

Minnesota and Dakota Land Values, and Tariff Impacts on US Agriculture

Dr. Wendong Zhang

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Regional SAM meeting, Minneapolis, Sept. 11, 2018



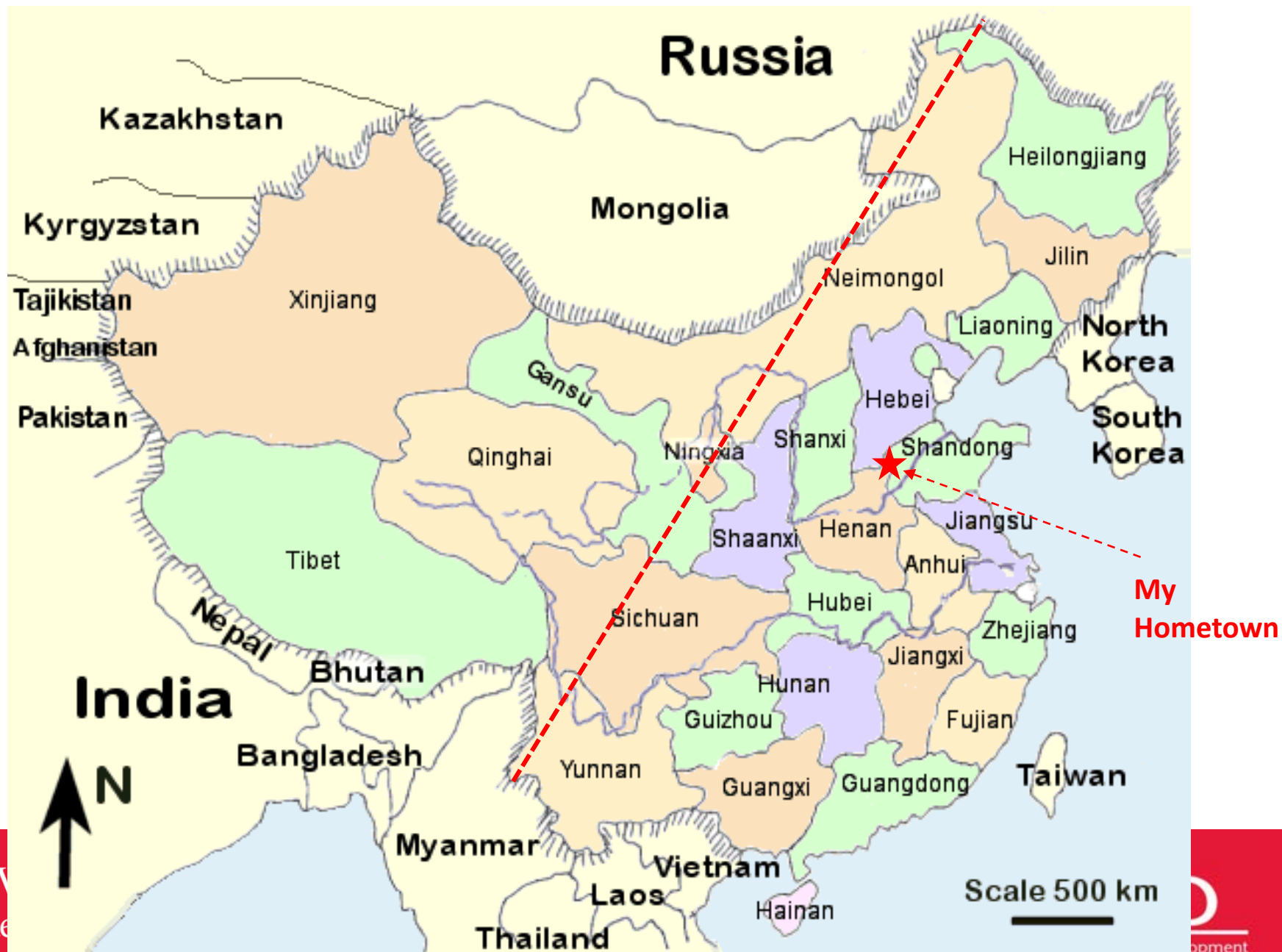
A Quick Introduction: Dr. Wendong Zhang

- Grown up in a rural county in NE China
- Attended college in Shanghai and Hong Kong
- Ph.D. in Ag Econ in 2015 from Ohio State
- 2012 summer intern at USDA-ERS on farm economy and farmland values
- Research and extension interests:

land value/ownership [www.card.iastate.edu/farmland/agriculture and the environment](http://www.card.iastate.edu/farmland/agriculture_and_the_environment)

China Ag center www.card.iastate.edu/china

China's Provinces

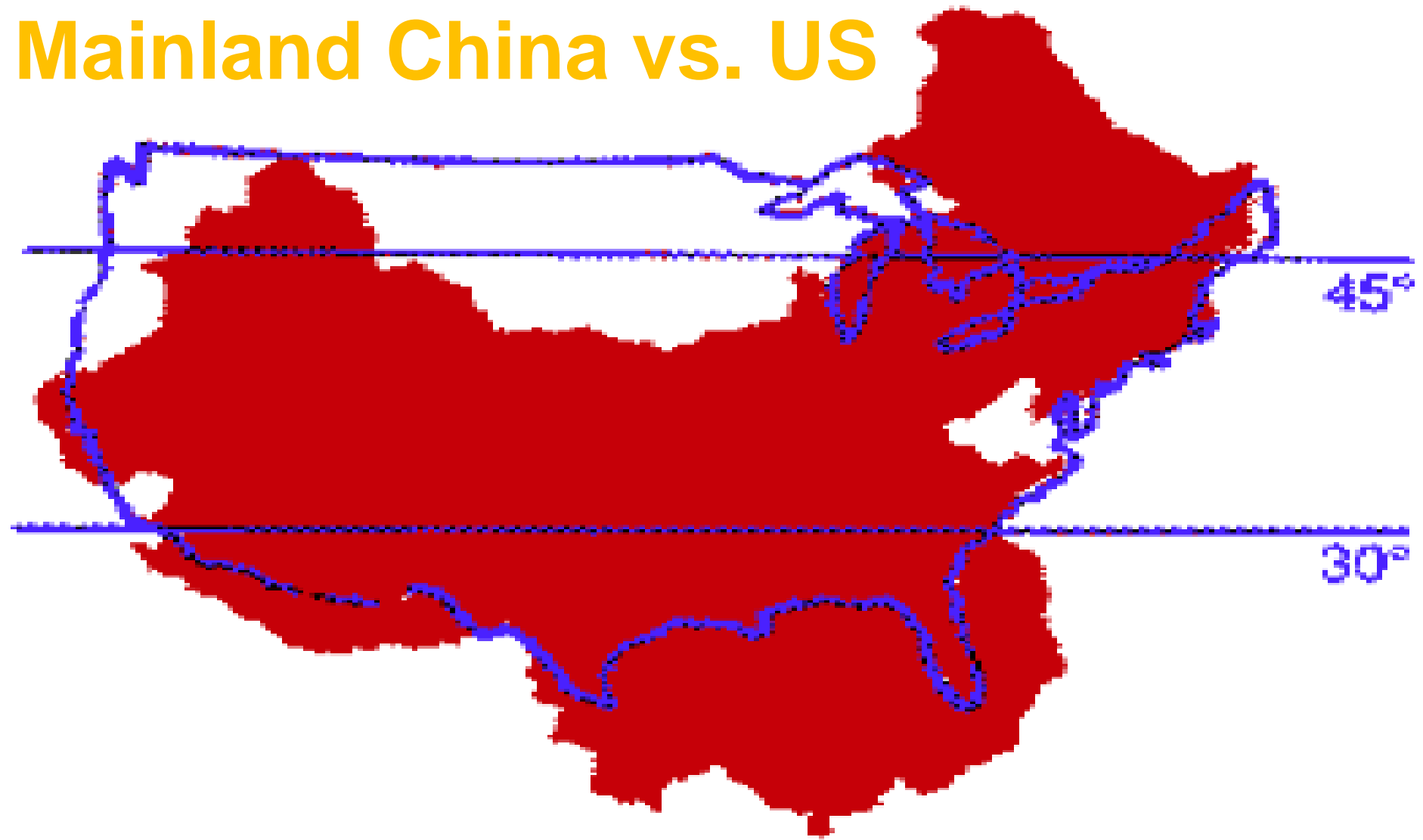


My hometown: Shenxian, Shandong Province

Greenhouse – plastic film - Shandong Province



Mainland China vs. US



Ag is comparative advantage for US

Figure 1. Number of farmers in Chinese provinces compared to Iowa

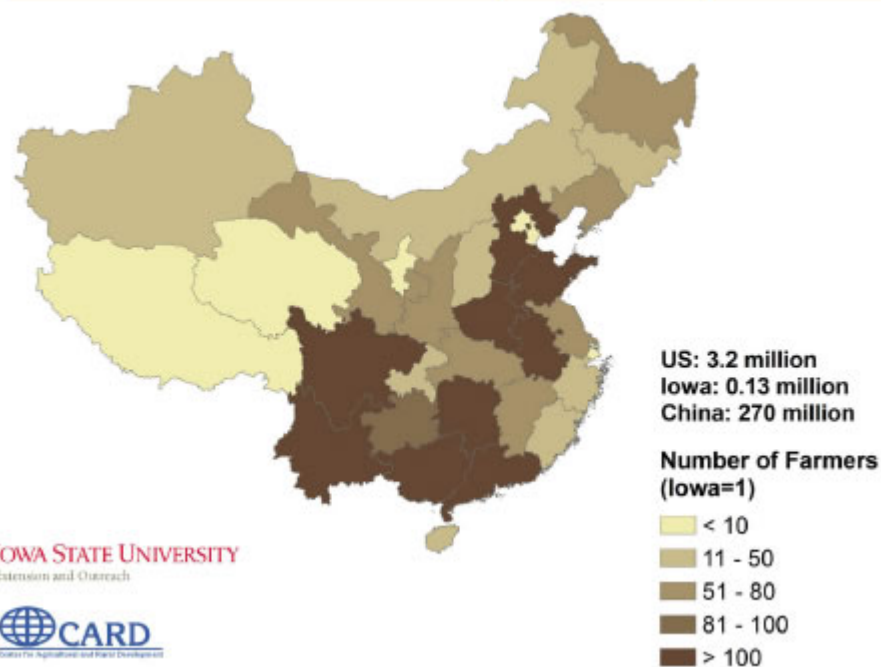
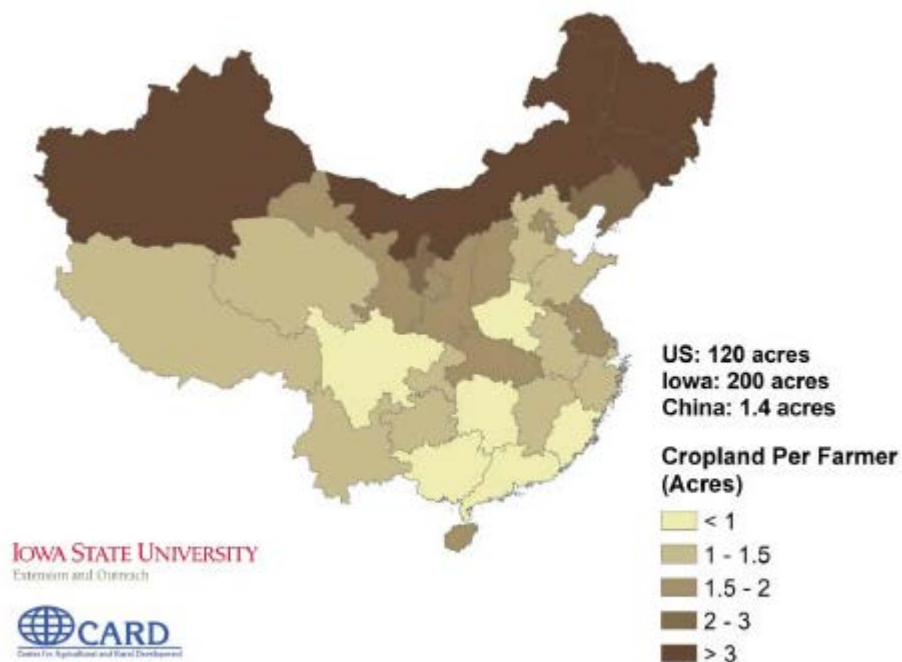


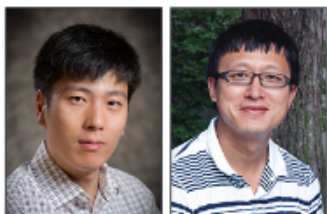
Figure 2. Crop land per farmer in China in acres



Because crop land per farmer is so small in China, using Iowa as the unit here would create too many decimal points. We use acres instead.

Navigating the Chinese agricultural economy through the lens of Iowa

By Wendong Zhang, extension economist, 515-294-2536, wdzhang@iastate.edu; Minghao Li, postdoctoral researcher, Center for Agricultural and Rural Development, Iowa State University



Average Farm Size
China: 2 Acres
US: > 400 Acres

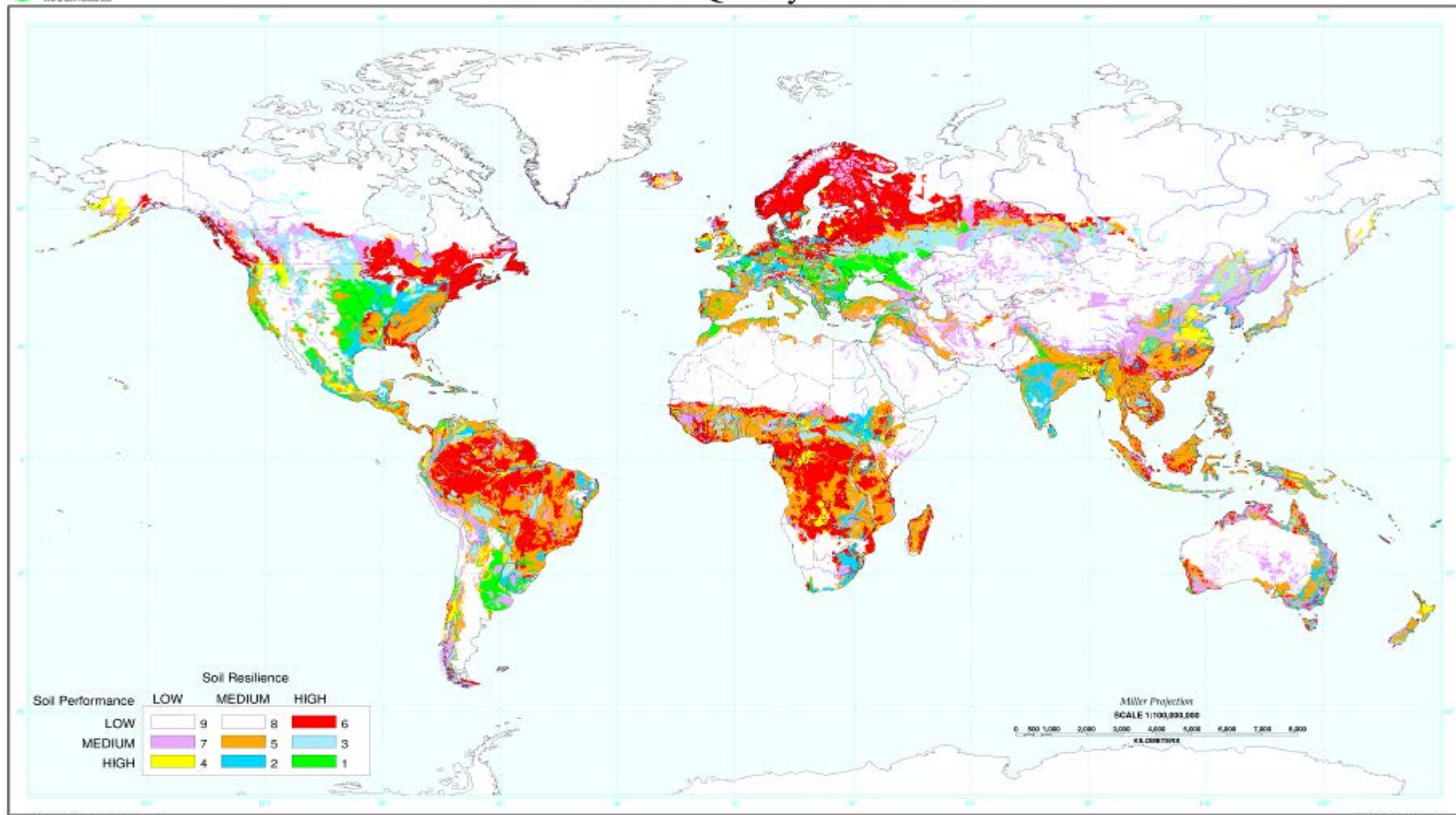
CARD
Center for Agricultural and Rural Development

Arable Land



U.S. Dept. of Agriculture
Natural Resources Conservation Service
Soil Conservation Service
World Soil Resources

Inherent Land Quality Assessment





China Corn Yield





Corn Yield
(Iowa=100%)

 No data

 11% - 40%

 41% - 45%

 46% - 50%

 51% - 60%

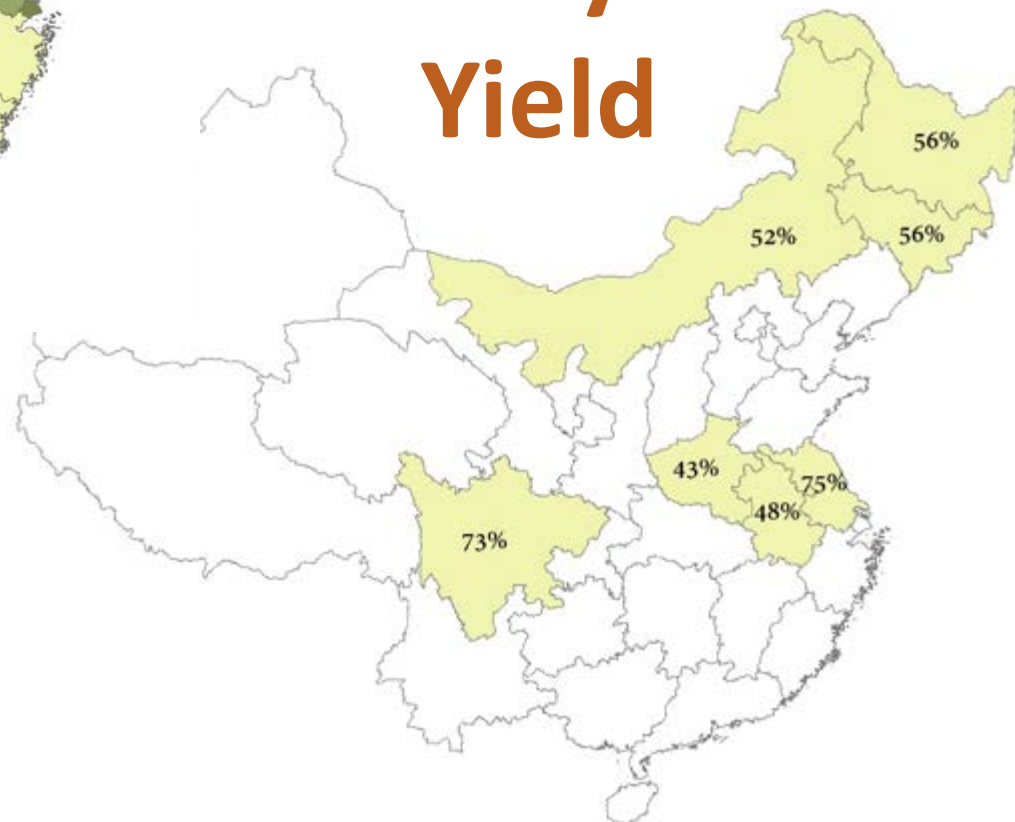
2015 Soybean Yield

US: 48 Bu/acre

Iowa: 56 Bu/acre

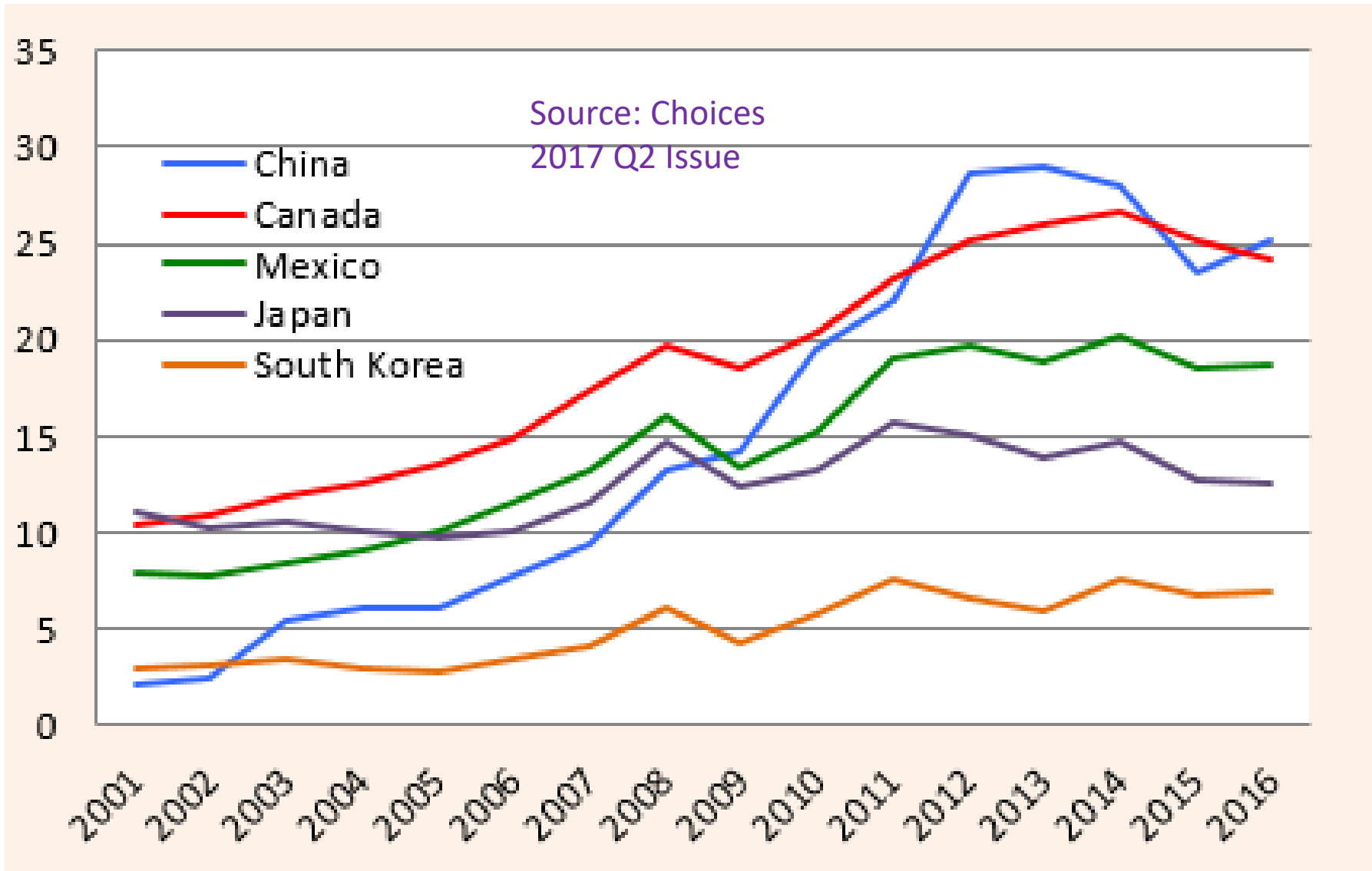
China: 26 Bu/acre

China Soybean Yield



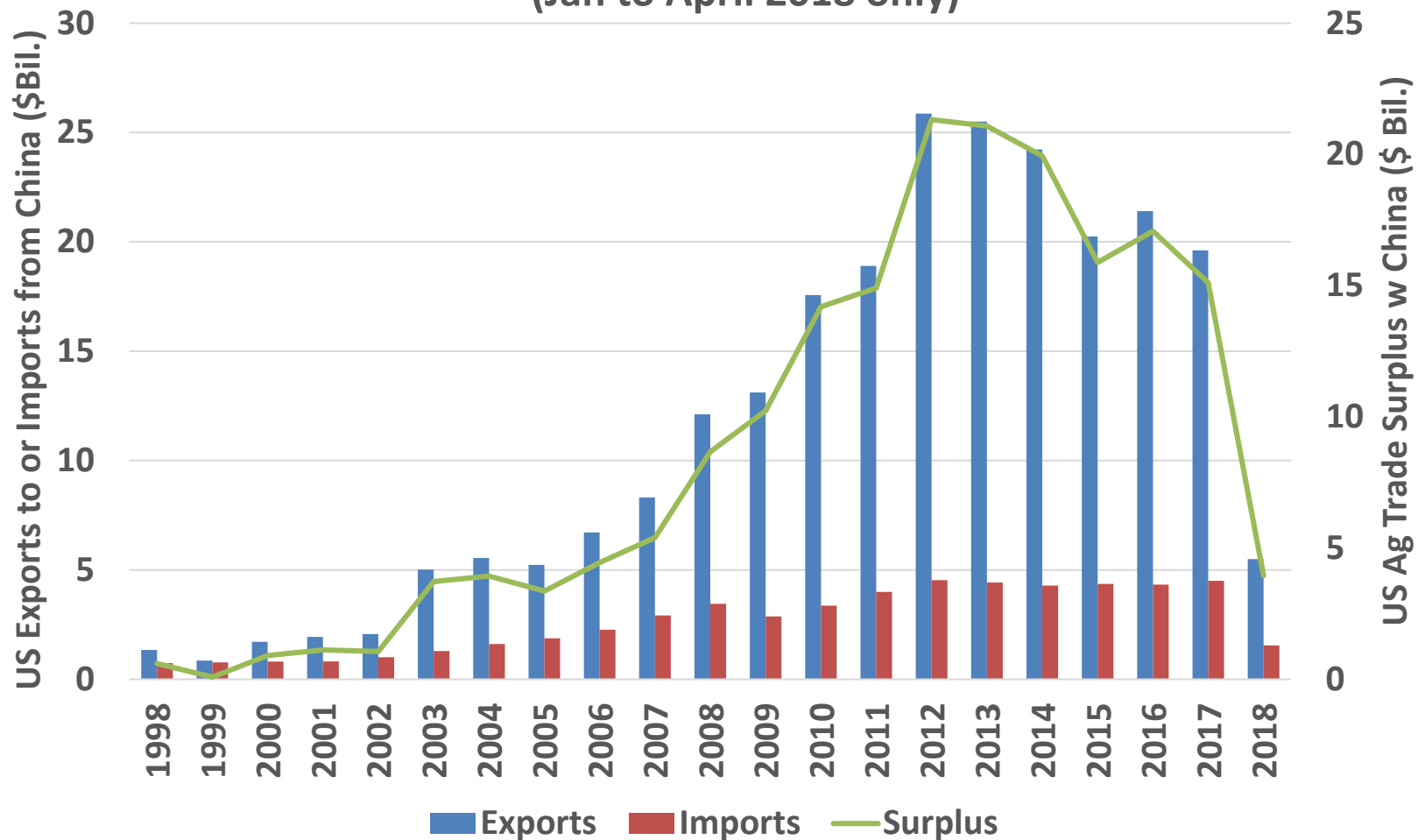
Why Care About China?

Reason 1: China is a huge market for US

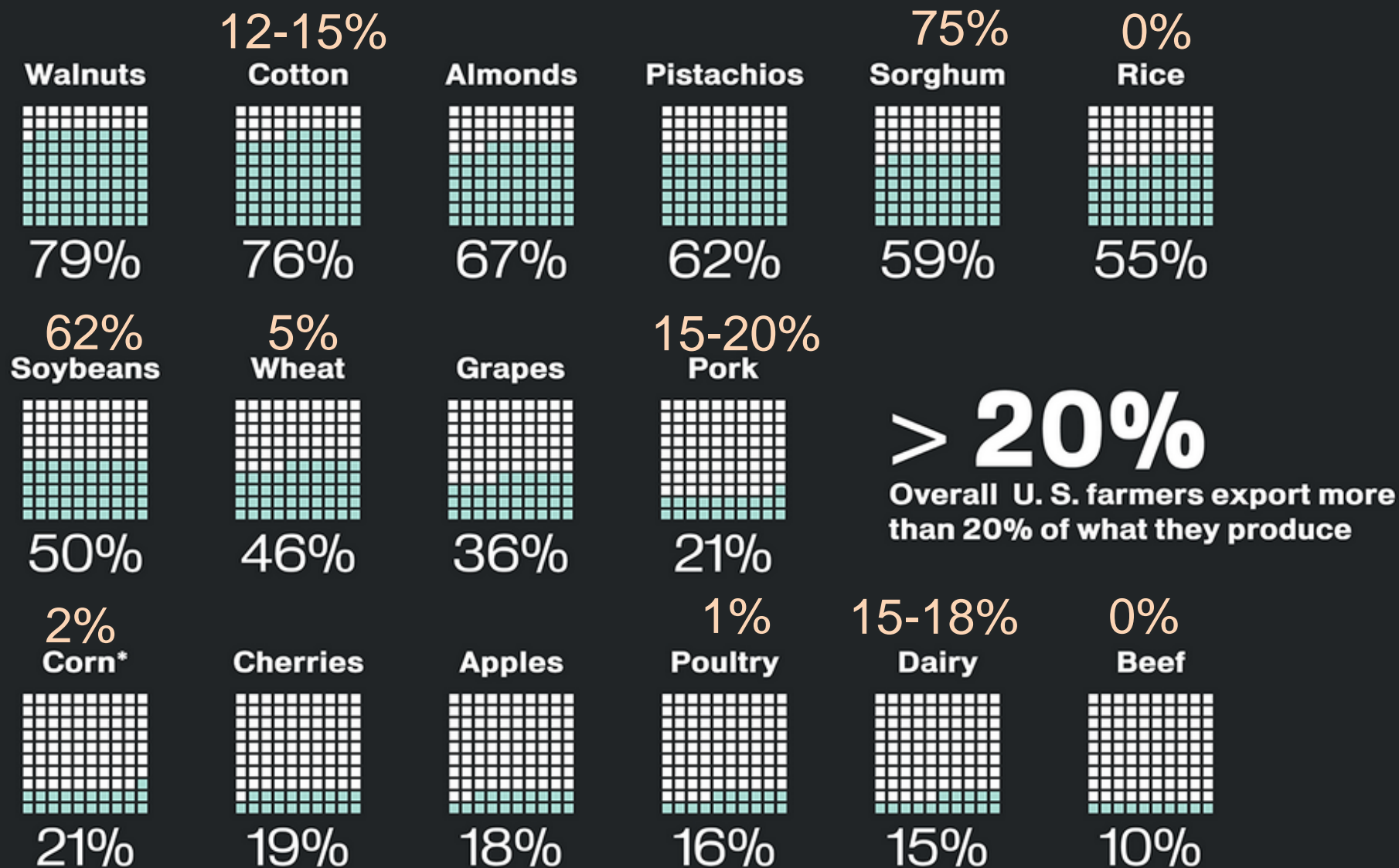


US holds a large and consistent ag trade surplus with China

US Ag Trade with China 1998-2018
(Jan to April 2018 only)



Percentage of U.S. Agricultural Production Exported



*Including ethanol, DDGS, and HFCS exports

Source: USDA-Foreign Agricultural Service, Production, Supply and Distribution System

Reference years: Marketing Year 2015/16 - 2017/18

United States Department of Agriculture
Foreign Agricultural Service



Chinese People Are Getting Richer, and will need more protein

1992
GDP per capita (PPP)

\$37,283

United States

\$1,846

China

U.S. GDP per capita was
20.2 times that of China

Bloomberg

2016

GDP per capita (PPP)

\$53,417

United States

\$14,275

China

U.S. GDP per capita was
3.7 times that of China

**China's GDP will overtake
the U.S. level in 2028 at
these projected average
growth rates:**

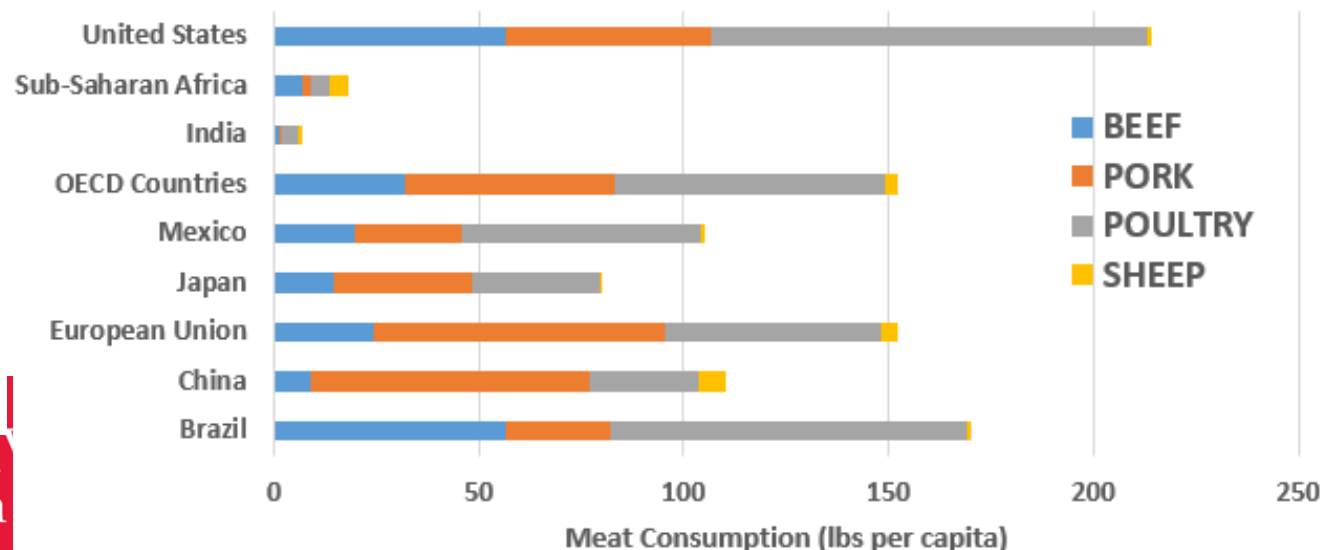
U.S. 2.0%



China 6.5%



Per-capita Meat Consumption by Country 2016 - OECD



What Have We Learned from China's Past Trade Retaliation Strategies?

Minghao Li, Wendong Zhang, and Chad Hart

JEL Classifications: Q17, F10

Keywords: Agricultural Commodities, China, Tariff, Trade Retaliation

Proportional, Restrained Response

Currently, China has a huge overall trade surplus with the United States, and thus naturally wants to maintain the status quo and avoid dispute escalations. As the two cases above demonstrate, China tends to target agricultural commodities with trade flows comparable to U.S. targets in order to send a clear message. At the same time, China

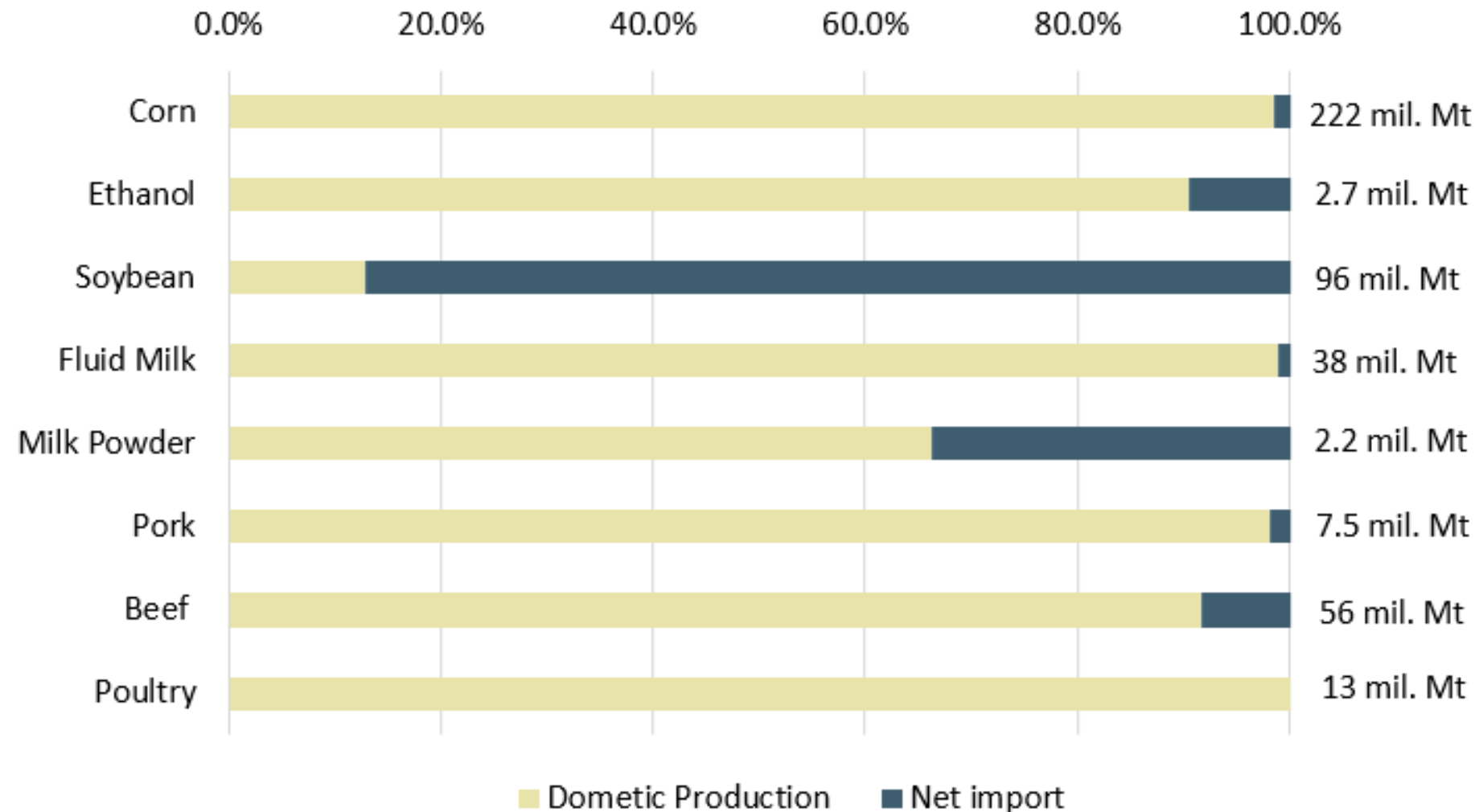
Target Products That Are Substitutable

In these two cases, China chose commodities that are easily substitutable across products, across sources, or via domestic production. Half of the U.S. broiler products were chicken feet, a replaceable snack food, and sorghum is commonly used for feed and can be replaced by corn or other coarse grains. In terms of substitutability across

Inflict Economic and Political Costs

From the perspective of China's government, the ultimate goal of retaliatory tariffs is to inflict economic loss on politically influential interest groups in the United States, turning them into lobbyists for easing trade restrictions. For retaliation measures to be effective, China's market as an export destination for targeted commodities has to be important for U.S. producers, as is the case for broiler products and sorghum. Furthermore, the Chinese government has long recognized the political significance of the U.S. agricultural industry, which partly explains why it targets U.S. agricultural exports in trade spats.

Total supply of selected ag. products in China (2013~17)



Why Care About China?

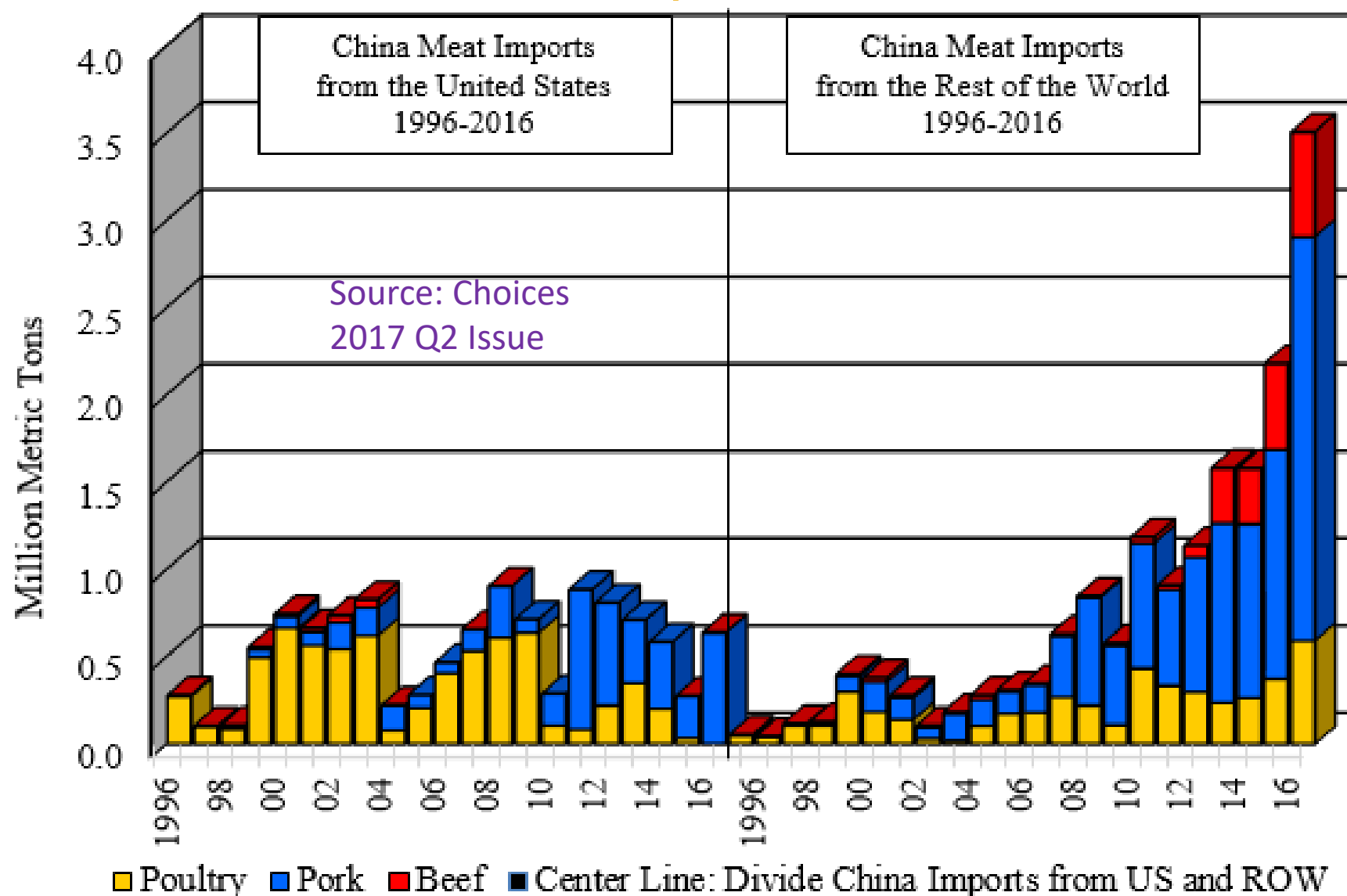
Reason 4: China will retaliate, diversify and find other suppliers if possible

Commodity (2016 value of China ag imports)	USA	Brazil	Europe	Australia	Argentina or Uruguay
Soybean (\$34.4 Bil.) (China increased production by 9% in 2018)	38%	47%			A-10%
Pork (\$2.32 Bil.)	13%		50%	Canada: 11%	
Ethanol (\$0.38 Bil.)	70%	11%	Pakistan 15%		
Beef (\$2.42 Bil.)	0%	22%		28%	U-21%
Poultry (\$1.11 Bil.)		79%			A-9%
Corn (\$0.87 Bil.)	10%	Ukraine: 79%			

China's Ag Import Sources

China can produce 97% of its pork, but only 15% of its soybean demand domestically
China provided about US\$200/acre subsidy to increase soy production (up 9% 2018)

US Loses Market Share as China Increases Meat Imports from the World



China aims to build a global infrastructure network
"Belt and Road" infrastructure projects, planned and completed (March 2017)

Belt and Road Initiative



■ Silk Road Economic Belt ■ Maritime Silk Road of the 21st Century ■ AIIB member states



Soybeans Nov '18 (ZSX18)

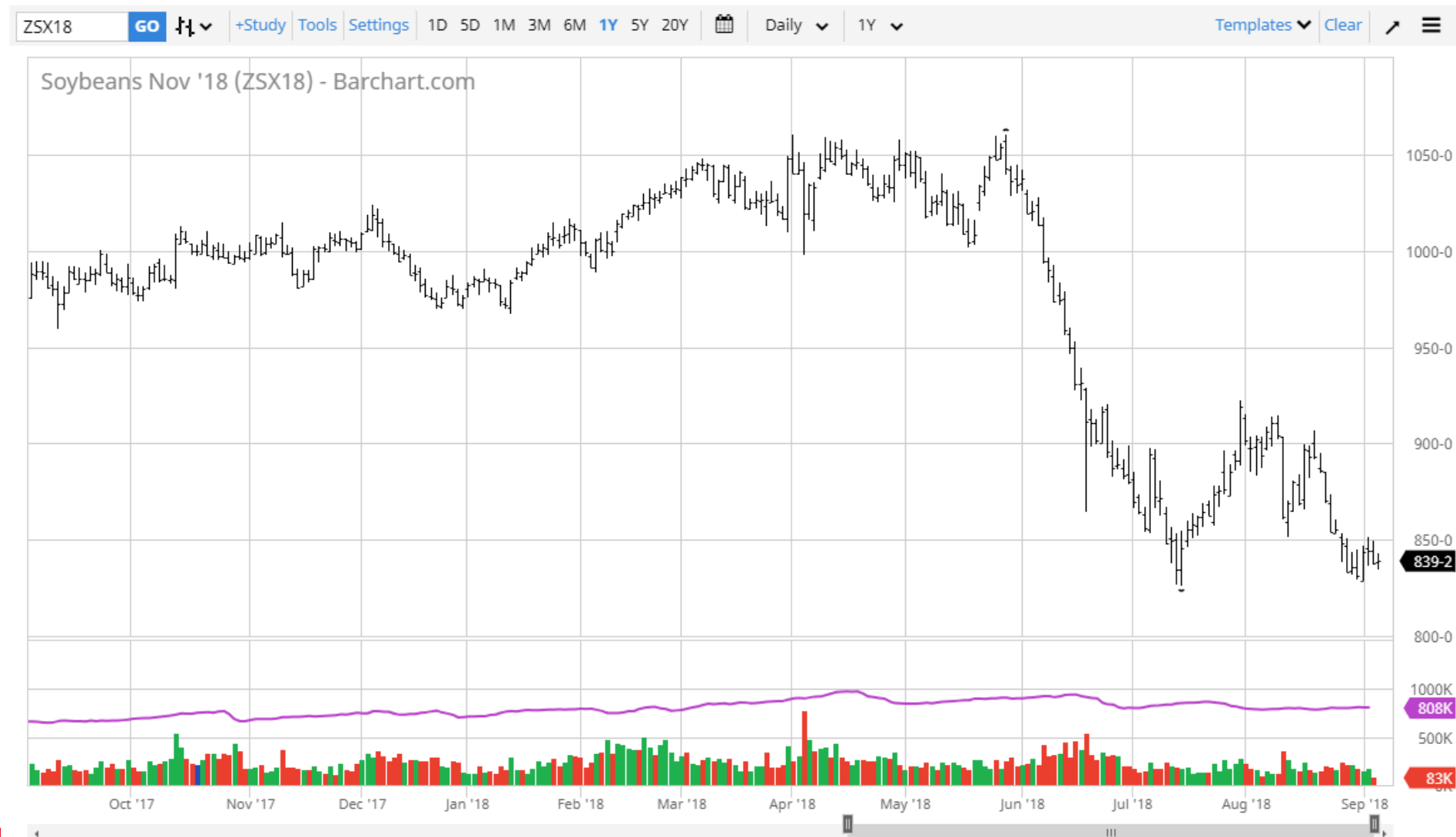
839-2s **unch (unch)** 09/06/18 [CBOT]

838-0 x 11 838-0 x 21

INTERACTIVE CHART for Fri, Sep 7th, 2018

Soy Futures

Alerts Watch Share Help



IOWA STATE UNIVERSITY
Extension and Outreach

Source:
BarChart.com

Trade Dispute Impacts – Price Changes

Cash Crop Prices	05/31/2018	08/15/2018	% Change	Source
Corn	\$ 3.52	\$ 3.21	-8.8%	USDA-AMS
Soy	\$ 9.48	\$ 7.83	-17.4%	USDA-AMS
Ethanol	\$ 1.41	\$ 1.35	-4.3%	USDA-AMS

Trade Dispute Impacts – Iowa Revenue Loss

Commodity	Price damage w elasticity	Per-unit price drop due to China trade dispute	Iowa production	Revenue loss due to China trade dispute (mil. Dollars)
Corn	-4%	- \$ 0.13	2.60 bil. bu	-\$ 325 mil.
Soy	-10%	- \$ 0.95	0.58 bil. bu	-\$ 551 mil.
Ethanol	-2%	- \$ 0.03	4.20 bil. gal.	-\$ 105 mil.
Hog	-11%	-\$8.72/cwt or - \$18/head	43 mil.	-\$795 mil.

U.S. government to pay \$4.7 billion in tariff-related aid to farmers



Mon, 27 Aug 2018

- **The US Department of Agriculture announced the first set of aid to US farmers hurt by President Donald Trump's trade war, totaling \$4.7 billion.**
- **\$3.6 billion of the aid will go to soybean farmers who have been hit particularly hard due to China's tariff on the crop.**
- **The aid is part of a promised \$12 billion package to help offset the pain of the trade war.**

The market aid payments will be administered by the USDA's Farm Service Agency and are limited to farmers having an average adjusted gross income of less than \$900,000 for the tax years 2014 through 2016. Payments also will be capped per person or legal enterprise at a combined \$125,000.

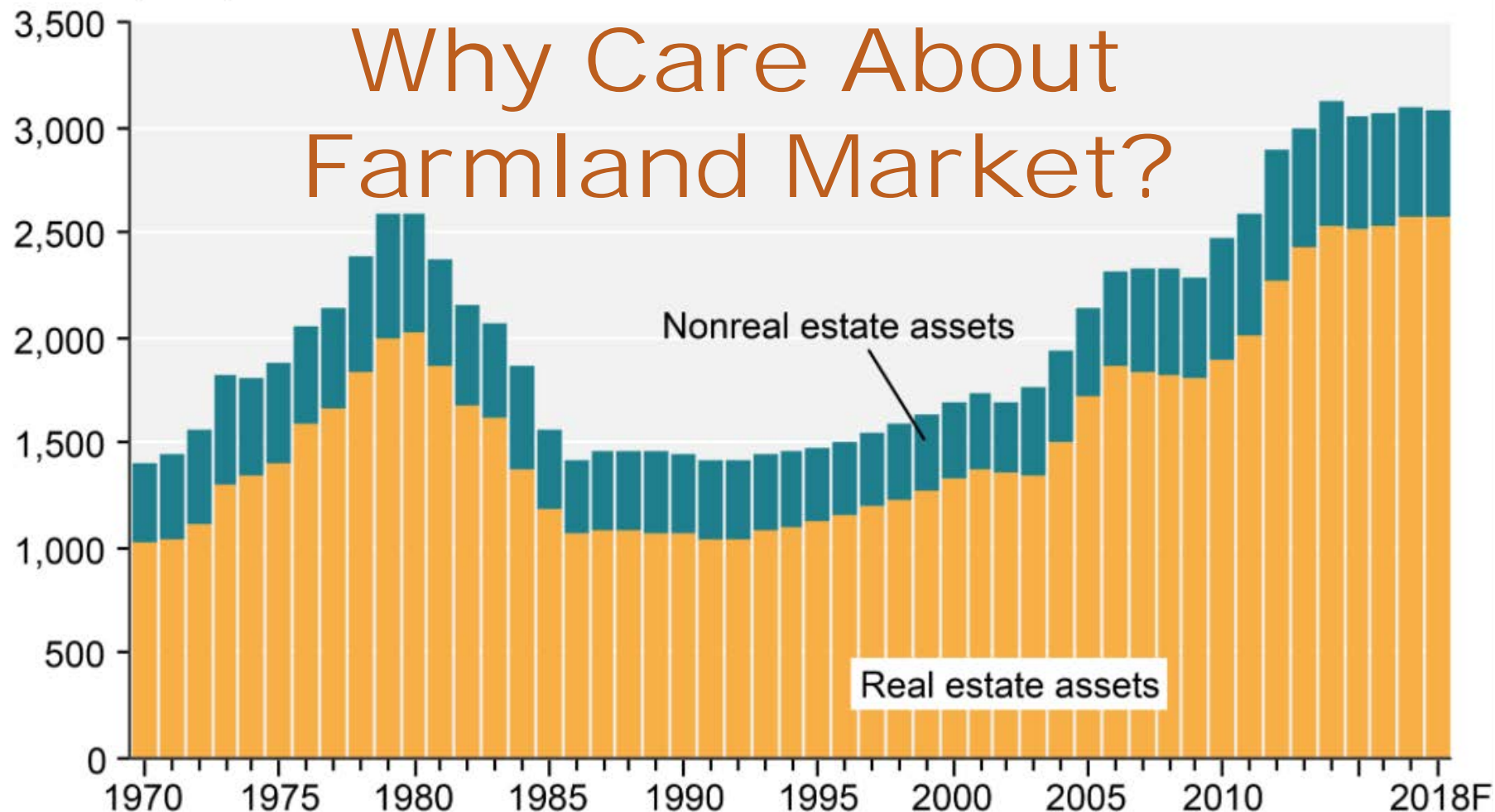
Commodity	Initial Payment Rate	Est. Initial Payment** (in \$1,000s)
Cotton	\$0.06 / lb.	\$276,900
Corn	\$0.01 / bu.	\$96,000
Dairy (milk)	\$0.12 / cwt.	\$127,400
Pork (hogs)	\$8.00 / head	\$290,300
Soybeans	\$1.65 / bu.	\$3,629,700
Sorghum	\$0.86 / bu.	\$156,800
Wheat	\$0.14 / bu.	\$119,200
Total		\$4,696,300

*** Initial payment rate on 50% of production*

Farm sector assets, inflation adjusted, 1970-2018F

\$ billion (2018)

Why Care About Farmland Market?



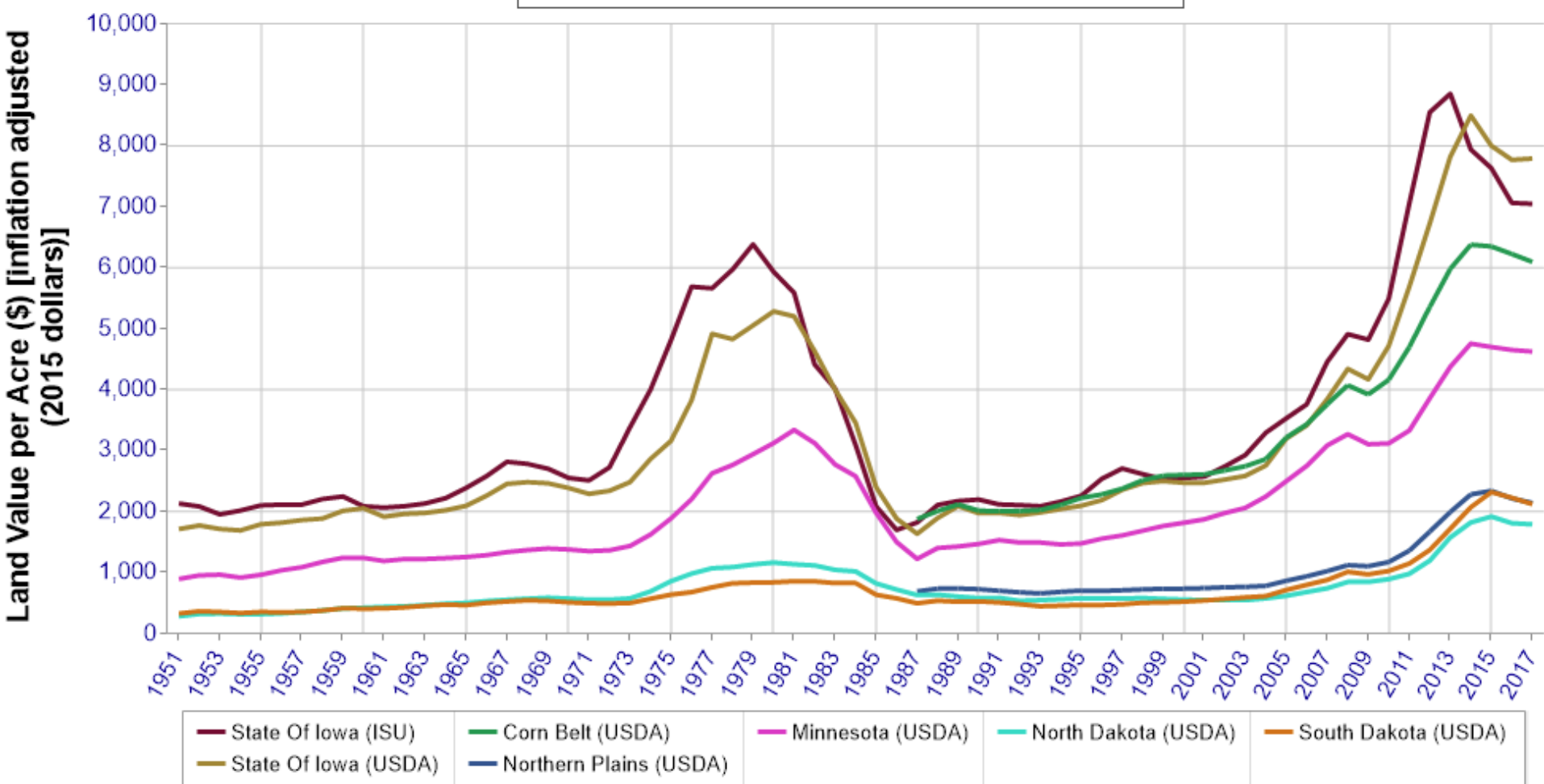
Note: F = forecast. The GDP chain-type price index is used to convert the nominal (current-dollar) statistics to real (inflation adjusted) amounts (2018=100).

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.

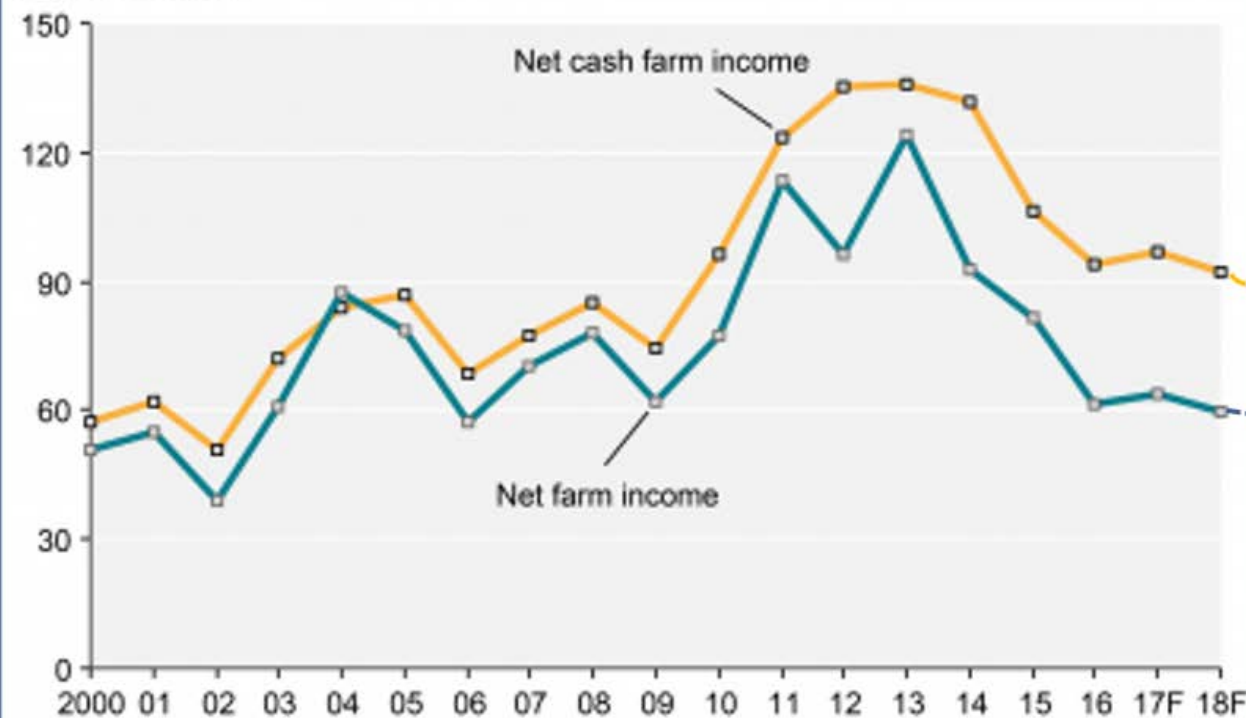
Data as of February 7, 2018.

Guiding Framework

$$\text{Land Value} = \frac{\text{localized net income}}{\text{universal interest rate}}$$



\$ billion, nominal



Note: F = forecast.

Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.

Data as of February 7, 2018.

Farm Policy

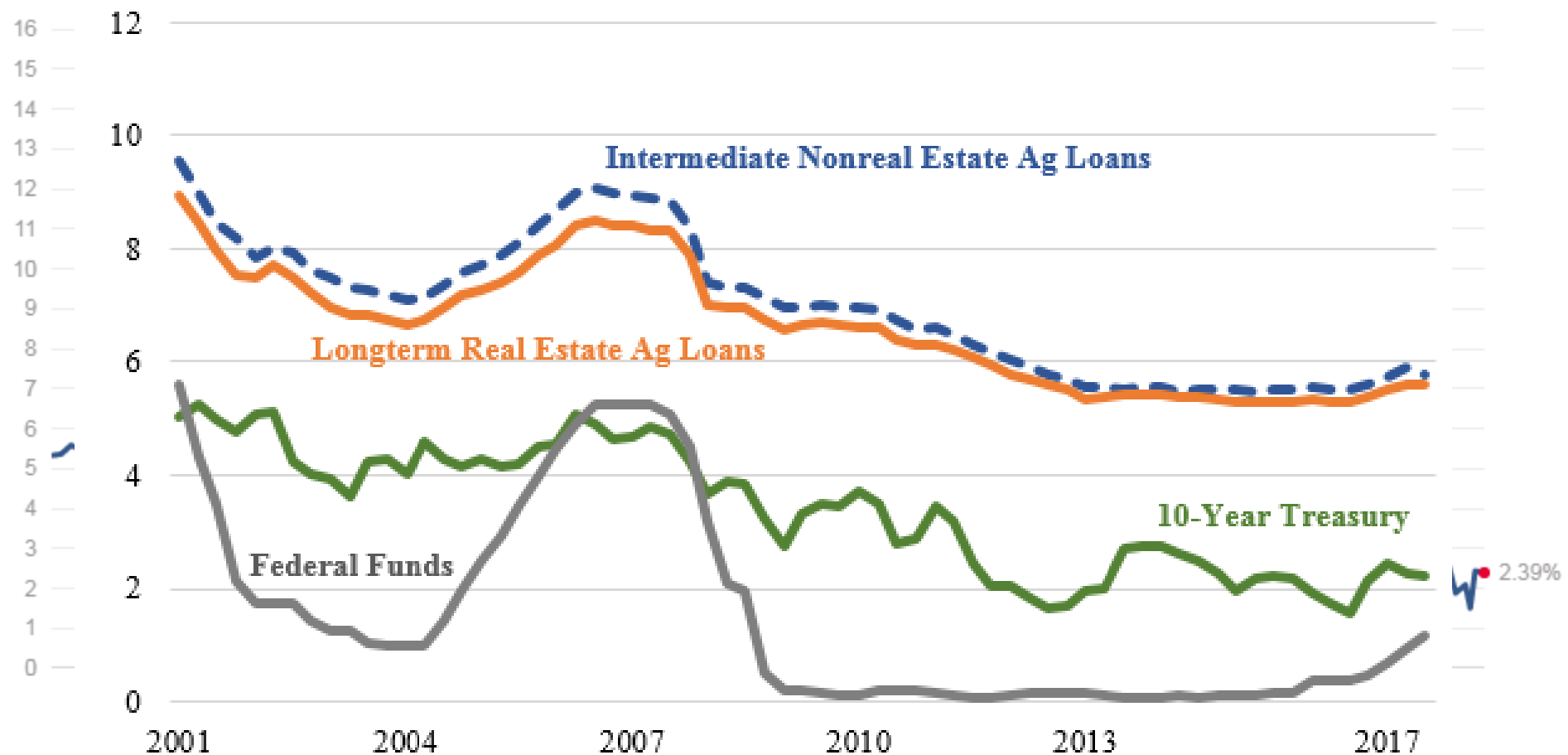
USDA
OCE
Forecast
to 2026

China Ag Center · Publication

Minghao Li, Wendong Zhang, and
Chad E. Hart. 2018. ["What Can We
Learn about U.S.-China Trade
Disputes from China's Past Trade
Retaliations?"](#) *CARD Policy Brief*.
Center for Agricultural and Rural
Development, Iowa State
University.

The U.S. Department of Agriculture's Economic Research Service (ERS) [indicated on Wednesday](#) that, "Net farm income, a broad measure of profits, is forecast to decrease \$4.3 billion (6.7 percent) to \$59.5 billion in 2018, which would be the lowest level in nominal terms since 2006."

Positive 2: Historically low interest rates



The Fed's New Dot Plot

Compare projections between: **Mar 2018** and **June 2018**

June 2018

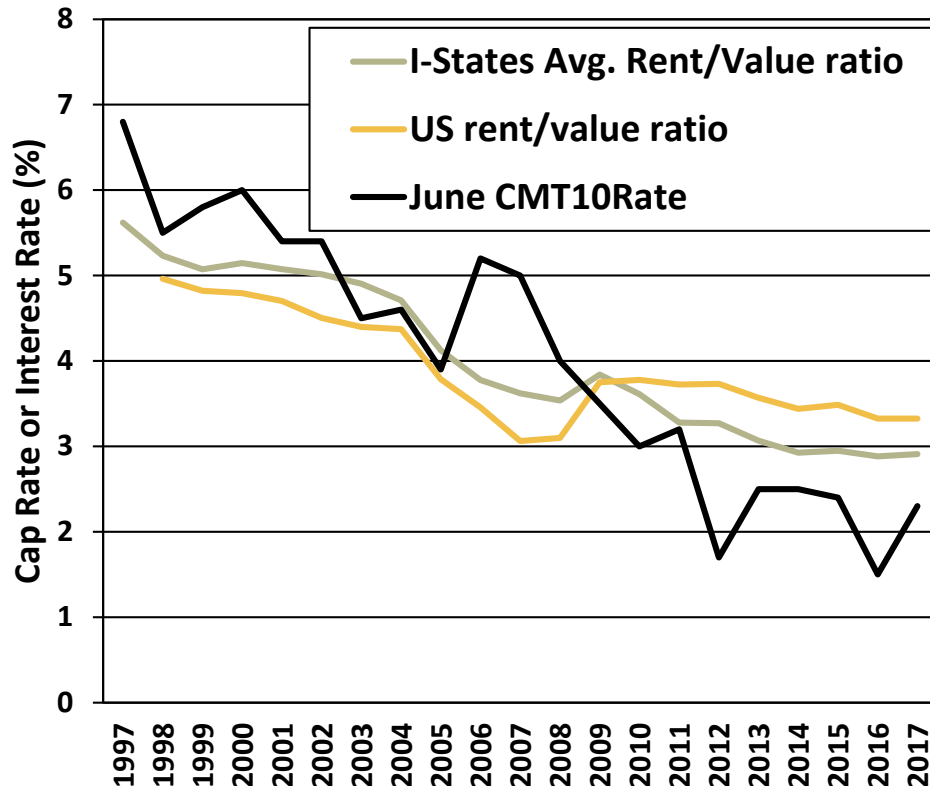
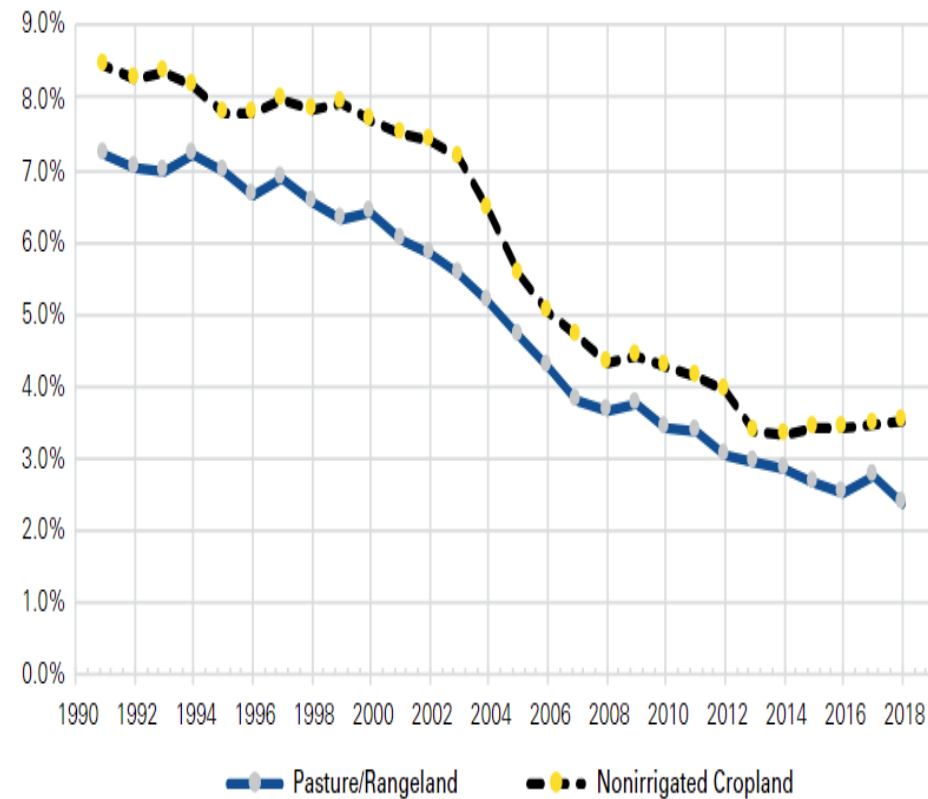
1 4 16 Number of governors voting ○ ● Older/newer projection ○ ● Median of projections



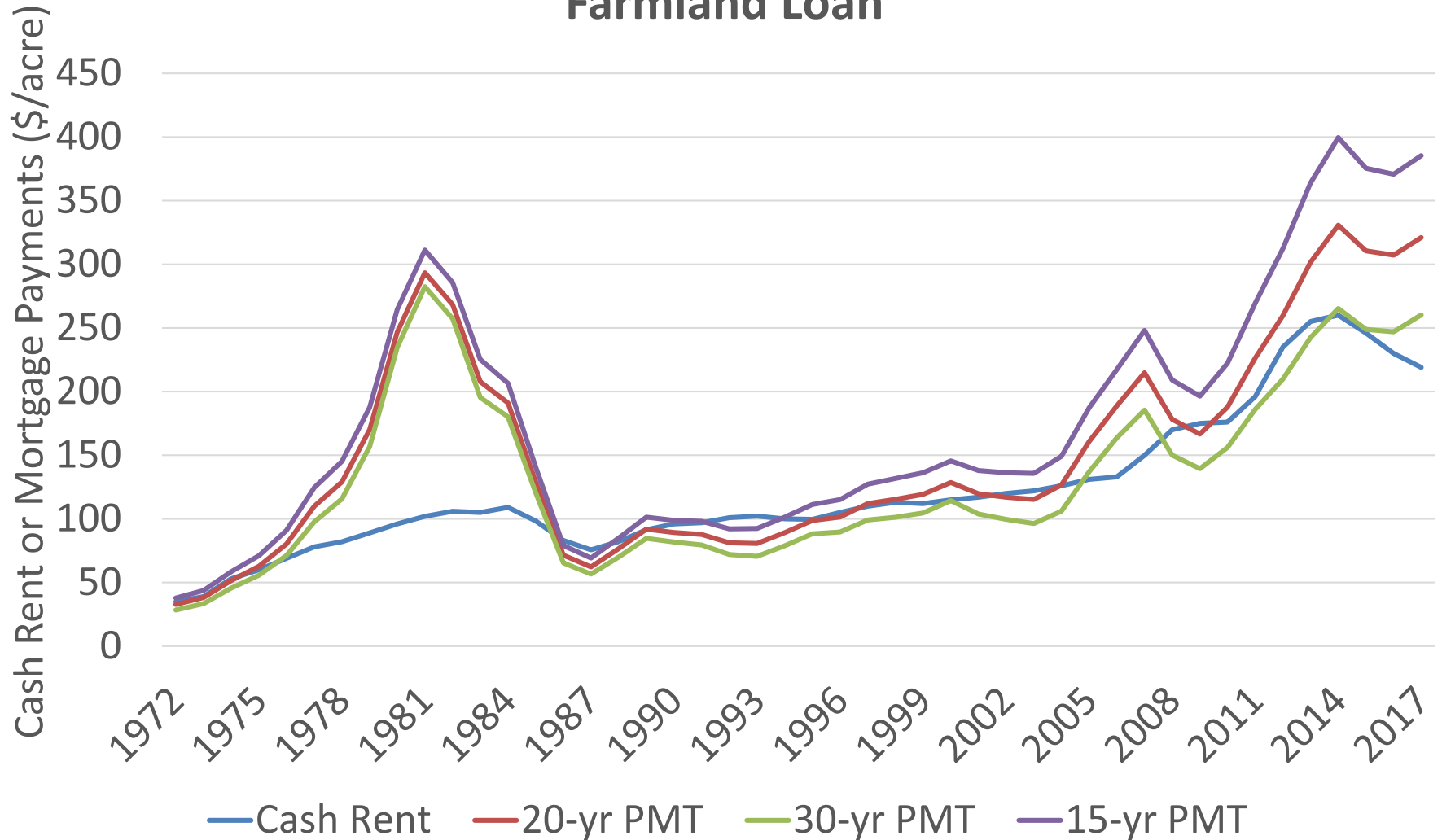
Left: Cash Rent Per Acre 1994-2017

Right: Cap Rate (Rent/Value) vs. CMT 10 Rate

Graph 1. Gross Rent-to-Value Ratio 1991-2018



Annual Mortgage Payments vs. Cash Rents for Iowa Farmland Loan



Land Values and Increasing Interest Rates – Purdue U

- **Regression Analysis**

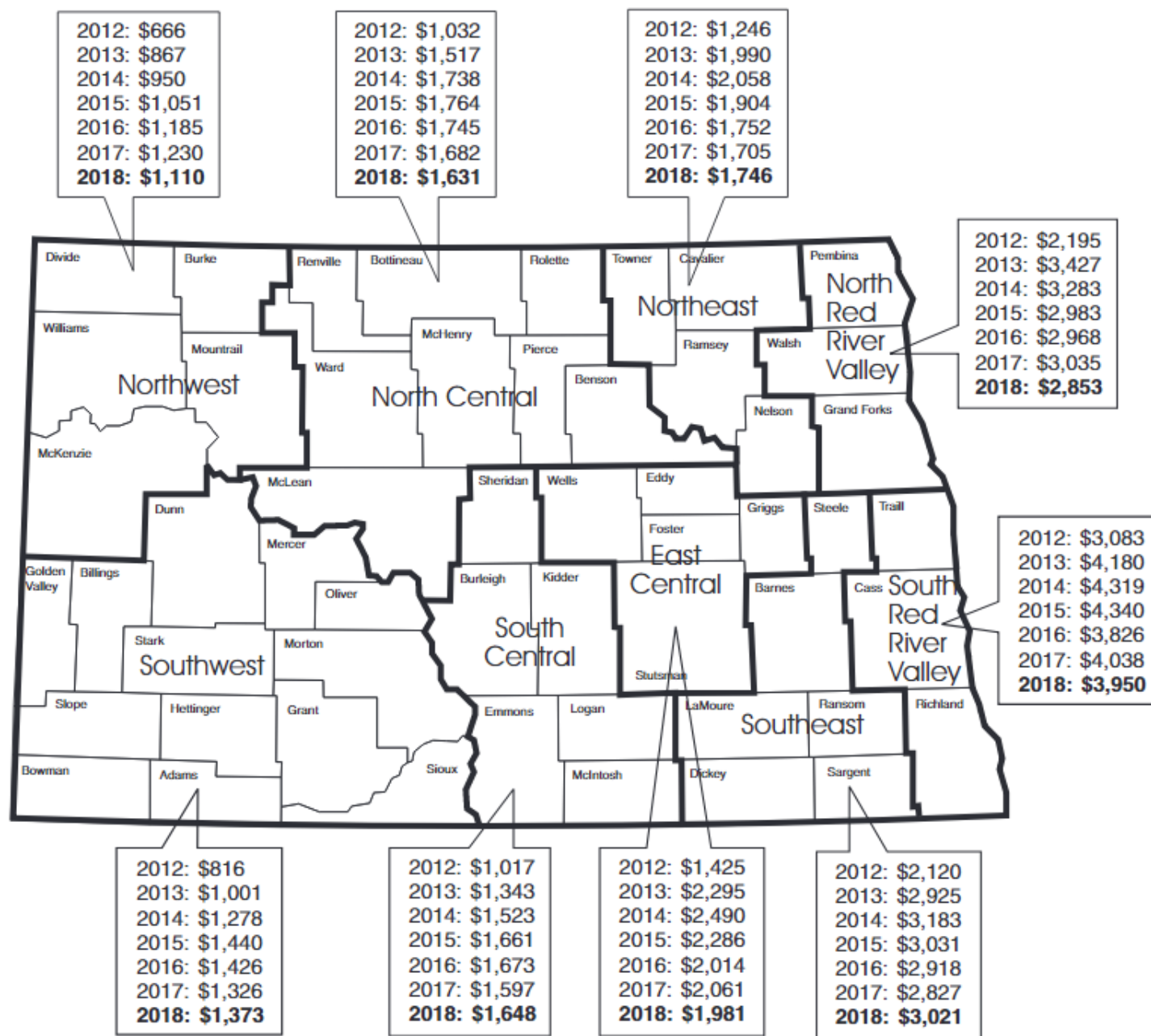
- $LV = f(LLV, CR, r)$

- LV = land value
 - LLV = lagged land value
 - CR = predicted cash rent
 - r = capitalization rate

- Using data from 1960 to 2017 for west central Indiana, a 1% increase in r , holding cash rent constant, would result in a decrease in land values of 5 to 7%.

Positive 3: Prudence in Ag Lenders/Regulators

- Banking Regulations
 - More stringent, frequent stress-test
 - BASEL III, liquidity requirements for banks
 - (Ron Hansen – Iowa Division of Banking Superintendent) walk into this “with eyes wide open”
- Cash-Flow Based Loan Practice
 - Before 1987: loan to value ratio is 85%
 - 1987-2008: loan to value ratio is 65%
 - After 2008: use cash-flow method for collateral (\$4 corn, \$10 bean) and 50% of cash flow value



**Estimated average per-acre values of cropland
in North Dakota from 2012 to 2018.**

South Dakota Cropland and Pasture Prices

Feb
2018

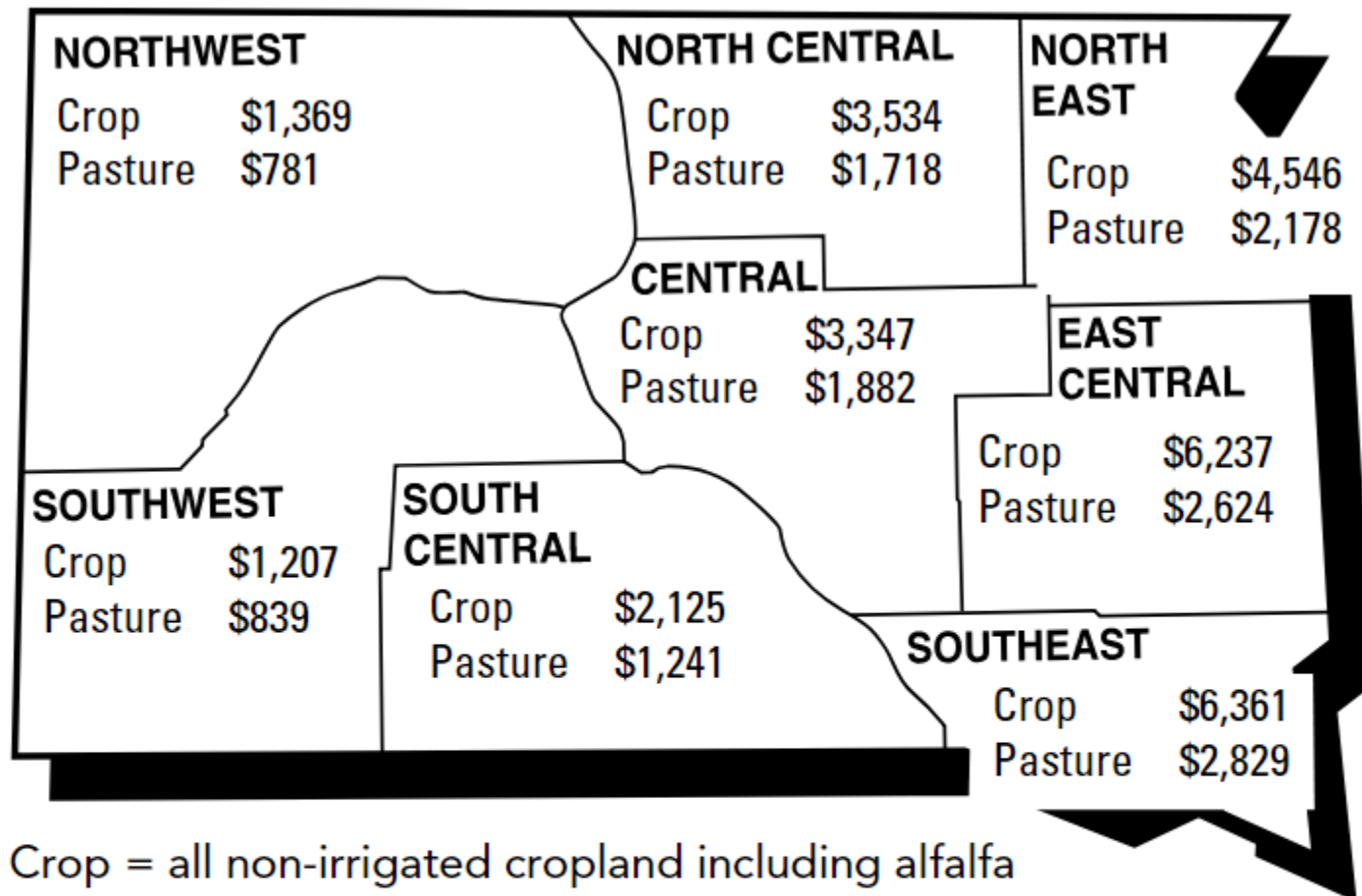


Figure 2. Average value of South Dakota cropland and pasture/rangeland, by region, February 2017, dollars per acre.

Source: 2017 South Dakota Farm Real Estate Market Survey, SDSU Extension.

South Dakota Cropland and Pasture Cash Rents

Feb
2018

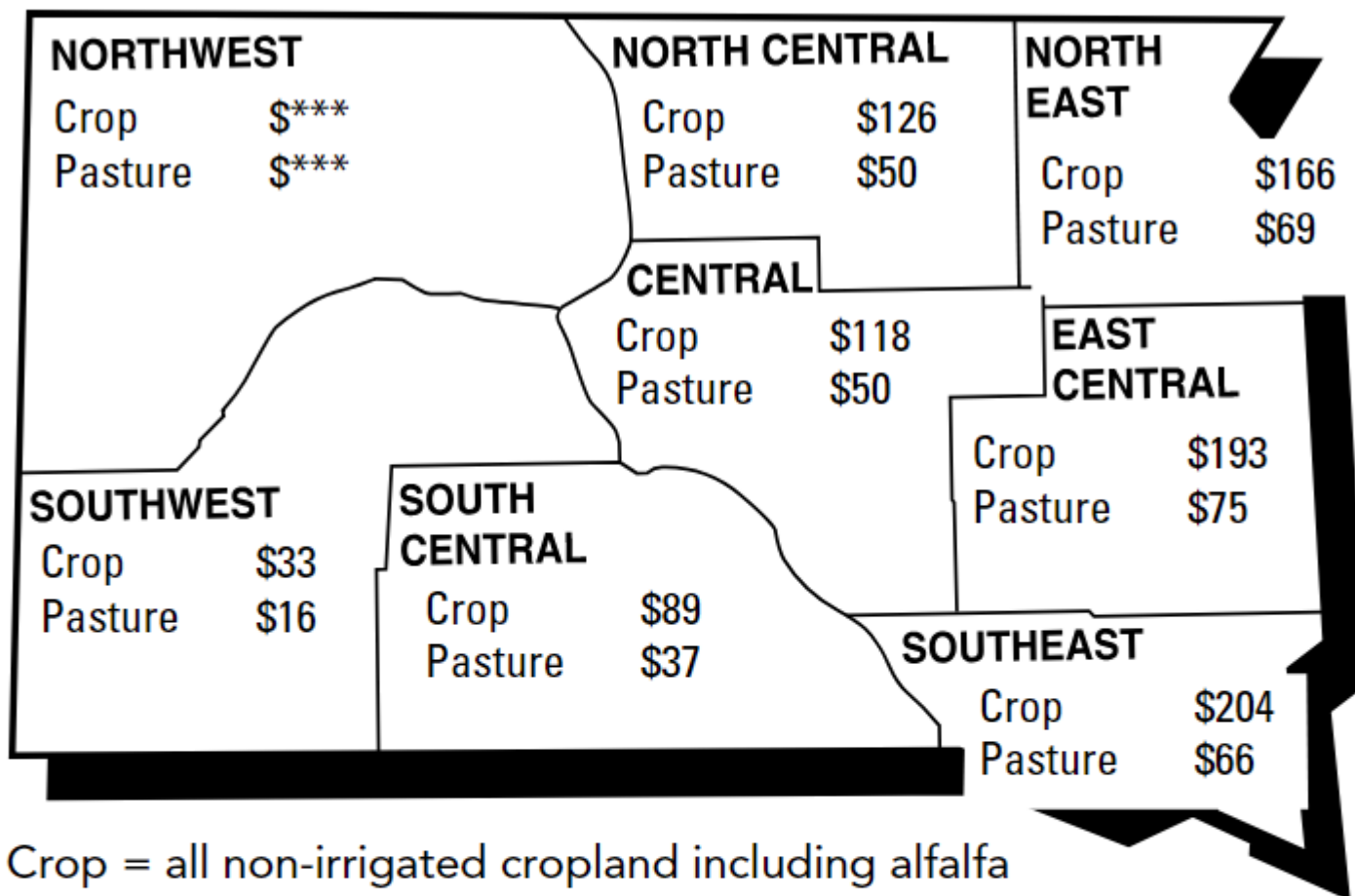
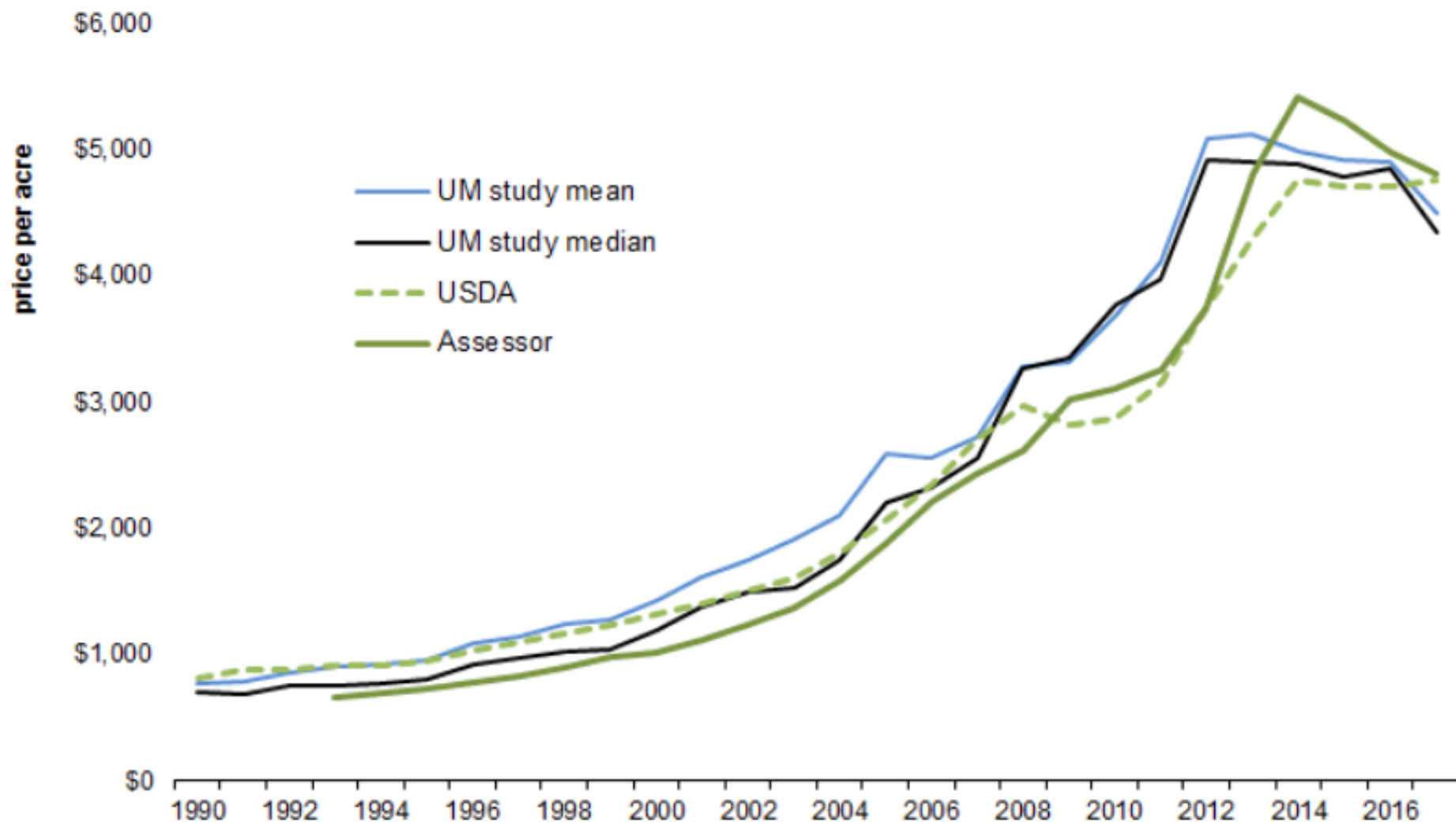


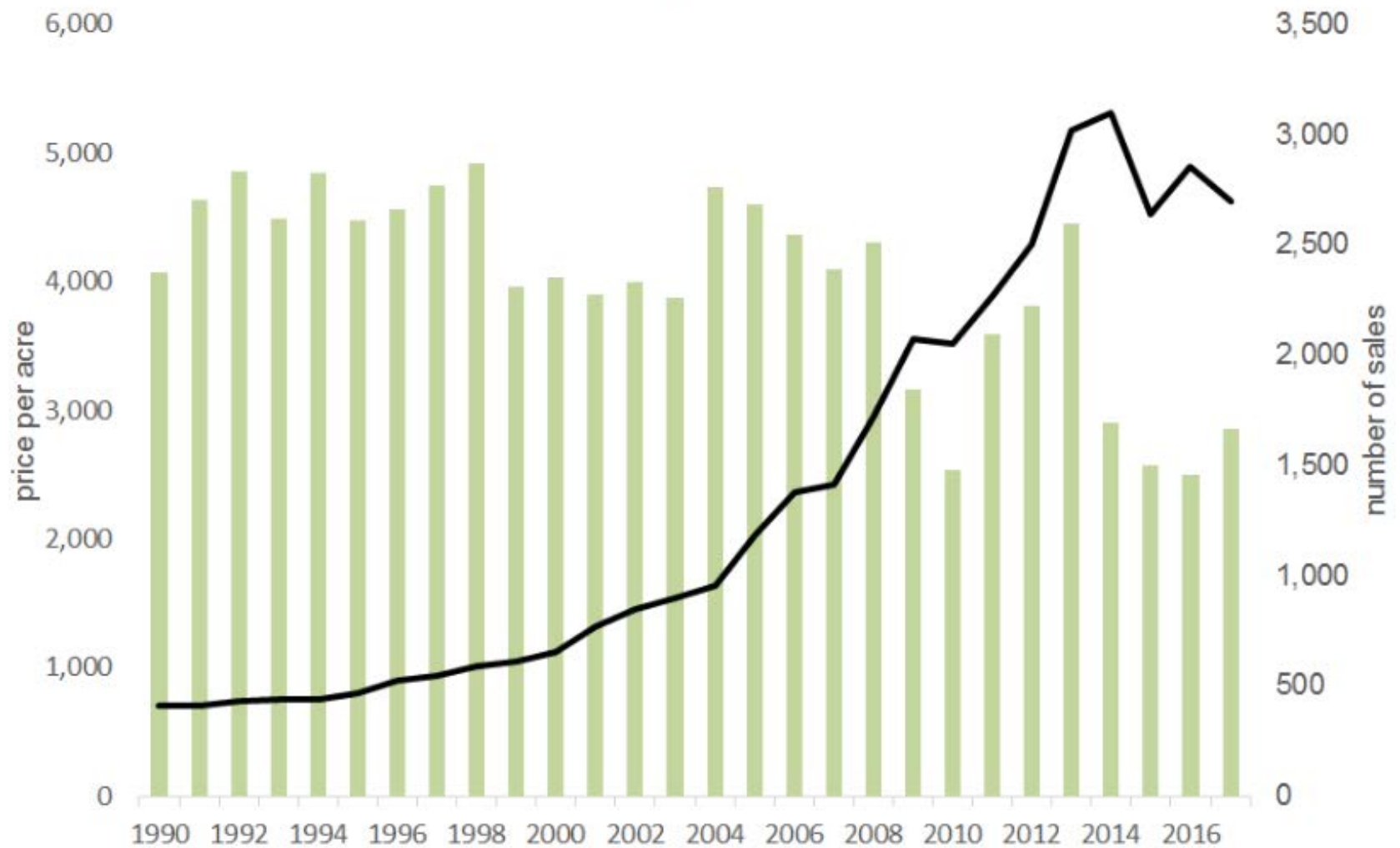
Figure 1. Average cash rental rate of South Dakota non-irrigated cropland and pasture/rangeland, by region, February 2017, dollars per acre.

Source: 2018 South Dakota Farm Real Estate Market Survey, SDSU Extension.

Estimates of average Minnesota farm real estate values 1990 - present



Minnesota farm real estate sales:
median price (line) and number of sales (bars)
sales year (Oct. - Sept.)

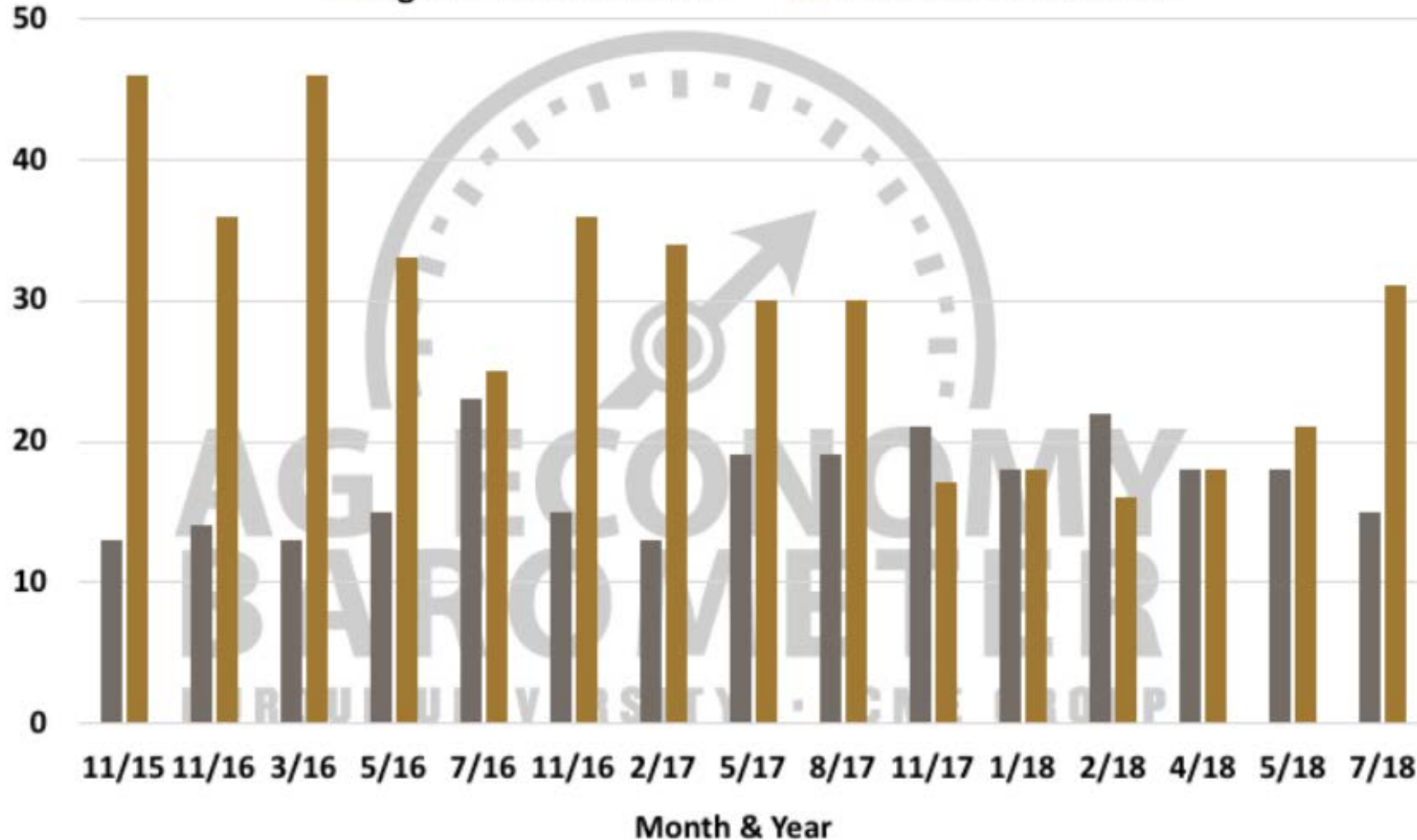


Farmland Price Expectations, 12 Months Ahead

% of respondents

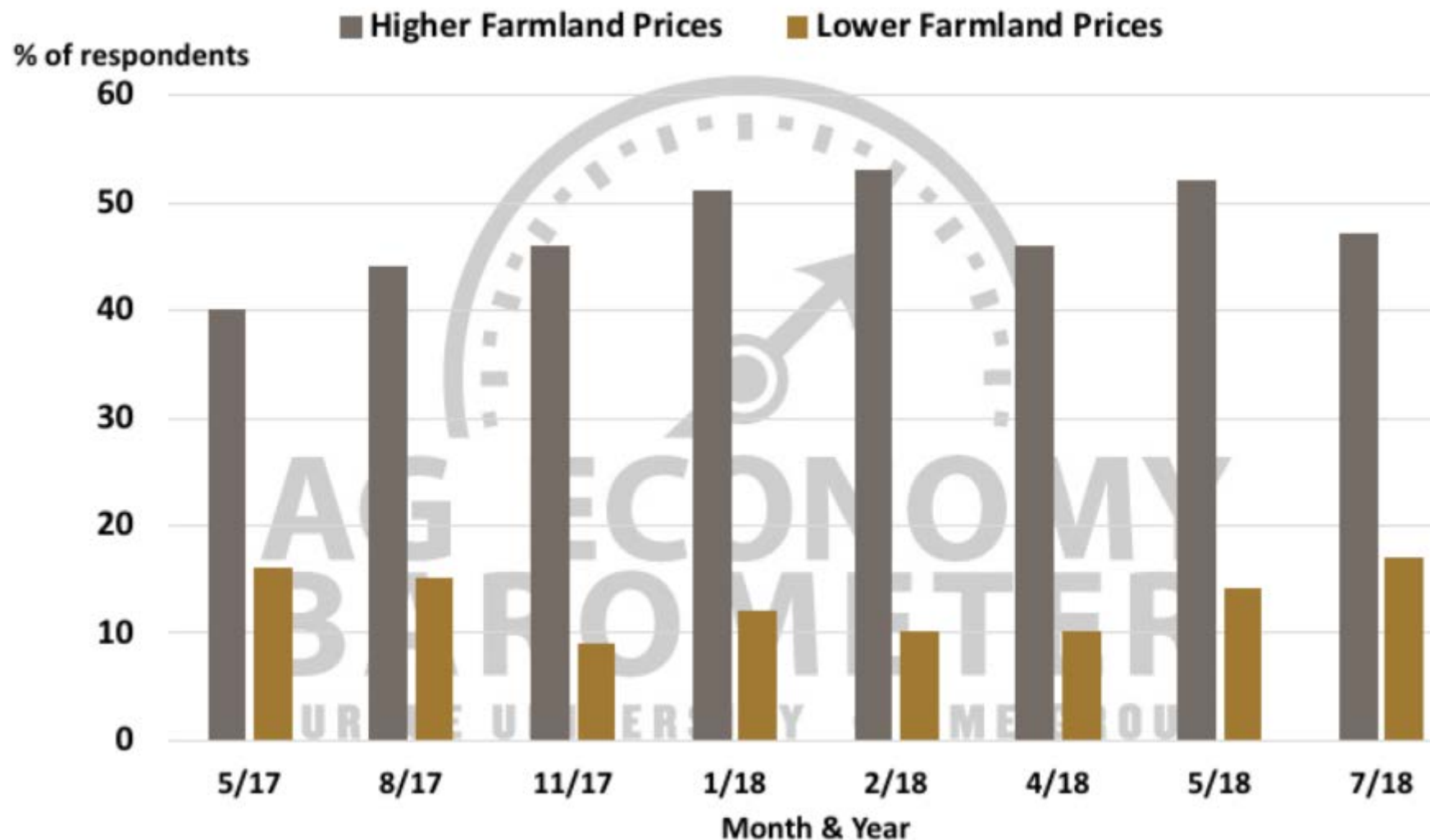
■ Higher Farmland Prices

■ Lower Farmland Prices



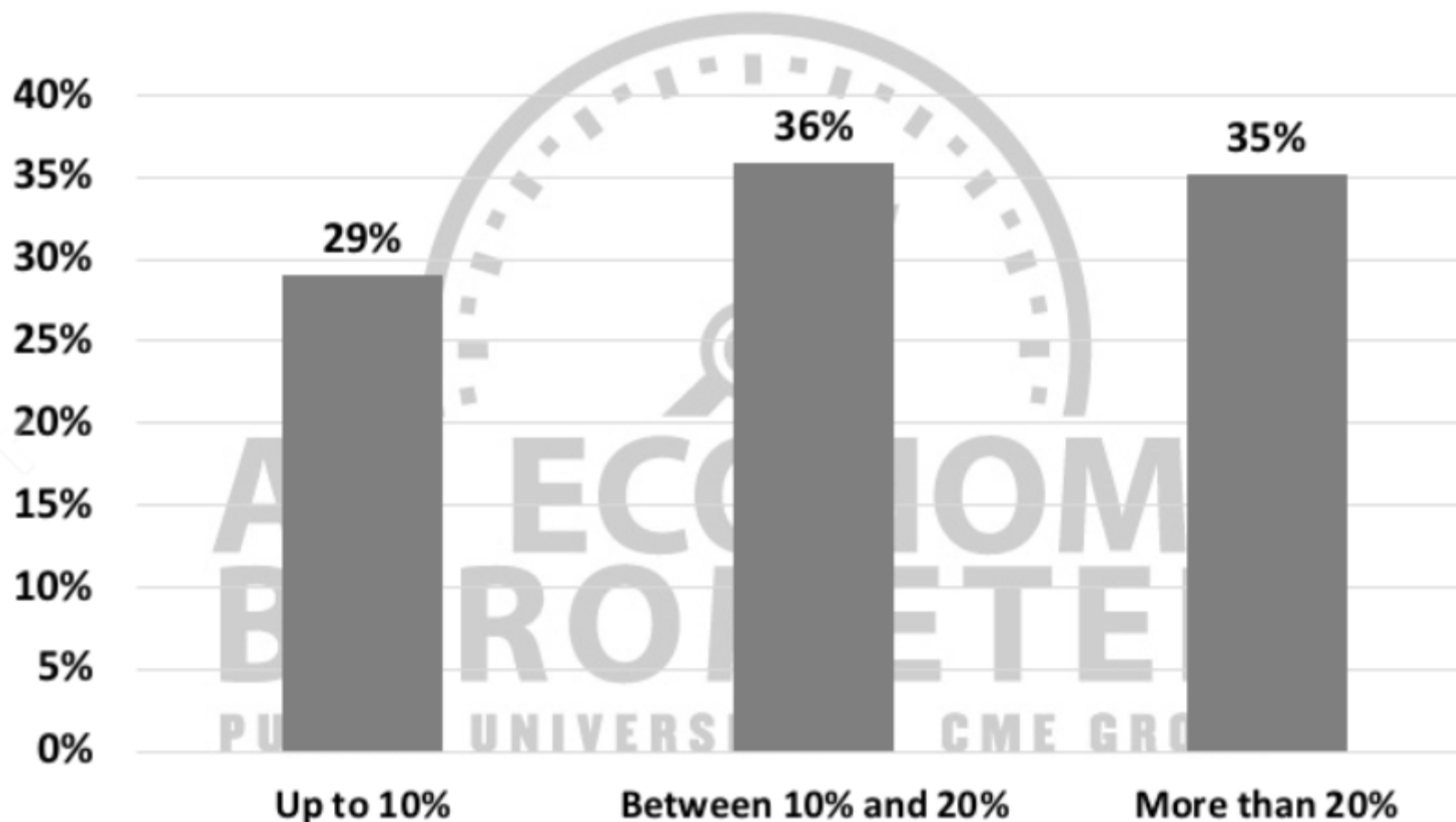
Source: Purdue Center for Commercial Agriculture, Producer Survey, July 2018

Farmland Price Expectations, 5 years from now

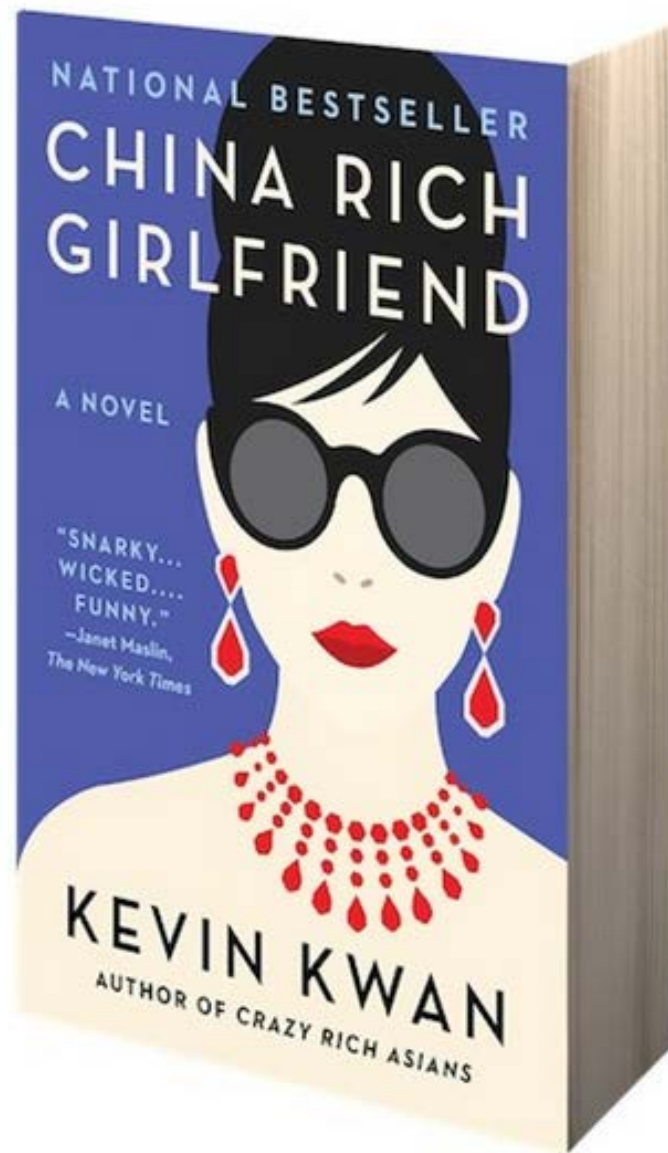


Source: Purdue Center for Commercial Agriculture, Producer Survey, July 2018

By how much do you expect your farm's net income to decline because of trade conflicts?



Source: Purdue Center for Commercial Agriculture, Producer Survey, July 2018



Thank You!

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