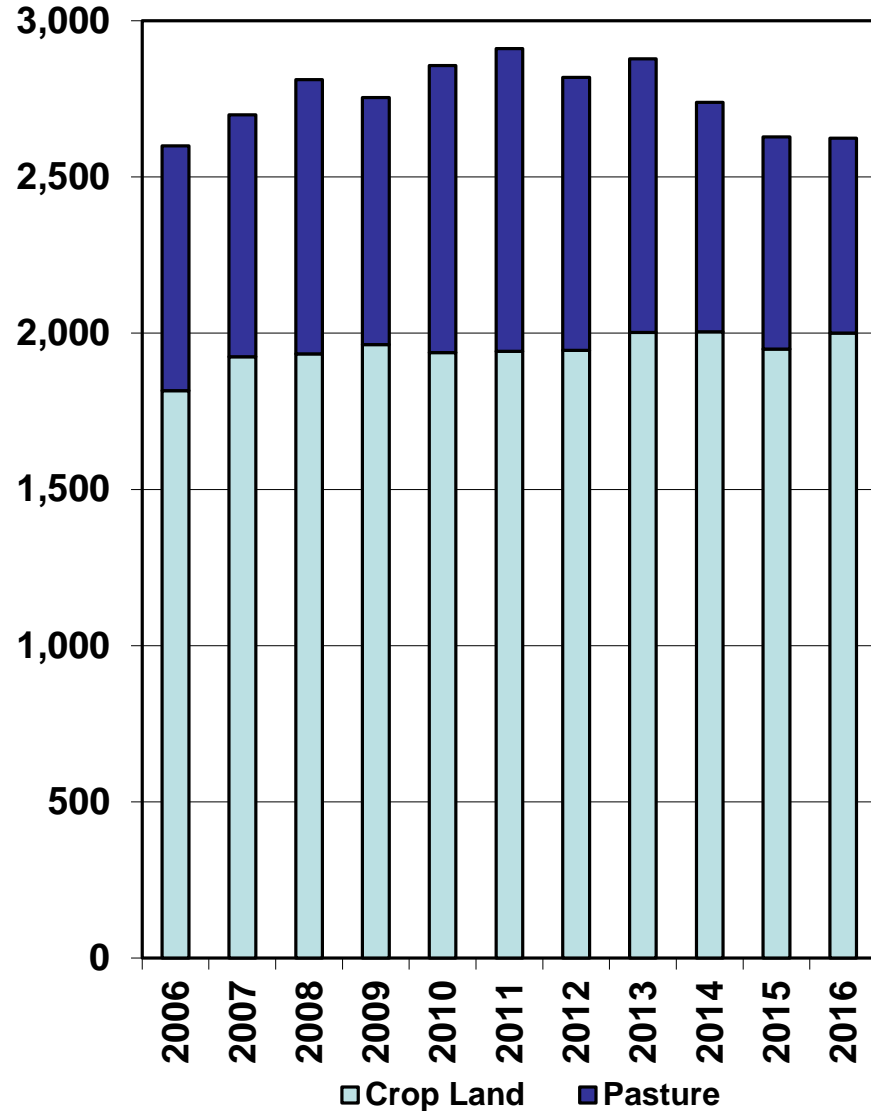
Producers were handling a lot more dollars, both in revenue and in costs.

Machinery purchases and debt increased.

In recent years, machinery purchases have plummeted and producers are at risk of higher interest rates.

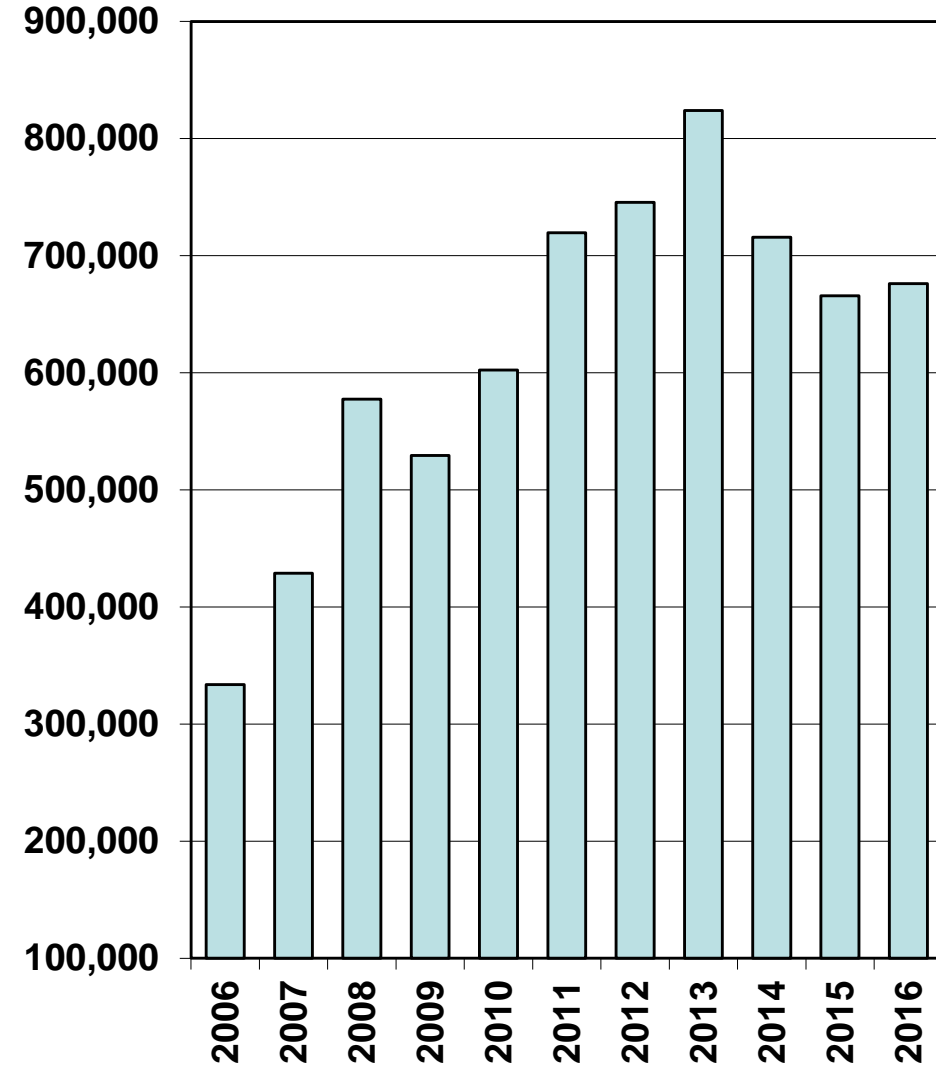
Acres per Farm

ND Farm Business Mgmt., Excluding RRV



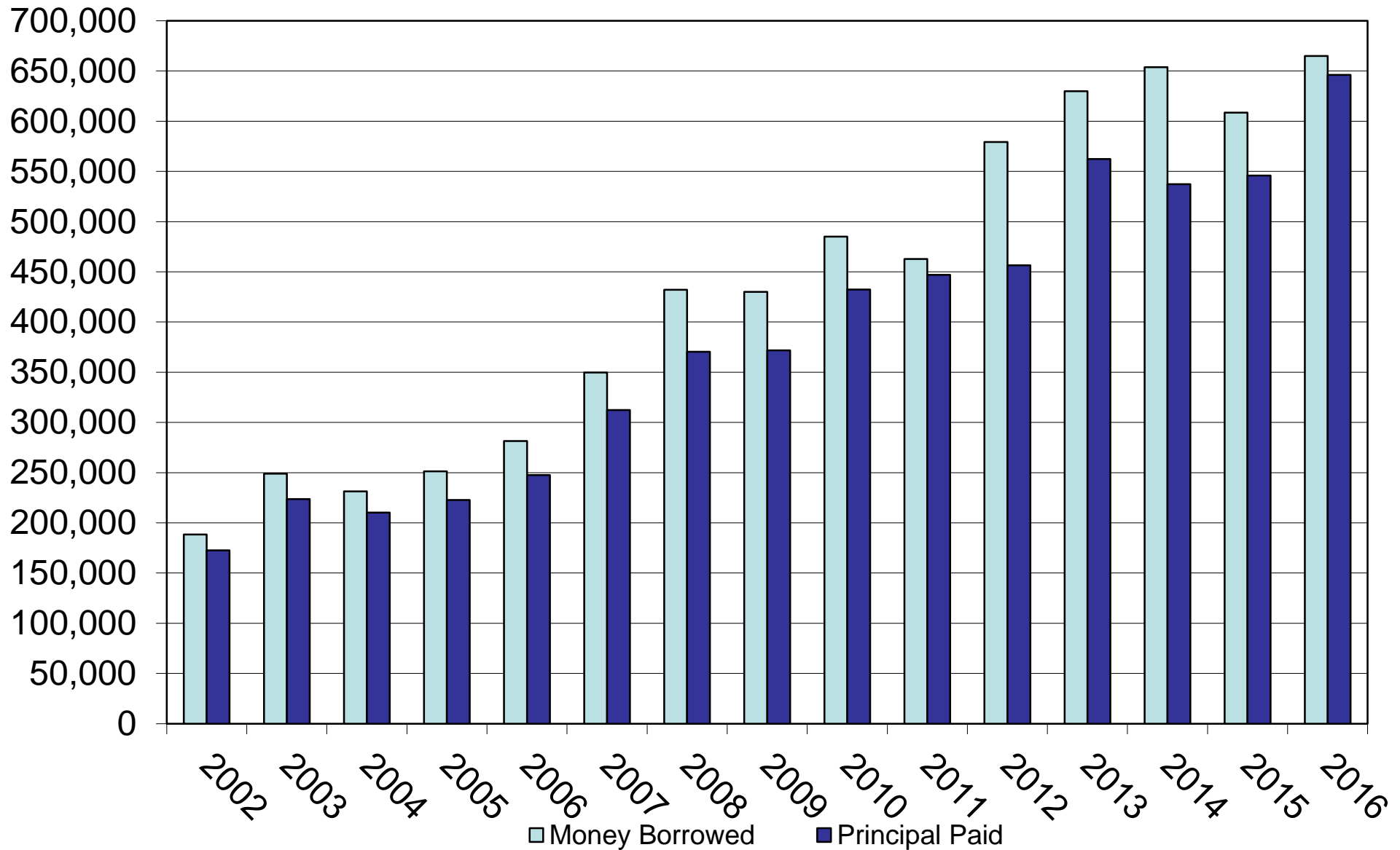
Gross Cash Farm Income

ND Farm Business Mgmt., Excluding RRV



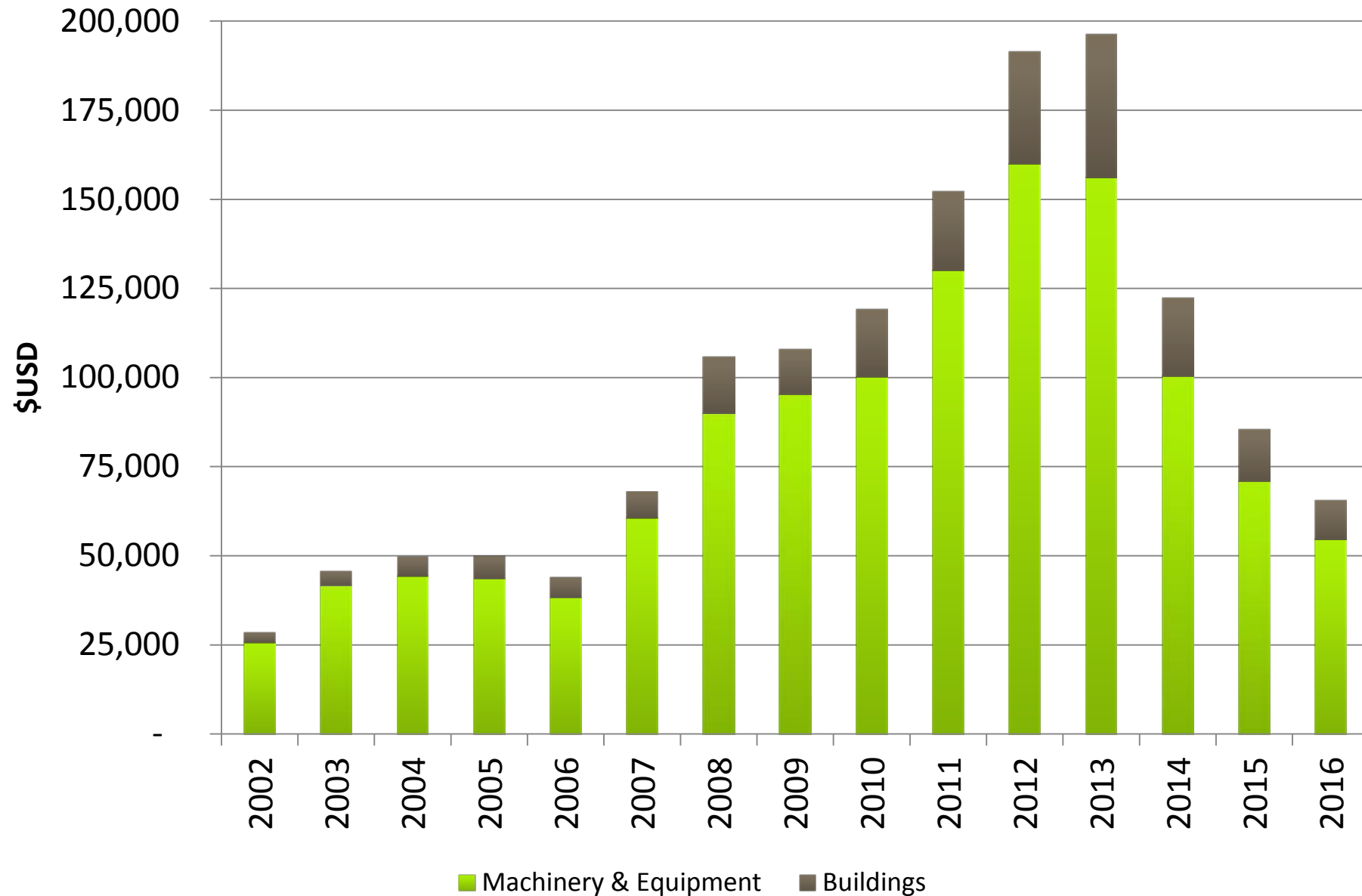
Money Borrowed and Principal Paid per Farm

ND Farm Business Management, Excluding RRV, 2002-2016



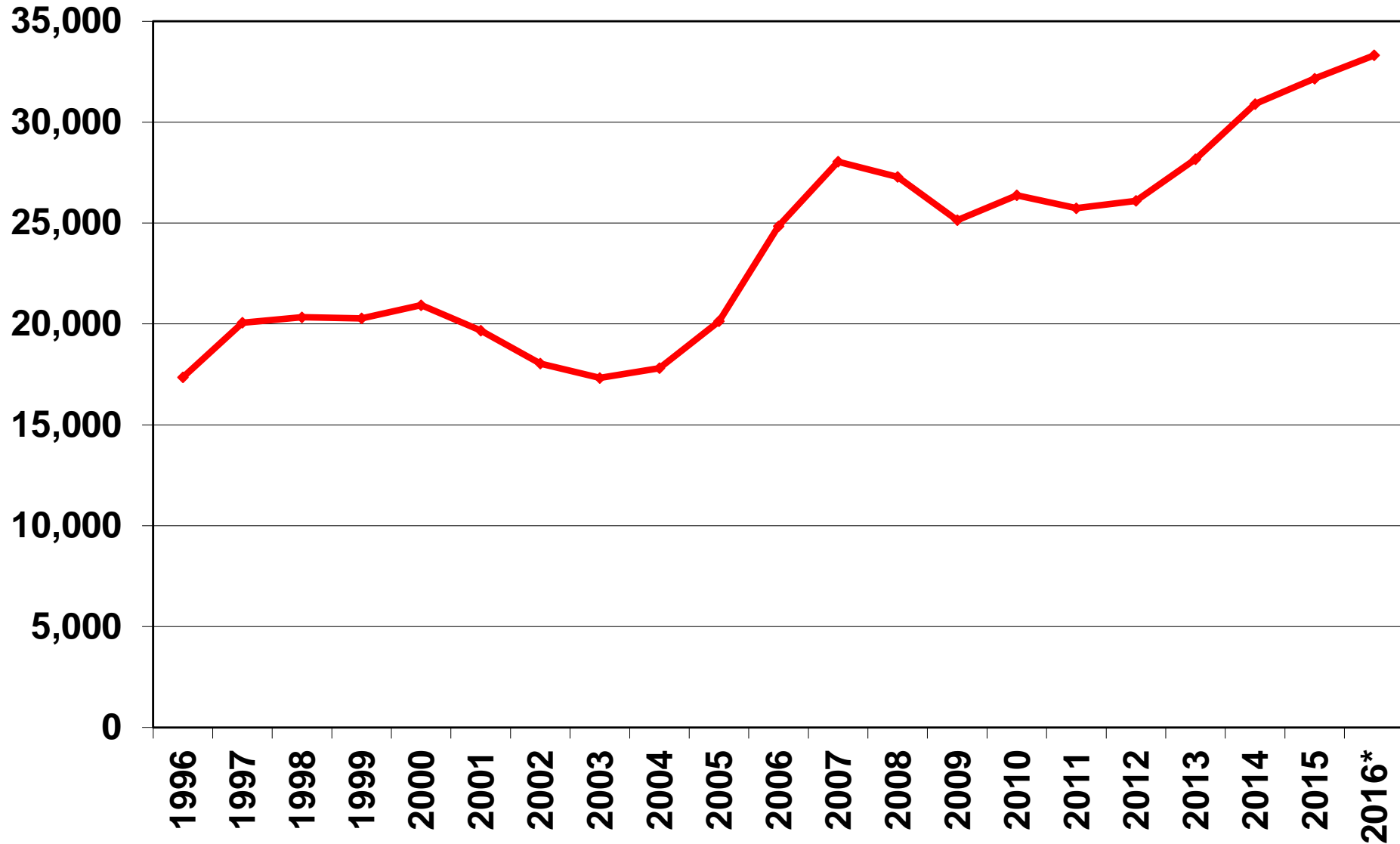
Purchases of Machinery, Equipment, and Buildings per Farm

ND Farm Business Management, Excluding RRV, 2002-2016



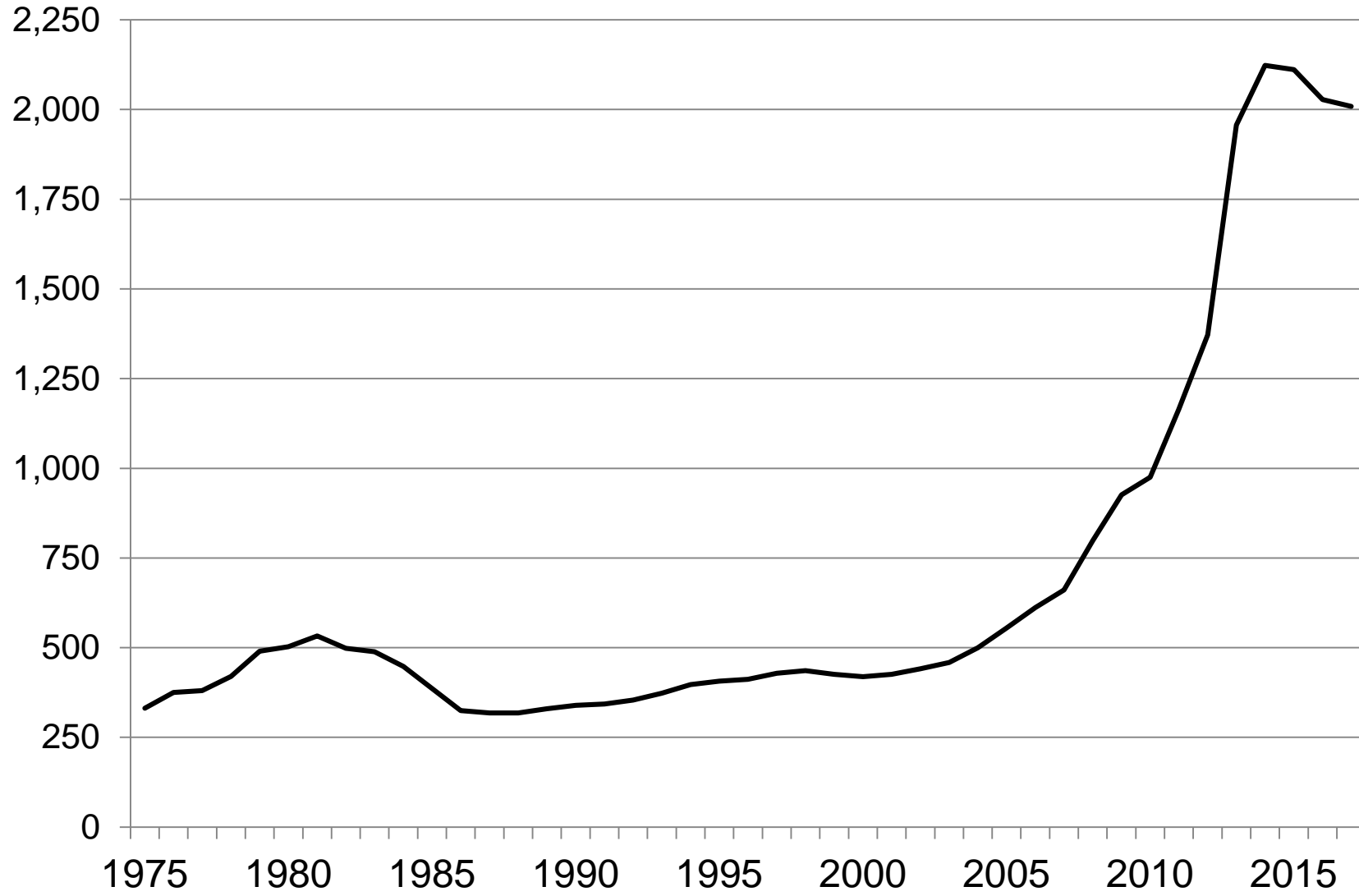
Interest Expense (Accrual), per Farm, 1996-2016

ND Farm Business Management Education, Excluding RRV



*Preliminary

N.D. Cropland Values



Crop Production Budgets (projections)

- Incorporate Yield Trends
- Expectations for Commodity Prices
- Inputs and Cost of Production
- Nine Regions of the state, up to 18 crops per region

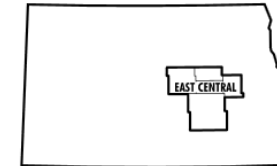
EC1658



FARM MANAGEMENT PLANNING GUIDE

January 2017

Projected 2017 Crop Budgets



East Central North Dakota

Andrew Swenson, Farm Management Specialist
Ron Haugen, Farm Management Specialist

Note: This region consists of five counties: Eddy, Foster, Griggs, Stutsman and Wells.

The 2017 crop budgets provide an estimate of revenues and costs for selected crops. Each set of budgets are developed for a multi-county region. There is considerable variation in soil type and productivity, weather conditions, as well as management and production practices within each region. Therefore, **THESE BUDGETS ARE ONLY INTENDED TO BE USED AS A GUIDE. EVERY INDIVIDUAL IS HIGHLY ENCOURAGED TO DEVELOP HIS/HER OWN BUDGETS!**

The profitability budget accounts for full economic opportunity costs for land and machinery investment, regardless of farm operator equity position. The bottom line is the return to labor and management. This is the expected "payment" to the producer for the labor and managerial efforts required by the crop enterprise. Each individual must make the decision whether it is sufficient.

The budget can be changed to conform to the more common definition of accounting profit (return to unpaid labor and management, and owner equity) by

replacing the machinery investment and land charge cost items with your per acre interest and rental expense of machinery and land, and real estate tax if land is owned.

The budget can be used for long run decisions if the revenues and costs are realistic for several years. (Crop prices, direct costs, and the land charge are best estimates for only the 2017 crop year, but crop yields are historic averages and machinery ownership costs are an average for the total length of ownership). If the budget shows a high return to labor and management, and is representative for several years, increased acreage and corresponding investment should be considered. However, if long-run returns to labor and management are unsatisfactory the best decision may be to exit the crop enterprise and employ the machinery and land investment, and labor and management, in a different enterprise or investment.

For short-run planning decisions you can omit the indirect costs if the land and machinery required to produce the different enterprises are in place. Simply compare the crop enterprises by calculating return over direct costs. Labor requirements and risk should also be considered. Insurance is not available for some crops.

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North Dakota State University, Fargo, ND

| 2017 East Central ND budgets | <u>Soybean</u> | <u>Wheat</u> |
|-------------------------------------|-----------------------|---------------------|
| Market Yield | 31 | 52 |
| Market Price | 8.85 | 5.05 |
| Market Revenue | 274.35 | 262.60 |
| -Seed | 65.75 | 15.31 |
| -Herbicides | 22.00 | 22.00 |
| -Fungicides | 0.00 | 17.00 |
| -Insecticides | 4.00 | 0.00 |
| -Fertilizer | 6.41 | 60.63 |
| -Crop Insurance | 13.50 | 13.10 |
| -Fuel & Lubrication | 10.14 | 12.03 |
| -Repairs | 18.61 | 19.62 |
| -Drying | 0.00 | 0.00 |
| -Miscellaneous | 4.75 | 1.50 |
| -Operating Interest | <u>3.45</u> | <u>3.83</u> |
| SUM OF DIRECT COSTS | 148.60 | 165.02 |
| -Misc. Overhead | 7.58 | 7.95 |
| -Machinery Depreciation | 21.91 | 22.52 |
| -Machinery Investment | 12.58 | 13.10 |
| -Land Charge | <u>67.00</u> | <u>67.00</u> |
| SUM OF INDIRECT COSTS | 109.08 | 110.56 |
| SUM OF LISTED COSTS | 257.68 | 275.59 |
| RETURN TO LABOR & MGMT | 16.67 | (12.99) |

Crop and Livestock Price Forecasts

- ▶ USDA - Farm Service Agency Loan Programs.
 - ▶ NDSU short term and long term crop and livestock price forecasts are used as input for the USDA-FSA loan programs.
 - ▶ Forecasts for 15 crops are prepared in early September, but are not made available to the general public
- ▶ Annual Agricultural Lenders Conference.
 - ▶ Short tem (single year) crop and livestock prices forecasts are prepared for conference attendees to aid with farmer and rancher loan applications.
 - ▶ Forecasts for 15 crops are prepared in mid-October and made available to the public after the conference is completed
 - ▶ Please see handout for comparison of crop price forecasts (approximately 12 months forward) with actual average prices received by North Dakota farmers.

Crop and Livestock Price Forecasts

- ▶ Projected Crop Budgets.
 - ▶ Short term (single year) crop price forecasts are prepared and included in the projected crop budgets each year.
 - ▶ Forecasts are prepared in mid-December and the crop budgets are released to the public in mid or late December.
- ▶ Plotting the Course.
 - ▶ Long term (five years forward) crop and livestock prices forecasts are prepared to help farm/ranch managers analyze long term investments (tilling, machinery, breeding stock, etc.)
 - ▶ The Food and Agricultural Policy Research Institute (FAPRI), at the University of Missouri, forecasts national average crop prices. These forecasts are used as the base for estimating the North Dakota crop prices.

Plotting a Course 2017

Short-term and Long-term Agricultural Planning Prices for North Dakota 2017

Ron Haugen
Farm Management Specialist

Tim Petry
Livestock Economist

Frayne Olson
Crop Marketing Specialist

Planning for the future can be a very frustrating process but one that typically pays high dividends. For most farm and ranch managers, developing realistic commodity price expectations is one of the most difficult and complex tasks of the planning process. With the downturn in commodity prices, planning is more critical than ever. To ease the burden of forecasting planning prices, the NDSU Extension Service has prepared a summary of projected short- and long-term planning prices.

The estimated short-term planning prices should be used as a guide in setting price expectations for 2017 production. These planning prices can be used for preparing annual enterprise budgets and annual whole-farm cash-flow projections.

The short-term planning prices should **not** be used for planning capital purchases or expansion alternatives that extend beyond the next production year. Unfortunately, the use of short-term planning prices to make long-term decisions is common. This practice is not

plans that affect the farm or ranch business for more than one year. Both individual yearly price forecasts and long-term average prices are presented.

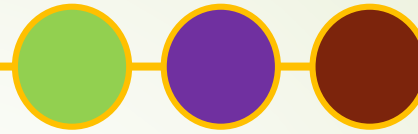
The long-term crop planning prices were derived from annual average price forecasts made by the Food and Agricultural Policy Research Institute (FAPRI). The U.S. price estimates reported in the 2016 Baseline Briefing Paper, November 2016, were adjusted using historical relationships to reflect North Dakota farm gate prices.

Historical prices are reported for reference. This information can be a valuable reminder of past price fluctuations and trends. Prices for 2016 are averages to date.

The historical crop prices were obtained from the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) "2016 North Dakota Agricultural Statistics Service publication No. 85." Historical milk prices are from the Food and Agricultural Policy Research Institute

Existing Materials

- Commodity price forecasting available to the public
- NDSU near-term price estimates
- "Localized" longer-term projections from FAPRI
- FAPRI one of only two sources of longer-term ag commodity price forecasts



Cattle Situation and Outlook

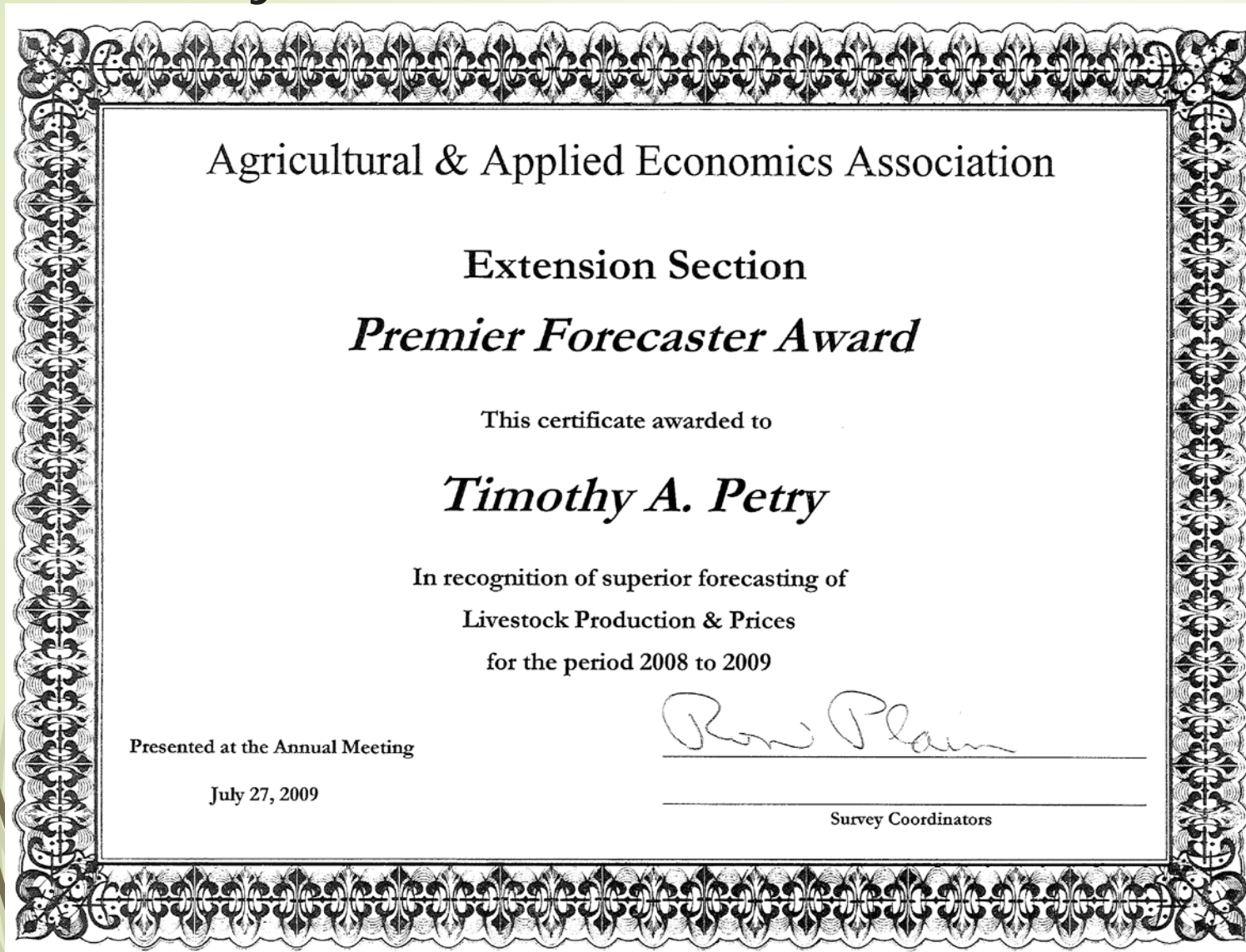
- Tim Petry, Livestock Economist
- www.ndsu.edu/livestockeconomics
 - July 21, 2017

Existing Materials

- Examines supply and disappearance in cattle markets
- Produced annually, and distributed to the public

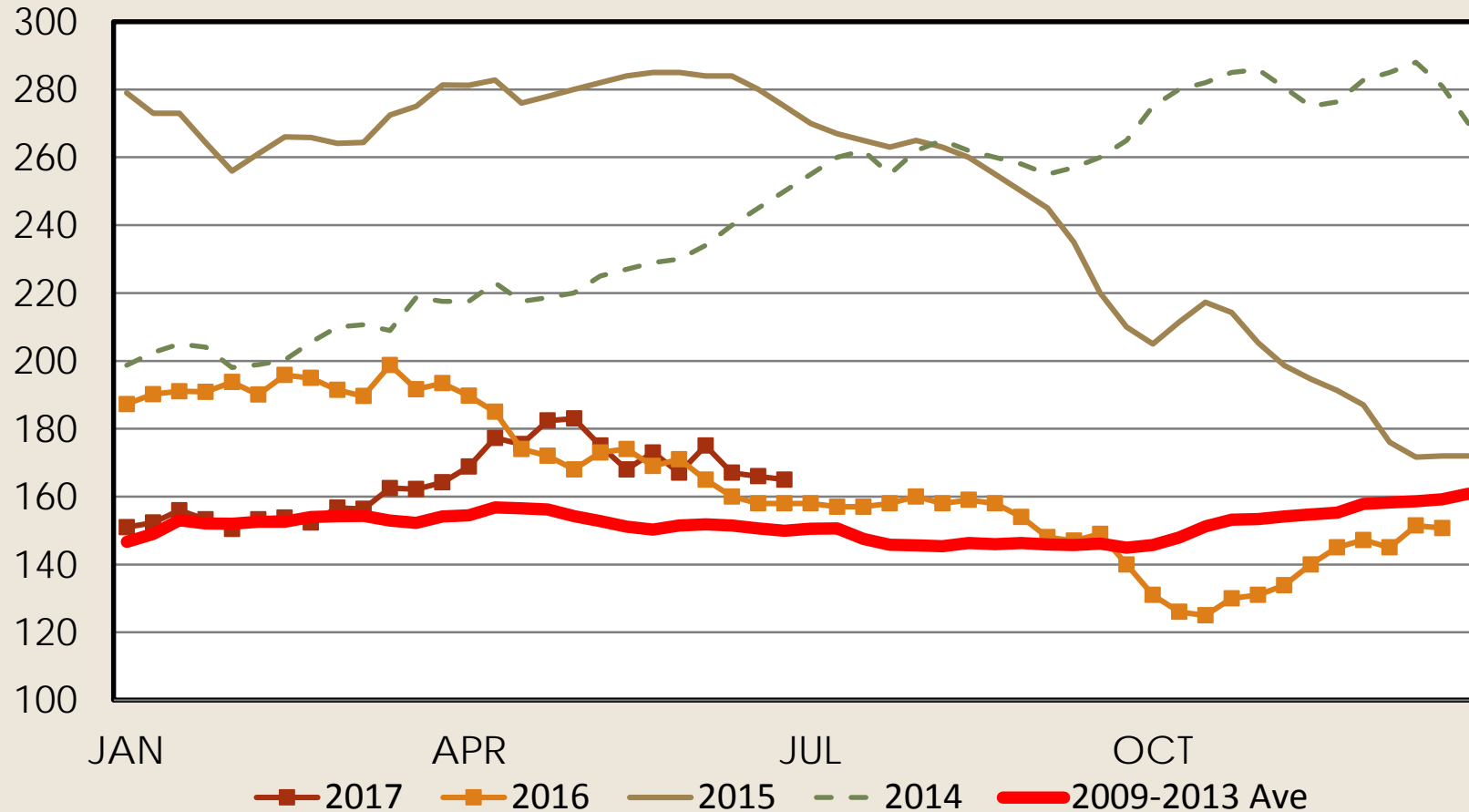
Outlook_07-21-2017.pptx

Mr. Petry has won this award 13 times



NDSU is **one of only two universities** asked by *Bloomberg News* to provide pre-report estimates of USDA-NASS monthly *Cattle on Feed* and semi-annual *CATTLE* inventory reports.

MED. FRAME #1 STEER CALF PRICES (Calves Sold After Weaning) 550-600 Pounds, N.D., Weekly

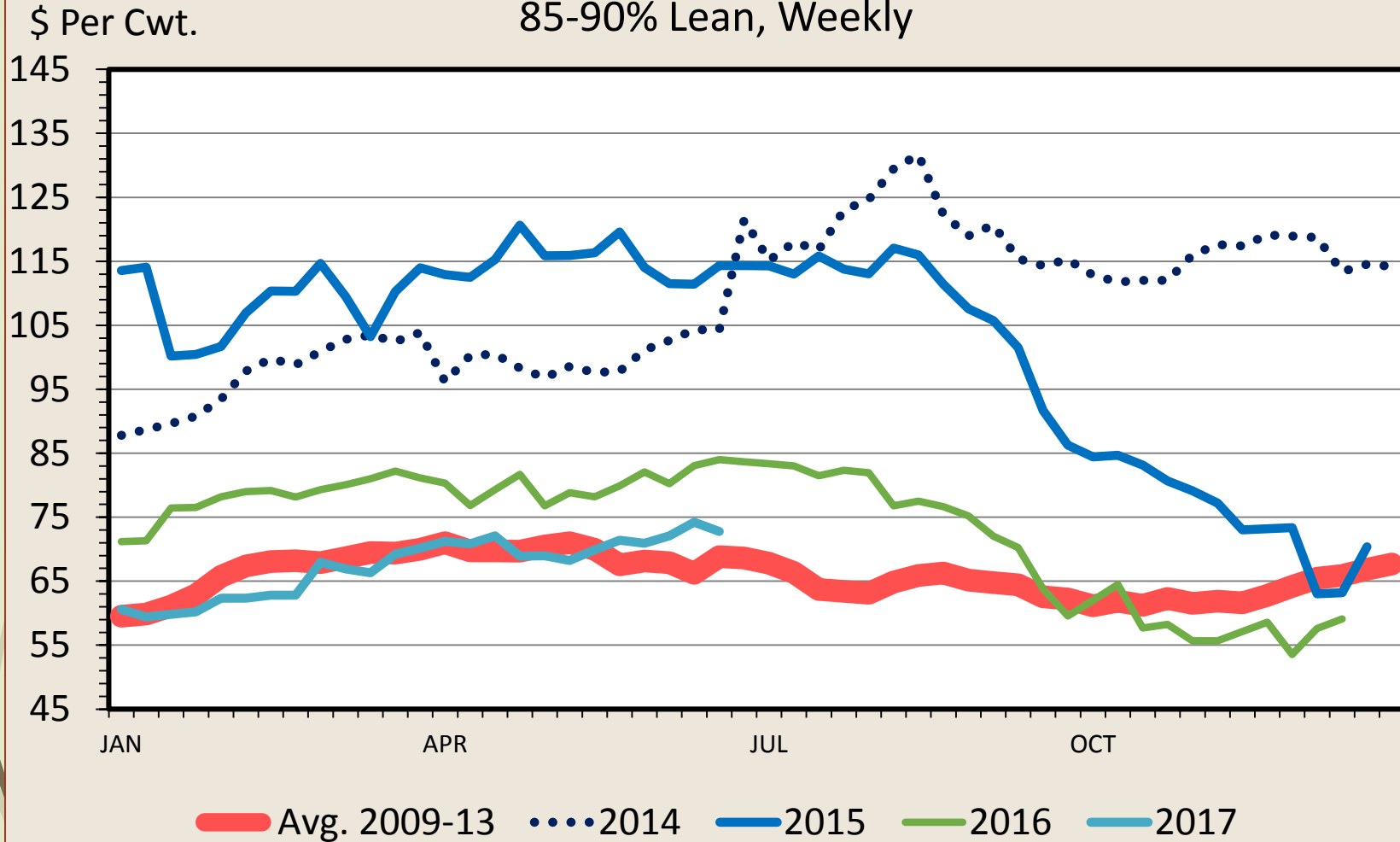


Take Aways

- High prices in 2014 and 2015 given way to lower prices
- 2017 prices tracking similar to last year, and similar to 2008 to 2012 average

SLAUGHTER COW PRICES

85-90% Lean, Weekly



Take Aways

- Prices show similar pattern to other key beef prices.
- Current prices to date are near the 2009-2013 average, lower than 2014-2016

Comparison of NDSU Projected Commodity Prices and Actual Prices Received 2012 through 2017

Dr. Frayne Olson
Crop Marketing Specialist
NDSU Extension Service
Department of Agribusiness and Applied Economics
North Dakota State University

NDSU NORTH DAKOTA
STATE UNIVERSITY

**Projected vs Actual North Dakota Marketing Year Average Prices Received by Farmers
(Projections made approximately 12 months in forward)**

| Crop | 2012/2013 | | 2013/2014 | | 2014/2015 | | 2015/2016 | | 2016/2017 | | 2017/2018 | |
|-----------------------------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------------------|
| | Projected | Actual | Projected | Actual | Projected | Actual | Projected | Actual | Projected | Actual | Projected | Harvest* |
| Hard Red Spring Wheat (bu.) | \$ 7.40 | \$ 8.19 | \$ 9.00 | \$ 6.50 | \$ 7.00 | \$ 5.42 | \$ 6.00 | \$ 5.49 | \$ 5.30 | \$ 4.40 | \$ 5.00 | \$ 6.71 to \$ 7.19 |
| Hard Red Winter Wheat (bu.) | \$ 6.40 | \$ 7.55 | \$ 7.80 | \$ 6.43 | \$ 6.00 | \$ 4.47 | \$ 5.50 | \$ 3.69 | \$ 4.50 | \$ 3.35 | \$ 4.30 | \$ 3.66 to \$ 4.01 |
| Durum Wheat (bu.) | \$ 8.50 | \$ 7.86 | \$ 9.40 | \$ 7.16 | \$ 7.30 | \$ 8.99 | \$ 7.00 | \$ 6.62 | \$ 6.00 | \$ 5.85 | \$ 5.75 | \$ 8.50 to \$ 9.00 |
| Malt Barley (bu.) | \$ 6.20 | \$ 6.72 | \$ 6.60 | \$ 6.36 | \$ 5.30 | \$ 5.53 | \$ 4.50 | \$ 5.09 | \$ 4.25 | \$ 4.82 | \$ 4.00 | \$ 3.00 to \$ 3.50 |
| Feed Barley (bu.) | \$ 4.15 | \$ 5.36 | \$ 4.90 | \$ 3.86 | \$ 3.60 | \$ 3.06 | \$ 2.80 | \$ 2.70 | \$ 2.90 | \$ 2.60 | \$ 2.70 | \$ 1.80 to \$ 2.40 |
| Corn (bu.) | \$ 5.00 | \$ 6.46 | \$ 5.65 | \$ 3.91 | \$ 4.25 | \$ 3.34 | \$ 3.40 | \$ 3.28 | \$ 3.60 | \$ 3.15 | \$ 3.45 | \$ 2.94 to \$ 3.38 |
| Soybean (bu.) | \$12.00 | \$14.00 | \$13.80 | \$12.40 | \$11.00 | \$9.49 | \$8.50 | \$8.49 | \$8.00 | \$9.05 | \$8.75 | \$ 8.87 to \$ 9.27 |
| Oil Sunflower (cwt.) | \$ 23.00 | \$ 24.60 | \$ 26.00 | \$ 20.30 | \$ 21.00 | \$ 19.50 | \$ 16.50 | \$ 19.10 | \$ 15.00 | \$ 17.40 | \$ 17.00 | \$ 14.55 to \$ 15.40 |
| Non-Oil Sunflower (cwt.) | \$ 36.00 | \$ 28.10 | \$ 36.00 | \$ 30.80 | \$ 31.00 | \$ 31.50 | \$ 23.50 | \$ 27.30 | \$ 21.00 | \$ 26.20 | \$ 23.50 | \$ 18.50 |
| Canola (cwt.) | \$ 21.00 | \$ 26.50 | \$ 25.00 | \$ 20.60 | \$ 20.00 | \$ 16.90 | \$ 16.00 | \$ 15.60 | \$ 14.00 | \$ 16.40 | \$ 16.00 | \$ 16.52 to \$ 16.90 |

**Projected vs Actual North Dakota Marketing Year Average Prices Received by Farmers
(Projections made approximately 12 months in forward)**

| Crop | 2012/2013 | | 2013/2014 | | 2014/2015 | | 2015/2016 | | 2016/2017 | | 2017/2018 | |
|---------------------------------|-----------|----------|-----------|----------|-----------|----------|-----------|---------|-----------|---------|-----------|----------------------|
| | Projected | Actual | Projected | Actual | Projected | Actual | Projected | Actual | Projected | Actual | Projected | Harvest* |
| Flax (bu.) | \$ 12.00 | \$ 13.80 | \$ 13.80 | \$ 13.80 | \$ 11.00 | \$ 11.80 | \$ 11.00 | \$ 8.95 | \$ 8.00 | \$ 8.26 | \$ 9.00 | \$ 8.36 to \$ 8.90 |
| Oats (bu.) | \$ 3.15 | \$ 3.36 | \$ 3.80 | \$ 3.14 | \$ 3.00 | \$ 2.42 | \$ 2.50 | \$ 2.00 | \$ 2.30 | \$ 2.25 | \$ 2.20 | \$ 2.25 |
| Dry Beans - Pinto & Navy (cwt.) | \$37.00 | \$35.10 | \$30.00 | \$35.30 | \$32.00 | \$28.20 | \$25.00 | \$24.00 | \$22.00 | \$27.60 | \$22.00 | \$ 26.00 to \$ 27.00 |
| Field Peas (bu.) | \$ 7.50 | \$ 9.54 | \$ 9.00 | \$ 8.88 | \$ 7.50 | \$ 7.32 | \$ 6.00 | \$ 8.10 | \$ 5.75 | N.A. | \$ 6.00 | \$ 5.55 to \$ 7.00 |
| Lentil (cwt.) | \$26.00 | \$18.70 | \$20.00 | \$17.90 | \$18.00 | \$23.50 | \$16.00 | \$28.90 | \$19.00 | \$27.80 | \$23.00 | \$ 23.00 to \$ 27.00 |

Projected prices prepared in Mid-October for the North Dakota Agricultural Lenders Conference. These forecasts are placed in the public domain after the conference is completed.

Actual Prices Received by Farmers are collected and published by the United States Department of Agriculture - National Agricultural Statistics Service.

Hard Red Spring Wheat, Durum, Malt Barley, Feed Barley, Oats, Flax and Canola Marketing Year = July 1 through June 30

Corn, Soybean, Oil Sunflower, Non-Oil Sunflower, Dry Beans, Field Peas and Lentil Marketing Year = September 1 through August 31

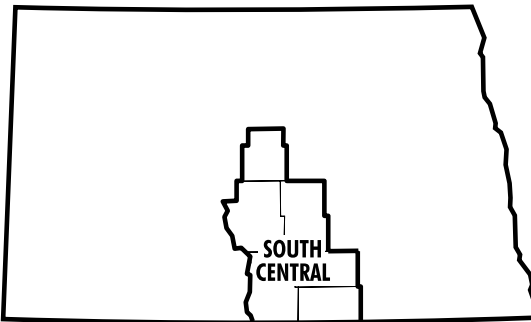
Harvest* = Range of prices offered for harvest delivery by a sample of North Dakota grain elevators (closing prices as of 07-21-17)



FARM MANAGEMENT PLANNING GUIDE

January 2017

Projected 2017 Crop Budgets



South Central North Dakota

Andrew Swenson, Farm Management Specialist
Ron Haugen, Farm Management Specialist

Note: This region consists of six counties: Burleigh, Emmons, Kidder, Logan, McIntosh and Sheridan.

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The budget can be changed to conform to the more common definition of accounting profit (return to unpaid labor and management, and owner equity) by

replacing the machinery investment and land charge cost items with your per acre interest and rental expense of machinery and land, and real estate tax if land is owned.

The budget can be used for long run decisions if the revenues and costs are realistic for several years. (Crop prices, direct costs, and the land charge are best estimates for only the 2017 crop year, but crop yields are historic averages and machinery ownership costs are an average for the total length of ownership). If the budget shows a high return to labor and management, and is representative for several years, increased acreage and corresponding investment should be considered. However, if long-run returns to labor and management are unsatisfactory the best decision may be to exit the crop enterprise and employ the machinery and land investment, and labor and management, in a different enterprise or investment.

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SERVICE

North Dakota State University, Fargo, ND

The budget can be used to estimate cashflow by making a few modifications. Machinery depreciation should be omitted and the machinery investment number replaced with your per acre principal and interest payment on machinery debt. For owned land, the land charge should be replaced with your per acre real estate tax and principal and interest payment on land debt.

The 2014 Farm Bill initiated the Price Loss Coverage (PLC) and Agricultural Risk Coverage (ARC) support programs. **PLC and ARC payments** have been omitted from the budgets because those payments, if any, are tied to historic farm program base acres, not to current crop selection or production.

Primary Assumptions:

Crops are planted on dryland recrop ground. Costs of moving crop to local market/storage are included.

The budgets for the South West, North West, South Central and North Central regions typically represent production systems where soil disturbance only occurs at seeding.

Market Price: Best estimates of NDSU extension economists. The greater of projected market price and marketing loan rate is used.

Market Yields: Average yield for the 7 year period 2009-2015, after the low and high yield years are removed. Yields for safflower, yellow mustard, buckwheat, millet, rye and chickpeas are from NDSU extension agronomists and industry sources.

Fertilizer: Cost of fertilizer applied, based on soil test, to meet yield goal of 130% of market yield. N fertilizer can be reduced if previous crop was soybean, dry bean, field peas or lentil.

Soil test - recrop:
 Nitrogen - 35 lb
 Phosphorus - 9 ppm
 Potassium - 328 ppm

Fertilizer prices:
 Nitrogen - .35/lb
 Phosphorus - .37/lb
 Potassium - .25/lb

Seed Prices:

| | |
|-----------------|-----------------|
| Spring Wheat | 8.75/bu |
| Durum | 12.00/bu |
| Barley | 7.75/bu |
| Corn GM | 2.65/thou.kern. |
| Soybean RR2 | .33/thou.kern. |
| Dry Beans | .68/lb |
| Oil Sunflower | 1.50/thou.kern. |
| Conf. Sunflower | 2.60/thou.kern. |
| Canola | 11.00/lb |
| Flax | 12.50/bu |
| Field Peas | 13.75/bu |
| Oats | 5.50/bu |
| Lentils | .57/lb |
| Mustard | 2.00/lb |
| Buckwheat | .60/lb |
| Millet | .25/lb |
| Winter Wheat | 7.50/bu |
| Rye | 7.75/bu |

Fuel prices:

| | |
|--------|----------|
| Diesel | 1.85/gal |
| Gas | 2.10/gal |

Lubrication charge: 15% of fuel cost

Crop Insurance: Revenue Protection was used for all wheat, barley, soybeans, corn, canola, sunflowers and dry beans. Yield Protection or APH insurance was used for other crops. A 70% coverage and optional units were used, except corn for which 80% coverage and enterprise units were assumed.

Miscellaneous: soil testing, machinery rent and custom work.

Operating Interest: Direct costs charged 4.75% interest for 6 month period.

Misc. Overhead: Machinery housing and insurance at .5% and .85%, respectively, of average machinery investment. Also, liability insurance and license fees of trucks. In addition, \$3.50 per acre is assumed for general farm utilities, farm publications, meetings, dues, income tax preparation, legal fees, etc.

Land charge = average cash rent.

Machinery investment: 4.5% real interest rate, over the years of machine ownership, is charged on average machinery investment. The real, or inflation adjusted, rate is the commercial rate minus the inflation rate. Ave. mach. investment = (Purchase price + Disposal price)/2

Depreciation = (Purchase price - disposal price / years ownership)

Spring Wheat

Durum

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|----------------|-----------------|---------------|-----------------|
| Market Yield | 44 | _____ | 45 | _____ |
| Market Price | 5.02 | _____ | 5.77* | _____ |
| MARKET INCOME | 220.88 | _____ | 259.65 | _____ |
| DIRECT COSTS | | | | |
| -Seed | 14.88 | _____ | 21.60 | _____ |
| -Herbicides | 25.20 | _____ | 25.20 | _____ |
| -Fungicides** | 9.00 | _____ | 9.00 | _____ |
| -Insecticides*** | 0.00 | _____ | 0.00 | _____ |
| -Fertilizer | 47.70 | _____ | 49.07 | _____ |
| -Crop Insurance | 12.80 | _____ | 13.50 | _____ |
| -Fuel & Lubrication | 9.41 | _____ | 9.45 | _____ |
| -Repairs | 17.72 | _____ | 17.75 | _____ |
| -Drying | 0.00 | _____ | 0.00 | _____ |
| -Miscellaneous | 7.50 | _____ | 7.50 | _____ |
| -Operating Interest | 3.43 | _____ | 3.64 | _____ |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED DIRECT COSTS | 147.64 | _____ | 156.71 | _____ |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.45 | _____ | 7.47 | _____ |
| -Machinery Depreciation | 20.45 | _____ | 20.50 | _____ |
| -Machinery Investment | 11.71 | _____ | 11.74 | _____ |
| -Land Charge | 58.00 | _____ | 58.00 | _____ |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED INDIRECT COSTS | 97.62 | _____ | 97.71 | _____ |
| SUM OF ALL LISTED COSTS | 245.26 | _____ | 254.42 | _____ |
| RETURN TO LABOR & MANAGEMENT | (24.38) | _____ | 5.23 | _____ |
| LISTED COSTS PER BUDGET UNIT | (bu) | | (bu) | |
| -Direct Costs | 3.36 | _____ | 3.48 | _____ |
| -Indirect Costs | 2.22 | _____ | 2.17 | _____ |
| -Total Costs | 5.57 | _____ | 5.65 | _____ |

Wheat notes:

*Durum price is for milling quality. There is risk of lower quality and lower price.

**Includes seed treatment, an early season foliar fungicide and a late season fungicide. Prothioconazole or metconazole containing products, for fusarium head blight (scab) control are recommended when conditions are favorable for infection.

***Cereal grain aphid insecticide would cost about \$4.

Malting Barley

Corn Grain

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|---------------|-----------------|----------------|-----------------|
| Market Yield | 67 | _____ | 100 | _____ |
| Market Price | 4.00* | _____ | 3.30 | _____ |
| MARKET INCOME | 268.00 | _____ | 330.00 | _____ |
| DIRECT COSTS | | | | |
| -Seed | 12.40 | _____ | 76.85* | _____ |
| -Herbicides | 23.70 | _____ | 20.00 | _____ |
| -Fungicides | 9.00** | _____ | 0.00 | _____ |
| -Insecticides | 0.00 | _____ | 0.00 | _____ |
| -Fertilizer | 44.27 | _____ | 56.97 | _____ |
| -Crop Insurance | 14.30 | _____ | 17.00 | _____ |
| -Fuel & Lubrication | 10.41 | _____ | 13.80 | _____ |
| -Repairs | 18.36 | _____ | 21.39 | _____ |
| -Drying | 0.00 | _____ | 18.00 | _____ |
| -Miscellaneous | 7.50 | _____ | 7.50 | _____ |
| -Operating Interest | 3.32 | _____ | 5.50 | _____ |
| SUM OF LISTED DIRECT COSTS | 143.26 | ===== | 237.01 | ===== |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.87 | _____ | 9.59 | _____ |
| -Machinery Depreciation | 21.59 | _____ | 31.00 | _____ |
| -Machinery Investment | 12.32 | _____ | 17.17 | _____ |
| -Land Charge | 58.00 | _____ | 58.00 | _____ |
| SUM OF LISTED INDIRECT COSTS | 99.77 | ===== | 115.76 | ===== |
| SUM OF ALL LISTED COSTS | 243.04 | _____ | 352.78 | _____ |
| RETURN TO LABOR & MANAGEMENT | 24.96 | _____ | (22.78) | _____ |
| LISTED COSTS PER BUDGET UNIT | (bu) | | (bu) | |
| -Direct Costs | 2.14 | _____ | 2.37 | _____ |
| -Indirect Costs | 1.49 | _____ | 1.16 | _____ |
| -Total Costs | 3.63 | _____ | 3.53 | _____ |

Barley notes:

*There is risk of not making malting barley quality. Use \$2.70 price for feed barley quality.

**Includes seed treatment, an early season foliar fungicide and a late season fungicide. Prothioconazole or metconazole containing products, for fusarium head blight (scab) control are recommended when conditions are favorable for infection.

Corn notes:

*GM corn with herbicide tolerance and above ground insect control traits. Cost includes insecticide seed treatment for wireworm, rootworm, white grub and suppression of cutworm.

Soybeans

Drybeans

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|---------------|-----------------|---------------|-----------------|
| Market Yield | 29 | _____ | 1520 | _____ |
| Market Price | 8.80 | _____ | 0.24 | _____ |
| MARKET INCOME | 255.20 | _____ | 364.80 | _____ |
| DIRECT COSTS | | | | |
| -Seed | 65.75* | _____ | 56.10 | _____ |
| -Herbicides | 20.00 | _____ | 45.80* | _____ |
| -Fungicides | 0.00 | _____ | 20.00** | _____ |
| -Insecticides | 4.00** | _____ | 0.00 | _____ |
| -Fertilizer | 4.05 | _____ | 29.87 | _____ |
| -Crop Insurance | 19.60 | _____ | 18.80 | _____ |
| -Fuel & Lubrication | 8.76 | _____ | 11.89 | _____ |
| -Repairs | 17.16 | _____ | 21.62 | _____ |
| -Drying | 0.00 | _____ | 0.00 | _____ |
| -Miscellaneous | 4.75 | _____ | 12.75 | _____ |
| -Operating Interest | 3.42 | _____ | 5.15 | _____ |
| SUM OF LISTED DIRECT COSTS | 147.49 | ===== | 221.98 | ===== |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.21 | _____ | 8.34 | _____ |
| -Machinery Depreciation | 20.47 | _____ | 26.93 | _____ |
| -Machinery Investment | 11.40 | _____ | 15.28 | _____ |
| -Land Charge | 58.00 | _____ | 58.00 | _____ |
| SUM OF LISTED INDIRECT COSTS | 97.08 | ===== | 108.55 | ===== |
| SUM OF ALL LISTED COSTS | 244.58 | _____ | 330.53 | _____ |
| RETURN TO LABOR & MANAGEMENT | 10.62 | _____ | 34.27 | _____ |
| LISTED COSTS PER BUDGET UNIT | (bu) | | (lb) | |
| -Direct Costs | 5.09 | _____ | 0.15 | _____ |
| -Indirect Costs | 3.35 | _____ | 0.07 | _____ |
| -Total Costs | 8.43 | _____ | 0.22 | _____ |

Soybean notes:

*RR2 (glyphosate) resistant soybeans. The cost includes \$8 for inoculant and fungicide treatment in addition to seed expense.

**Soybean aphid and/or spider mite insecticide

Drybean notes:

Under the 2014 farm bill government payment reductions can occur if drybean plantings exceed non-base acres plus 15 percent of base acres (35 percent if enrolled in ARC-IC).

*Includes dessicant prior to straight cutting

**Fungicide for white mold. Fungicide for rust at \$4-\$12 plus application maybe necessary.

Oil Sunflower Confection Sunflower

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|----------------|-----------------|---------------|-----------------|
| Market Yield | 1480 | | 1480 | |
| Market Price | 0.171 | | 0.221 | |
| MARKET INCOME | 253.08 | | 327.08 | |
| DIRECT COSTS | | | | |
| -Seed | 33.00 | | 46.80 | |
| -Herbicides | 33.20 | | 35.30 | |
| -Fungicides | 0.00* | | 0.00* | |
| -Insecticides | 6.00** | | 12.00** | |
| -Fertilizer | 28.47 | | 28.47 | |
| -Crop Insurance | 13.40 | | 22.13 | |
| -Fuel & Lubrication | 10.06 | | 10.06 | |
| -Repairs | 17.60 | | 17.60 | |
| -Drying | 4.44 | | 4.44 | |
| -Miscellaneous | 15.50 | | 23.50 | |
| -Operating Interest | 3.84 | | 4.76 | |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED DIRECT COSTS | 165.50 | | 205.05 | |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.86 | | 7.86 | |
| -Machinery Depreciation | 22.10 | | 22.10 | |
| -Machinery Investment | 12.99 | | 12.99 | |
| -Land Charge | 58.00 | | 58.00 | |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED INDIRECT COSTS | 100.96 | | 100.96 | |
| SUM OF ALL LISTED COSTS | 266.46 | | 306.00 | |
| RETURN TO LABOR & MANAGEMENT | (13.38) | | 21.08 | |
| LISTED COSTS PER BUDGET UNIT | (lb) | | (lb) | |
| -Direct Costs | 0.11 | | 0.14 | |
| -Indirect Costs | 0.07 | | 0.07 | |
| -Total Costs | 0.18 | | 0.21 | |

Oil Sunflower notes:

*Fungicide for rust would cost \$4 plus application.

**One spraying for head feeding insects (red seed weevil, lygus bug and banded moths). Custom application cost of \$8 is under "Miscellaneous." Insecticide treatment for cutworms would cost about \$5 plus application (usually tank mixed with herbicide).

Confection Sunflower notes:

*Fungicide for rust would cost \$4 plus application.

**Two sprayings for head feeding insects (red seed weevil, lygus bug and banded moths) at about \$6 per application. Each custom application cost of \$8 is under "Miscellaneous." Insecticide treatment for cutworms would cost about \$5 plus application (usually tank mixed with herbicide).

Canola

Flax

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|---------------|-----------------|----------------|-----------------|
| Market Yield | 1710 | _____ | 18 | _____ |
| Market Price | 0.16 | _____ | 8.55 | _____ |
| MARKET INCOME | 273.60 | _____ | 153.90 | _____ |
| DIRECT COSTS | | | | |
| -Seed | 55.00* | _____ | 11.25 | _____ |
| -Herbicides | 22.50 | _____ | 28.50 | _____ |
| -Fungicides | 0.00** | _____ | 0.00 | _____ |
| -Insecticides | 0.00 | _____ | 0.00 | _____ |
| -Fertilizer | 57.65 | _____ | 16.76 | _____ |
| -Crop Insurance | 13.20 | _____ | 6.60 | _____ |
| -Fuel & Lubrication | 8.91 | _____ | 8.13 | _____ |
| -Repairs | 16.63 | _____ | 16.61 | _____ |
| -Drying | 0.00 | _____ | 0.00 | _____ |
| -Miscellaneous | 7.50 | _____ | 1.50 | _____ |
| -Operating Interest | 4.31 | _____ | 2.12 | _____ |
| SUM OF LISTED DIRECT COSTS | 185.69 | ===== | 91.47 | ===== |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.25 | _____ | 6.92 | _____ |
| -Machinery Depreciation | 19.65 | _____ | 18.83 | _____ |
| -Machinery Investment | 11.43 | _____ | 10.79 | _____ |
| -Land Charge | 58.00 | _____ | 58.00 | _____ |
| SUM OF LISTED INDIRECT COSTS | 96.32 | ===== | 94.53 | ===== |
| SUM OF ALL LISTED COSTS | 282.01 | _____ | 186.00 | _____ |
| RETURN TO LABOR & MANAGEMENT | (8.41) | _____ | (32.10) | _____ |
| LISTED COSTS PER BUDGET UNIT | (lb) | | (bu) | |
| -Direct Costs | 0.11 | _____ | 5.08 | _____ |
| -Indirect Costs | 0.06 | _____ | 5.25 | _____ |
| -Total Costs | 0.16 | _____ | 10.33 | _____ |

Canola notes:

*Cost includes insecticide seed treatment for flea beetles.

**Fungicide for white mold would cost about \$18 plus application.

Field Peas

Oats

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|---------------|-----------------|----------------|-----------------|
| Market Yield | 37 | | 67 | |
| Market Price | 6.24 | | 2.16 | |
| MARKET INCOME | 230.88 | | 144.72 | |
| DIRECT COSTS | | | | |
| -Seed | 41.25 | | 11.00 | |
| -Herbicides | 35.00 | | 10.25 | |
| -Fungicides | 1.50 | | 0.00 | |
| -Insecticides | 0.00* | | 0.00 | |
| -Fertilizer | 7.69 | | 36.24 | |
| -Crop Insurance | 8.10 | | 8.80 | |
| -Fuel & Lubrication | 9.94 | | 10.82 | |
| -Repairs | 18.78 | | 18.37 | |
| -Drying | 0.00 | | 0.00 | |
| -Miscellaneous | 9.25 | | 7.50 | |
| -Operating Interest | 3.12 | | 2.45 | |
| SUM OF LISTED DIRECT COSTS | 134.63 | | 105.43 | |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.56 | | 8.11 | |
| -Machinery Depreciation | 22.55 | | 22.09 | |
| -Machinery Investment | 12.30 | | 13.14 | |
| -Land Charge | 58.00 | | 58.00 | |
| SUM OF LISTED INDIRECT COSTS | 100.40 | | 101.35 | |
| SUM OF ALL LISTED COSTS | 235.03 | | 206.78 | |
| RETURN TO LABOR & MANAGEMENT | (4.15) | | (62.06) | |
| LISTED COSTS PER BUDGET UNIT | | | | |
| | (bu) | | (bu) | |
| -Direct Costs | 3.64 | | 1.57 | |
| -Indirect Costs | 2.71 | | 1.51 | |
| -Total Costs | 6.35 | | 3.09 | |

Field Pea notes:

Green pea price is expected to be about \$.70 higher than yellow peas.

*Insecticide treatment for cutworms and/or pea aphids would cost about \$4 per acre plus application.

Lentils

Yellow Mustard

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|---------------|-----------------|---------------|-----------------|
| Market Yield | 1230 | | 850 | |
| Market Price | 0.24 | | 0.305 | |
| MARKET INCOME | 295.20 | | 259.25 | |
| DIRECT COSTS | | | | |
| -Seed | 39.90 | | 24.00 | |
| -Herbicides | 34.60* | | 19.70 | |
| -Fungicides | 16.00** | | 0.00 | |
| -Insecticides | 0.00*** | | 0.00 | |
| -Fertilizer | 4.26 | | 19.51 | |
| -Crop Insurance | 15.60 | | 0.00* | |
| -Fuel & Lubrication | 9.66 | | 8.58 | |
| -Repairs | 19.42 | | 16.94 | |
| -Drying | 0.00 | | 0.00 | |
| -Miscellaneous | 9.25 | | 7.50 | |
| -Operating Interest | 3.53 | | 2.29 | |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED DIRECT COSTS | 152.22 | | 98.51 | |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.58 | | 7.19 | |
| -Machinery Depreciation | 22.64 | | 19.52 | |
| -Machinery Investment | 12.54 | | 11.78 | |
| -Land Charge | 58.00 | | 58.00 | |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED INDIRECT COSTS | 100.76 | | 96.49 | |
| SUM OF ALL LISTED COSTS | 252.98 | | 195.00 | |
| RETURN TO LABOR & MANAGEMENT | 42.22 | | 64.25 | |
| LISTED COSTS PER BUDGET UNIT | (lb) | | (lb) | |
| -Direct Costs | 0.12 | | 0.12 | |
| -Indirect Costs | 0.08 | | 0.11 | |
| -Total Costs | 0.21 | | 0.23 | |

Lentil notes:

*Includes pre-harvest dessicant.

**Fungicide treatment for ascochyta/anthracnose.

***Insecticide treatment for cutworms and/or grasshoppers would cost about \$4 per acre plus application.

Yellow Mustard notes:

*Crop insurance is not available in this region.

Buckwheat

Millet

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|----------------|-----------------|----------------|-----------------|
| Market Yield | 900 | | 1500 | |
| Market Price | 0.192 | | 0.065 | |
| MARKET INCOME | 172.80 | | 97.50 | |
| DIRECT COSTS | | | | |
| -Seed | 30.00 | | 6.25 | |
| -Herbicides | 17.10 | | 9.25 | |
| -Fungicides | 0.00 | | 0.00 | |
| -Insecticides | 0.00 | | 0.00 | |
| -Fertilizer | 11.69 | | 16.83 | |
| -Crop Insurance | 8.30* | | 0.00 | |
| -Fuel & Lubrication | 8.36 | | 9.22 | |
| -Repairs | 16.29 | | 17.35 | |
| -Drying | 0.00 | | 0.00 | |
| -Miscellaneous | 1.50 | | 7.50 | |
| -Operating Interest | 2.21 | | 1.58 | |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED DIRECT COSTS | 95.45 | | 67.98 | |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.03 | | 7.45 | |
| -Machinery Depreciation | 19.01 | | 20.25 | |
| -Machinery Investment | 11.10 | | 12.17 | |
| -Land Charge | 58.00 | | 58.00 | |
| | ===== | ===== | ===== | ===== |
| SUM OF LISTED INDIRECT COSTS | 95.14 | | 97.88 | |
| SUM OF ALL LISTED COSTS | 190.59 | | 165.85 | |
| RETURN TO LABOR & MANAGEMENT | (17.79) | | (68.35) | |
| LISTED COSTS PER BUDGET UNIT | | | | |
| | (lb) | | (lb) | |
| -Direct Costs | 0.11 | | 0.05 | |
| -Indirect Costs | 0.11 | | 0.07 | |
| -Total Costs | 0.21 | | 0.11 | |

Buckwheat notes:

*Crop insurance is not available in some counties of the region.

Winter Wheat

Rye

| | Per Acre | Your Figures | Per Acre | Your Figures |
|---|----------------|-----------------|---------------|-----------------|
| Market Yield | 47* | _____ | 43 | _____ |
| Market Price | 4.28 | _____ | 4.49 | _____ |
| MARKET INCOME | 201.16 | _____ | 193.07 | _____ |
| DIRECT COSTS | | | | |
| -Seed | 8.25 | _____ | 9.30 | _____ |
| -Herbicides | 22.40 | _____ | 6.50 | _____ |
| -Fungicides | 9.00 | _____ | 0.00 | _____ |
| -Insecticides | 0.00 | _____ | 0.00 | _____ |
| -Fertilizer | 51.79 | _____ | 46.34 | _____ |
| -Crop Insurance | 12.90 | _____ | 7.20 | _____ |
| -Fuel & Lubrication | 8.78 | _____ | 8.75 | _____ |
| -Repairs | 16.24 | _____ | 16.10 | _____ |
| -Drying | 0.00 | _____ | 0.00 | _____ |
| -Miscellaneous | 7.50 | _____ | 7.50 | _____ |
| -Operating Interest | 3.25 | _____ | 2.42 | _____ |
| SUM OF LISTED DIRECT COSTS | 140.11 | ===== | 104.11 | ===== |
| INDIRECT (FIXED) COSTS | | | | |
| -Misc. Overhead | 7.13 | _____ | 7.14 | _____ |
| -Machinery Depreciation | 19.06 | _____ | 19.09 | _____ |
| -Machinery Investment | 10.53 | _____ | 10.71 | _____ |
| -Land Charge | 58.00 | _____ | 58.00 | _____ |
| SUM OF LISTED INDIRECT COSTS | 94.72 | ===== | 94.95 | ===== |
| SUM OF ALL LISTED COSTS | 234.83 | _____ | 199.06 | _____ |
| RETURN TO LABOR & MANAGEMENT | (33.67) | _____ | (5.99) | _____ |
| LISTED COSTS PER BUDGET UNIT | (bu) | | (bu) | |
| -Direct Costs | 2.98 | _____ | 2.42 | _____ |
| -Indirect Costs | 2.02 | _____ | 2.21 | _____ |
| -Total Costs | 5.00 | _____ | 4.63 | _____ |

Winter Wheat notes:

*Yield is per harvested acre. There is some risk of acreage abandonment in spring.

2017 Machinery List

| Machine | Purch. Price | Annual Use | Years to trade | Trade in | Deprec. | Invest. | Repairs | Ac/hr |
|------------------------|--------------|------------|----------------|----------|-----------|-----------|-----------|-------|
| FWA 140HP Tractor | 130000 | 400 hr | 20 | 40676 | 11.17 /hr | 9.60 /hr | 12.84 /hr | |
| FWA 180HP Tractor | 176200 | 500 hr | 15 | 50575 | 16.75 /hr | 10.20 /hr | 17.40 /hr | |
| 4WD 340HP Tractor | 232100 | 500 hr | 15 | 66661 | 22.06 /hr | 13.44 /hr | 13.11 /hr | |
| SP Combine (base unit) | 281900 | 250 hr | 12 | 68074 | 71.28 /hr | 31.50 /hr | 44.43 /hr | |
| Tandem Truck (used) | 38600 | 150 hr | 15 | 12300 | 11.69 /hr | 7.64 /hr | 7.92 /hr | |
| Semi & Trailer (used) | 43300 | 150 hr | 10 | 12400 | 20.60 /hr | 8.36 /hr | 9.57 /hr | |
| Pick-up Truck | 32000 | 300 hr | 10 | 7400 | 8.20 /hr | 2.96 /hr | 3.67 /hr | |
| Swather 30 ft | 30600 | 1000 ac | 20 | 7253 | 1.17 /ac | 0.85 /ac | 0.49 /ac | 13.1 |
| Sprayer 90 ft | 38800 | 5000 ac | 10 | 19278 | 0.39 /ac | 0.26 /ac | 0.50 /ac | 42.5 |
| Heavy Harrow 70 ft | 31000 | 2000 ac | 20 | 18080 | 0.32 /ac | 0.55 /ac | 0.35 /ac | 39.7 |
| Air Seeder 40 ft | 180800 | 2400 ac | 10 | 92386 | 3.68 /ac | 2.56 /ac | 6.25 /ac | 17.0 |
| Planter 16-30 | 112800 | 1400 ac | 15 | 46864 | 3.14 /ac | 2.57 /ac | 4.67 /ac | 14.2 |
| Corn head 8R | 58600 | 800 ac | 12 | 16808 | 4.35 /ac | 2.12 /ac | 1.36 /ac | 6.8 |
| Grain head w/pu | 15600 | 800 ac | 20 | 1536 | 0.88 /ac | 0.48 /ac | 0.25 /ac | 10.2 |
| Grain str. cut 30 ft | 26000 | 2000 ac | 8 | 10508 | 0.97 /ac | 0.41 /ac | 0.40 /ac | 10.2 |
| Head w/sunf pans 30 ft | 31300 | 600 ac | 20 | 3200 | 2.34 /ac | 1.29 /ac | 0.48 /ac | 10.2 |
| Flex head 30 ft | 38600 | 1000 ac | 20 | 3541 | 1.75 /ac | 0.95 /ac | 0.60 /ac | 10.2 |
| Rock picker | 22300 | 50 hr | 20 | 7122 | 0.51 /ac | 0.44 /ac | 0.33 /ac | 29.1 |
| Grain Cart | 30500 | 100 hr | 20 | 5200 | 12.65 /hr | 8.03 /hr | 7.60 /hr | |
| Grain auger | 13000 | 50 hr | 20 | 750 | 12.25 /hr | 6.19 /hr | 4.80 /hr | |

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Plotting a Course 2017

Short-term and Long-term Agricultural Planning Prices for North Dakota 2017

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Planning for the future can be a very frustrating process but one that typically pays high dividends. For most farm and ranch managers, developing realistic commodity price expectations is one of the most difficult and complex tasks of the planning process. With the downturn in commodity prices, planning is more critical than ever. To ease the burden of forecasting planning prices, the NDSU Extension Service has prepared a summary of projected short- and long-term planning prices.

The estimated short-term planning prices should be used as a guide in setting price expectations for 2017 production. These planning prices can be used for preparing annual enterprise budgets and annual whole-farm cash-flow projections.

The short-term planning prices should **not** be used for planning capital purchases or expansion alternatives that extend beyond the next production year. Unfortunately, the use of short-term planning prices to make long-term decisions is common. This practice is not recommended because current supply/demand conditions rarely continue for long periods of time and are a poor indicator of future trends.

The long-term planning prices are valuable for evaluating alternative

plans that affect the farm or ranch business for more than one year. Both individual yearly price forecasts and long-term average prices are presented.

The long-term crop planning prices were derived from annual average price forecasts made by the Food and Agricultural Policy Research Institute (FAPRI). The U.S. price estimates reported in the 2016 Baseline Briefing Paper, November 2016, were adjusted using historical relationships to reflect North Dakota farm gate prices.

Historical prices are reported for reference. This information can be a valuable reminder of past price fluctuations and trends. Prices for 2016 are averages to date.

The historical crop prices were obtained from the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) "2016 North Dakota Agricultural Statistics Service publication No. 85." Historical milk prices are from the Food and Agricultural Policy Research Institute (FAPRI). Historical feeder steer prices are from the USDA Agricultural Marketing Service (AMS) for Kist Livestock Auction, Mandan, N.D. Historical slaughter steer, cull cow, hog and sheep prices are from NASS and AMS.

This publication is found at:

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CROPS

| Marketing Year | Spring Wheat | Durum Wheat | Oats | Feed Barley | Malting Barley | Oil Sunflower | Non-oil Sunflower | Corn | Soybeans | Canola | Flaxseed | Winter Wheat | Dry Beans | Dry Peas | Lentils | Alfalfa Hay | Other Hay |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|---------------------------|--------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------|--------------|
| | (bu) | (bu) | (bu) | (bu) | (bu) | (cwt) | (cwt) | (bu) | (bu) | (cwt) | (bu) | (bu) | (cwt) | (cwt) | (cwt) | (ton) | (ton) |
| 2011-12 | 8.17 | 9.45 | 3.03 | 5.06 | 5.50 | 27.60 | 32.70 | 5.81 | 11.90 | 24.00 | 13.90 | 6.57 | 39.90 | 15.30 | 20.40 | 73.00 | 52.00 |
| 2012-13 | 8.19 | 7.86 | 3.36 | 5.36 | 6.72 | 24.60 | 28.10 | 6.46 | 14.00 | 26.50 | 13.80 | 7.55 | 35.10 | 15.90 | 18.70 | 130.00 | 81.00 |
| 2013-14 | 6.50 | 7.16 | 3.14 | 3.86 | 6.36 | 20.30 | 30.80 | 3.91 | 12.40 | 20.60 | 13.80 | 6.43 | 35.30 | 14.80 | 17.90 | 108.00 | 71.00 |
| 2014-15 | 5.42 | 8.99 | 2.42 | 3.06 | 5.53 | 19.50 | 31.50 | 3.34 | 9.49 | 16.90 | 11.80 | 4.47 | 28.20 | 12.20 | 23.50 | 85.00 | 58.00 |
| 2015-16 | 5.49 | 6.62 | 2.00 | 2.70 | 5.09 | 19.10 | 27.30 | 3.28 | 8.49 | 15.60 | 8.95 | 3.69 | 24.00 | 13.50 | 28.90 | 82.00 | 59.00 |
| Historic avg. (2011-2015) | 6.75 | 8.02 | 2.79 | 4.01 | 5.84 | 22.22 | 30.08 | 4.56 | 11.26 | 20.72 | 12.45 | 5.74 | 32.50 | 14.34 | 21.88 | 95.60 | 64.20 |
| 2016-17 (to date)* | 4.26 | 5.71 | 1.95 | 2.54 | 4.92 | 14.72** | N.A. | 2.95 | 8.92 | 15.82 | 7.75 | 3.22 | 27.28 | 9.86** | 27.19** | 77.56 | 61.53 |
| 2017-18 short-term | 5.00 | 5.75 | 2.20 | 2.70 | 4.00 | 17.00 | 22.00 | 3.30 | 8.85 | 16.00 | 8.50 | 4.30 | 24.00 | 10.00 | 24.00 | 82.00 | 64.00 |
| 2018-19 | 5.24 | 5.68 | 2.20 | 2.86 | 4.58 | 18.15 | 26.14 | 3.51 | 9.17 | 16.99 | 9.71 | 4.51 | 27.51 | 9.63 | 24.08 | 85.00 | 65.00 |
| 2019-20 | 5.45 | 5.90 | 2.23 | 2.90 | 4.64 | 18.48 | 26.61 | 3.55 | 9.34 | 17.29 | 9.88 | 4.68 | 28.02 | 9.81 | 24.53 | 90.00 | 70.00 |
| 2020-21 | 5.60 | 6.07 | 2.23 | 2.89 | 4.62 | 18.25 | 26.28 | 3.54 | 9.22 | 17.08 | 9.76 | 4.81 | 27.66 | 9.68 | 24.20 | 86.00 | 66.00 |
| 2021-22 | 5.59 | 6.06 | 2.22 | 2.88 | 4.61 | 18.13 | 26.11 | 3.53 | 9.16 | 16.97 | 9.70 | 4.80 | 27.48 | 9.62 | 24.05 | 87.00 | 67.00 |
| 2022-23 | 5.61 | 6.08 | 2.23 | 2.89 | 4.62 | 18.26 | 26.29 | 3.54 | 9.23 | 17.09 | 9.77 | 4.82 | 27.69 | 9.69 | 24.23 | 90.00 | 70.00 |
| Projected long-term avg. (2018-22) | 5.50¹ | 5.96² | 2.22³ | 2.88⁴ | 4.61⁵ | 18.25⁶ | 26.29⁷ | 3.53⁸ | 9.22⁹ | 17.08¹⁰ | 9.76¹¹ | 4.72¹² | 27.67¹³ | 9.69¹⁴ | 24.22¹⁵ | 87.60 | 67.60 |

* average of beginning of marketing year to December 2016
 ** average of local cash bids
 Note: FAPRI projections are updated in January 2017

1 Spring wheat price is calculated based on the historical relationship: N.D. spring wheat = U.S. wheat x 1.07
 2 Durum wheat price is calculated based on the historical relationship: U.S. spring wheat x 1.16
 3 Oats price is calculated based on the historical relationship: N.D. oats = N.D. feed barley x 0.77
 4 Feed barley price is calculated based on the historical relationship: N.D. feed barley = U.S. corn x 0.75
 5 Malting barley price is calculated based on the historical relationship: N.D. malting barley = N.D. feed barley x 1.6
 6 Oil sunflower price is calculated based on the historical relationship: N.D. oil sunflower = U.S. soybean x 1.87
 7 Non-oil sunflower price is calculated based on the historical relationship: N.D. non-oil sunflower = N.D. oil sunflower x 1.44
 8 Corn price is calculated based on the historical relationship: N.D. corn = U.S. corn x 0.92
 9 Soybean price is calculated based on the historical relationship: N.D. soybean = U.S. soybean x 0.945
 10 Canola price is calculated based on the historical relationship: N.D. canola = U.S. soybean x 1.75
 11 Flaxseed price is calculated based on the historical relationship: N.D. flaxseed = U.S. soybean x 1.0
 12 Winter wheat price is calculated based on the historical relationship: N.D. winter wheat = U.S. wheat x 0.92
 13 Dry bean price is calculated based on the historical relationship: N.D. dry bean = N.D. soybean x 3.0
 14 Dry pea price is calculated based on the historical relationship: N.D. dry pea = N.D. soybean x 1.05
 15 Lentil price is calculated based on the historical relationship: N.D. lentil = N.D. dry pea x 2.5

BEEF

| Year* | 400-500 lb. Steers | 500-600 lb. Steers | 600-700 lb. Steers | 700-800 lb. Steers | 800-900 lb. Steers | 1,100-1,700 lb. Cull Cows | 5-Area Direct Slaughter Steers |
|---|-----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|---------------------------|--------------------------------|
| | (cwt) Fourth quarter prices | (cwt) Fourth quarter prices | (cwt) Fourth quarter prices | (cwt) First quarter prices | (cwt) First quarter prices | (cwt) Annual prices | (cwt) Annual prices |
| 2011 | 171.15 | 156.87 | 148.08 | 154.50 | 146.04 | 72.00 | 114.72 |
| 2012 | 176.66 | 162.78 | 152.78 | 140.58 | 132.71 | 76.70 | 122.86 |
| 2013 | 205.43 | 183.90 | 174.19 | 175.12 | 163.59 | 78.29 | 125.88 |
| 2014 | 323.38 | 285.52 | 259.17 | 220.47 | 202.00 | 104.20 | 154.56 |
| 2015 | 234.07 | 206.55 | 188.32 | 161.62 | 150.26 | 99.00 | 148.12 |
| Historic avg. (2011-2015) | 222.14 | 199.12 | 184.51 | 170.46 | 158.92 | 86.04 | 133.23 |
| 2016 (to date) | 151.26 | 137.89 | 128.09 | 128.00** | 125.00** | 73.57 | 121.00 |
| 2017 short-term | 145.00 | 132.00 | 122.00 | 118.00** | 115.00** | 70.00 | 110.00 |
| 2018 | 150.00 | 137.00 | 127.00 | 123.00** | 120.00** | 75.00 | 115.00 |
| 2019 | 155.00 | 142.00 | 132.00 | 128.00** | 125.00** | 80.00 | 120.00 |
| 2020 | 160.00 | 147.00 | 137.00 | 133.00** | 130.00** | 85.00 | 125.00 |
| 2021 | 170.00 | 157.00 | 147.00 | 143.00** | 140.00** | 95.00 | 135.00 |
| 2022 | 180.00 | 167.00 | 157.00 | 153.00** | 150.00** | 105.00 | 145.00 |
| Projected long-term avg. (2018-22) | 163.00 | 150.00 | 140.00 | 136.00 | 133.00 | 88.00 | 128.00 |

HOGS

| Year | 250 lb. Slaughter Hogs |
|---|------------------------|
| | (cwt) |
| 2011 | 63.48 |
| 2012 | 61.20 |
| 2013 | 63.80 |
| 2014 | 73.00 |
| 2015 | 52.20 |
| Historic avg. (2011-2015) | 62.74 |
| 2016 to date | 48.00 |
| 2017 short-term | 45.00 |
| 2018 | 48.00 |
| 2019 | 50.00 |
| 2020 | 55.00 |
| 2021 | 60.00 |
| 2022 | 65.00 |
| Projected long-term avg. (2018-22) | 55.60 |

SHEEP

| Slaughter Ewes | 105-140 lb. Slaughter Lambs | 60-90 lb. Feeder Lambs | |
|---|-----------------------------|------------------------|---------------|
| (cwt) | (cwt) | (cwt) | |
| 2011 | 53.00 | 175.23 | 208.21 |
| 2012 | 38.00 | 112.00 | 144.00 |
| 2013 | 22.00 | 120.00 | 136.00 |
| 2014 | 38.00 | 152.00 | 200.00 |
| 2015 | 54.00 | 146.00 | 188.00 |
| Historic avg. (2011-2015) | 41.00 | 141.05 | 175.24 |
| 2016 to date | 47.00 | 142.00 | 178.00 |
| 2017 short-term | 45.00 | 140.00 | 175.00 |
| 2018 | 50.00 | 145.00 | 180.00 |
| 2019 | 55.00 | 150.00 | 185.00 |
| 2020 | 57.00 | 160.00 | 195.00 |
| 2021 | 60.00 | 162.00 | 200.00 |
| 2022 | 62.00 | 165.00 | 202.00 |
| Projected long-term avg. (2018-22) | 56.80 | 156.40 | 192.40 |

MILK

| All Milk | |
|---|--------------|
| (cwt) | |
| 2011 | 20.00 |
| 2012 | 18.90 |
| 2013 | 19.90 |
| 2014 | 23.60 |
| 2015 | 17.10 |
| Historic avg. (2011-2015) | 19.90 |
| 2016 to date | 15.97 |
| 2017 short-term | 16.50 |
| 2018 | 18.00 |
| 2019 | 20.00 |
| 2020 | 22.00 |
| 2021 | 24.00 |
| 2022 | 23.00 |
| Projected long-term avg. (2018-22) | 21.40 |

* 400-500, 500-600 and 600-700 lb. weights are fourth-quarter prices. 700-800 and 800-900 lb. weights are first-quarter prices of the next year.
 To estimate heifer prices, subtract \$15/cwt for 400-500, 500-600 and 600-700 lb. animals and subtract \$6/cwt for 700-800 and 800-900 lb. animals.
 Cull cow and slaughter steer prices are calendar year averages.
 ** Projected for the first quarter of the next year.