



# iSELECT

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## US Farm Profitability

Industry Deep Dive: Wednesday, February 6<sup>th</sup>, 2018

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# Topics Covered

- What is farm profitability?
- What is the state of farm profitability in 2018/2019?
- What factors today are most impactful to farm profitability?
- What are some of the new technologies coming online that could potentially impact farm profitability?
- What startups have we talked to and where should we look next?
- What are the precedent exits in technologies directly improving farm profitability?
- Who are the potential early adopter customers for solutions to the farm profitability challenges?
- How should we pursue investment?

# Key Findings Summary

## ■ Problems:

- Farm profitability (net farm income) hit a 9-year low in 2018, though the years of 2008-2013 were exceptionally high by industry standards
- Farmers traditionally receive the lowest end of the “Food Dollar”, and are susceptible to a wide variety of variables

## ■ Potential Solutions:

- Improved trade relations to expand US export capacity
- Increasing diversification of products produced on the farm
- Improving production of higher value crops, which are taking command of US exports
- Increasing farmer access to technology and information to increase bargaining power

## ■ Challenges

- Farms tend to improve in profitability as they industrialize and grow in size and farms are continuing to grow in size; what does this mean for the food supply?
- Lots of noise and various solutions in the agricultural technologies space; it can be difficult to make decisions
- Sources of debt financing are generally less available for smaller scale farmers

## ■ The Impacts & Opportunities

- Farmers, with greater access to information, differentiation and resources have immense power as food producers; finding ways to consistently increase their profit share represents a massive opportunity for value capture



## **Problems, Opportunities & Solutions**



# Farm Profitability

*Each year farmers produce \$200B worth of agricultural value, yet only receive 12% of each dollar earned by the food they grow.*

## Breakdown:

### Farm Profitability: State of the Union

- On average, farm profitability has been declining for the last 10-12 years, since historic highs in the late 2000s.
- Net farm income has continued to decrease, debt to asset ratio has continued to increase

### Driving Forces of Farm Profitability

- Climate variability/Climate change
- Trade policy/exports
- International agricultural productivity
- Technological advancement
- Crop diversification
- Input prices

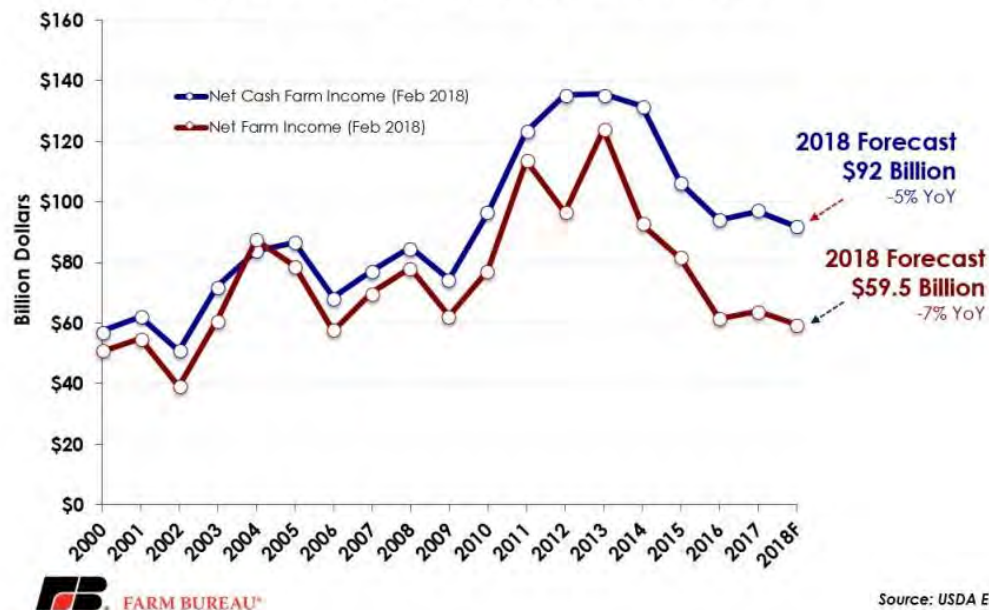
### Technology that Could Help

- Information technology (FBN, Conservis)
- Improved biotechnology solutions
- Automation & robotics
- New crop types/diversification

### Market Opportunity

- Farmers produce \$200B in agricultural value every year, marginal increases in market share present opportunity for large value capture.

Figure 1. Net Cash Income and Net Farm Income



# What's Going Right & Wrong?

## The Good

- Record agricultural production and yield numbers for corn and soy
  - Soybeans for the first time in US history exceeded corn plantings in 2018 @ 89.145 million acres vs. 89.140 million acres
  - Yield for soybeans = 52.1 bushels/acre
  - Yield for corn = 178.9 bushels/acre (up from 1.3% from the year before)
  - Second largest corn harvest in recorded history at 14.6M bushels
- New technology is becoming available that gives farmers more access to information at the farm and market level to enhance decision making
  - Groups like FBN & Indigo claim to be giving farmers more choice, trying to uproot the control of the Big Three.

## The Bad

- % food dollar earned by farmers has reached an all-time low (\$0.12/dollar)
- Net farm income is at a 10-12 year low (\$66.3B) and net farm cash income dropped \$8.5B in 2017 to \$93.4B in 2018
- Labor continues to be a major issue in both commodity & specialty agriculture
- Debt to asset ratio has risen consistently since 2013
- Trade dispute with China has affected US ability to export agricultural goods
- 85% of the \$25B in farm subsidies went to 15% of growers



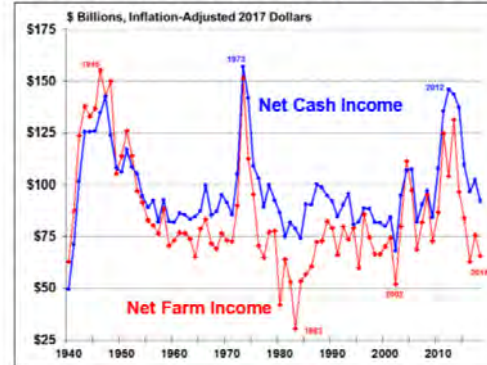
# Net Farm Income & Farmer Food Dollar Share

Figure 1. Annual U.S. Farm Sector Nominal Income, 1940-2018



Source: ERS, "2018 Farm Income Forecast," November 30, 2018. All values are nominal—that is, not adjusted for inflation. Values for 2018 are forecasts.

Figure 2. Annual U.S. Farm Sector Inflation-Adjusted Income, 1940-2018



Source: ERS, "2018 Farm Income Forecast," November 30, 2018. All values are adjusted for inflation using the chain-type gross domestic product deflator, where 2017 = 100. Office of Management and Budget, Historical Tables, Table 10.1, <https://www.whitehouse.gov/omb/budget/Historicals>; 2018 is forecast.

Figure 1. Farm Share of the Food Dollar, Nominal and Real 1993 to 2016



FARM BUREAU

Source: USDA ERS

## Main Takeaways

- Net farm income has hit a 10-12 year low, though the period of 2010-2012 was abnormally high
- Excess production during high years has led to price drops in recent years
- Farmer share of the "Food Dollar" is at an all time low (\$0.12/dollar)
- Farms producing both cattle and crops saw greater resilience in net farm income; those producing only crops were hit harder



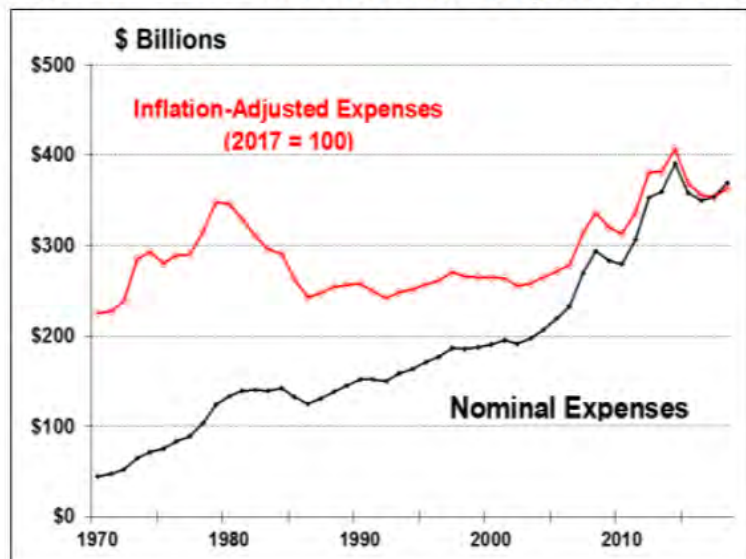
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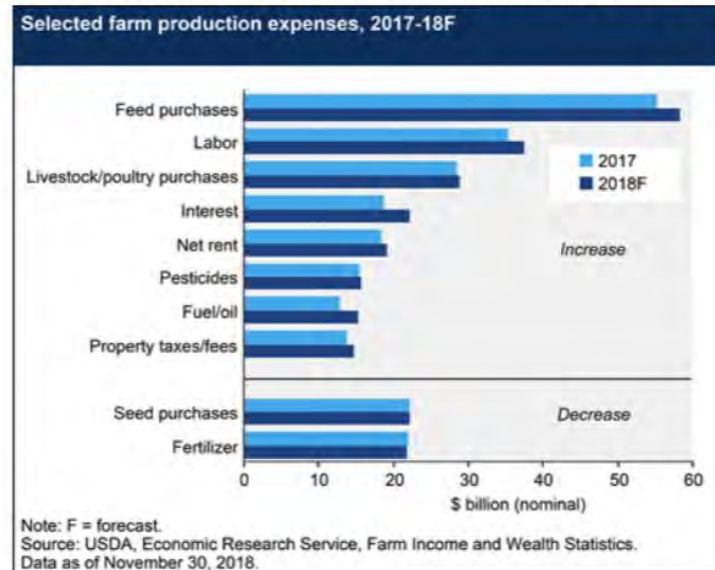
# Agricultural Cost Breakdown 2018

Figure 16. Total Annual Farm Production Expenses, 1970-2018



Source: ERS, "2018 Farm Income Forecast," November 30, 2018. Inflation-adjusted expenses are calculated using the chain-type GDP deflator, OMB, Historical Tables, Table 10.1. Amounts for 2018 are forecasts.

Figure 18. Farm Production Expenses for Selected Items, 2017 and 2018



Source: ERS, "2018 Farm Income Forecast," November 30, 2018. All values are nominal. Amounts for 2018 are forecasts.

## Main Takeaways

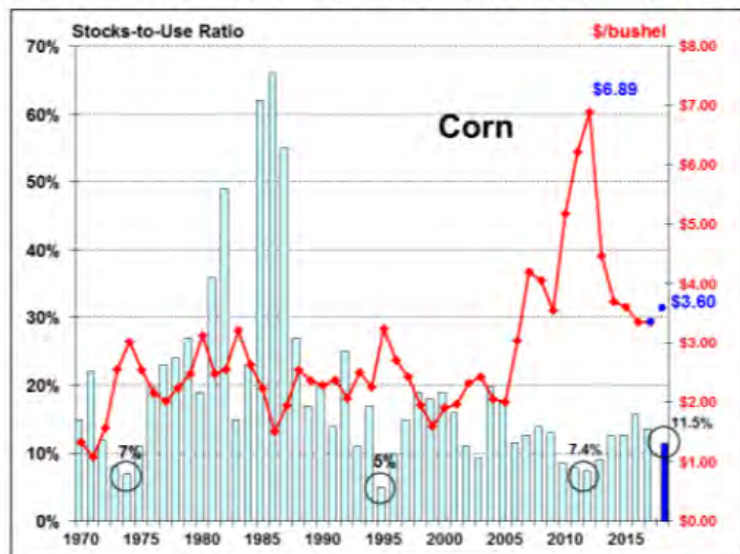
- Generally speaking, expenses were forecasted to increase across the board
- Important to note that expenses vary across different agricultural operations (animals vs. crops)





# Corn & Soy Pricing Trends

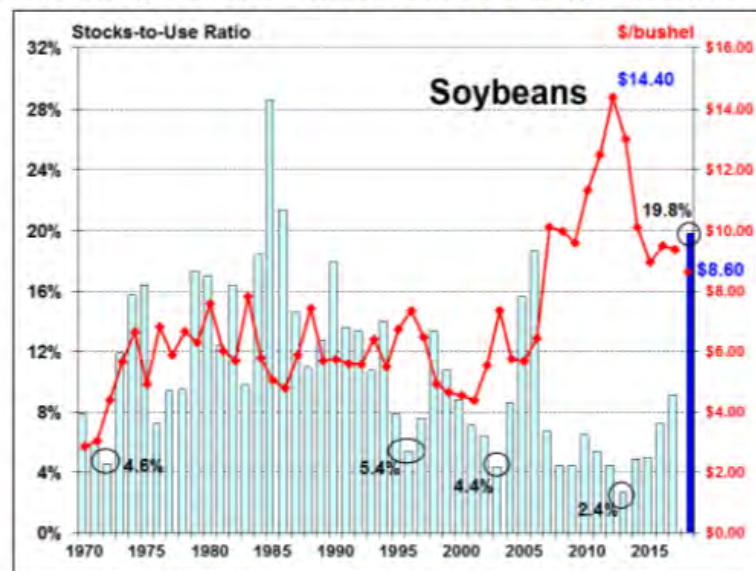
Figure 5. U.S. Corn Stocks-to-Use Ratio Down, Price Up Slightly in 2018



Source: World Agricultural Outlook Board (WAOB), USDA, World Agricultural Supply and Demand Estimates (WASDE), November 8, 2018. All values are nominal. Values for 2018 are forecasts.

Notes: Stocks-to-Use equals the ratio of season-ending stocks relative to the season's total usage.

Figure 6. U.S. Soybean Stocks-to-Use Ratio Up Sharply, Price Down in 2018



Source: WAOB, USDA, WASDE, November 8, 2018. All values are nominal. Values for 2018 are forecasts.

Notes: Stocks-to-Use equals the ratio of season-ending stocks relative to the season's total usage.

## Main Takeaways

- Corn and soy prices were projected to increase marginally in 2018
- Record setting production and yield for corn and soy in the US in 2018



# Appendix A. Cost Breakdown of Sample Farms

Figure 1. Corn following corn, 2019 estimated costs of production

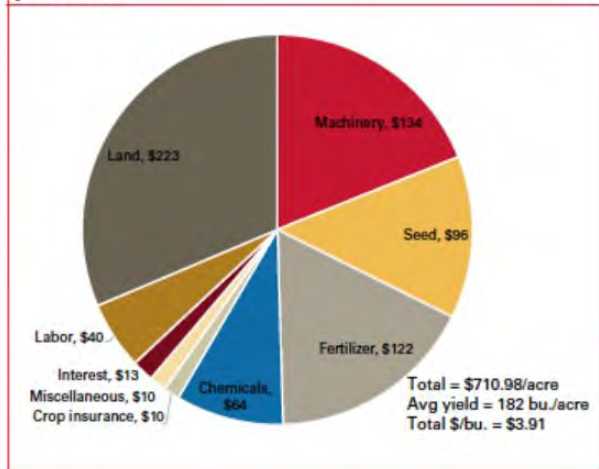


Figure 2. Corn following soybeans, 2019 estimated costs of production

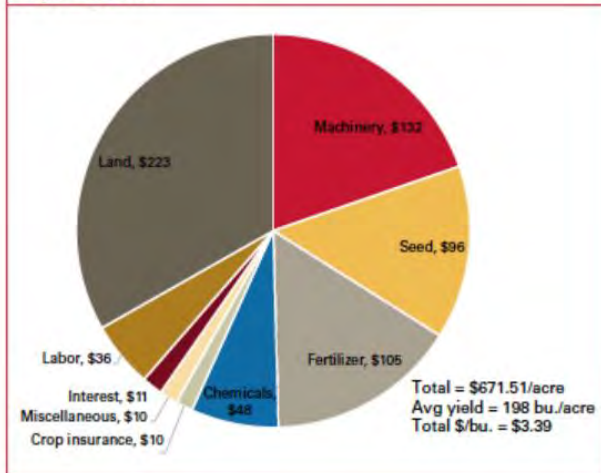
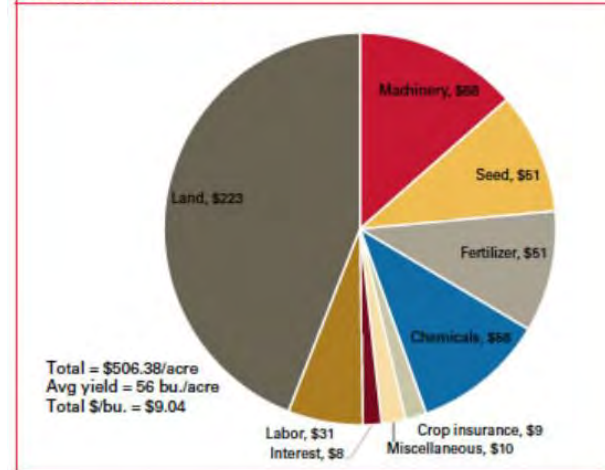


Figure 3. Herbicide tolerant soybeans, 2019 estimated costs of production

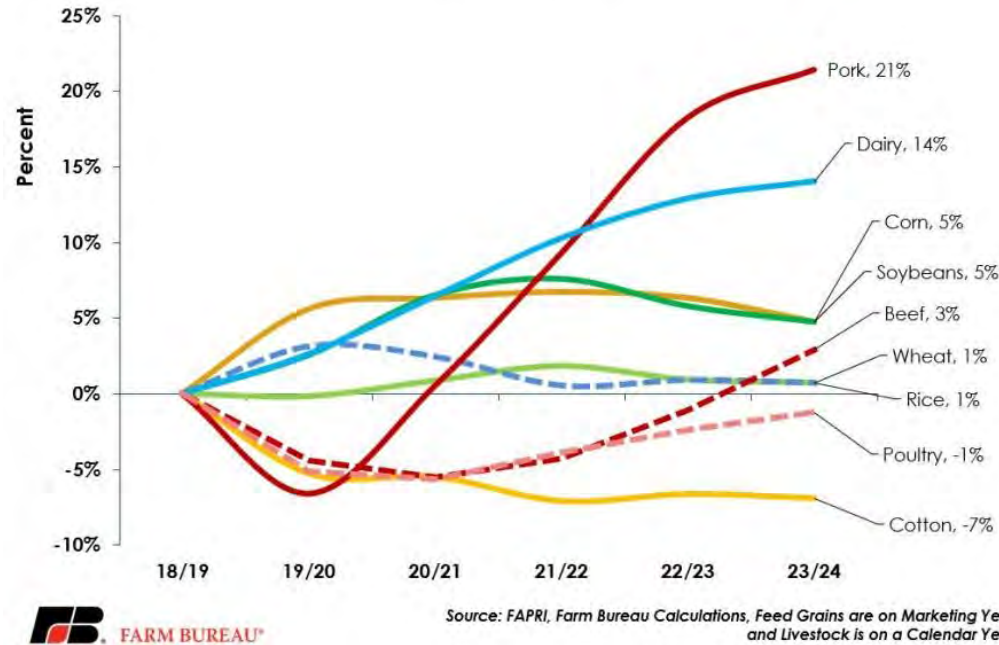


## Main Takeaways

- Land and machinery make up 50% or more of the cost of commodity crop operations, followed by seed, fertilizer and crop protection chemicals as other areas of major cost.

# Commodity Crop Prices Going Forward

Figure 4. Projected Cumulative Price Changes for Select Agricultural Commodities



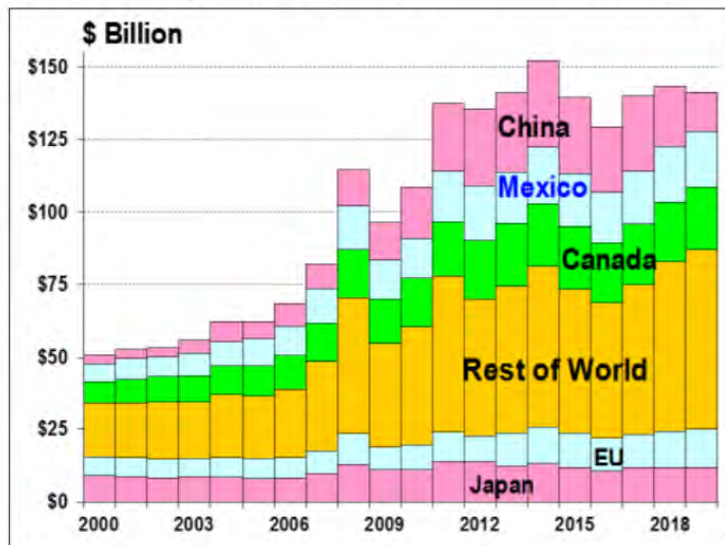
## Main Takeaways

- Overall, the agricultural outlook is less bleak for corn and soy, while demand for pork and dairy is expected to increase substantially



# US Agricultural Trade Trends

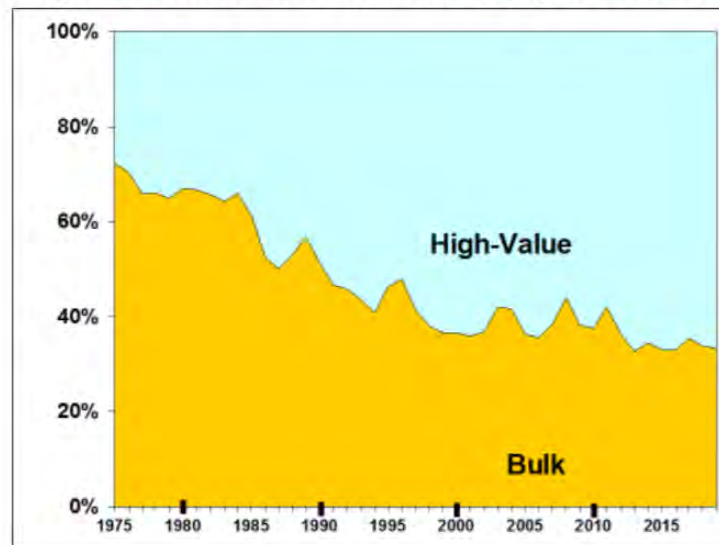
Figure 21. U.S. Agricultural Exports Have Levelled Off Since FY2011



Source: ERS, Outlook for U.S. Agricultural Trade, AES-I05, November 29, 2018. Amounts for 2018 and 2019 are projected.

Note: Data are for fiscal years (October to September).

Figure 22. U.S. Agricultural Trade: Bulk vs. High-Value Shares



Source: ERS, Outlook for U.S. Agricultural Trade, AES-I05, November 29, 2018. Amounts for 2018 and 2019 are projected.

## Main Takeaways

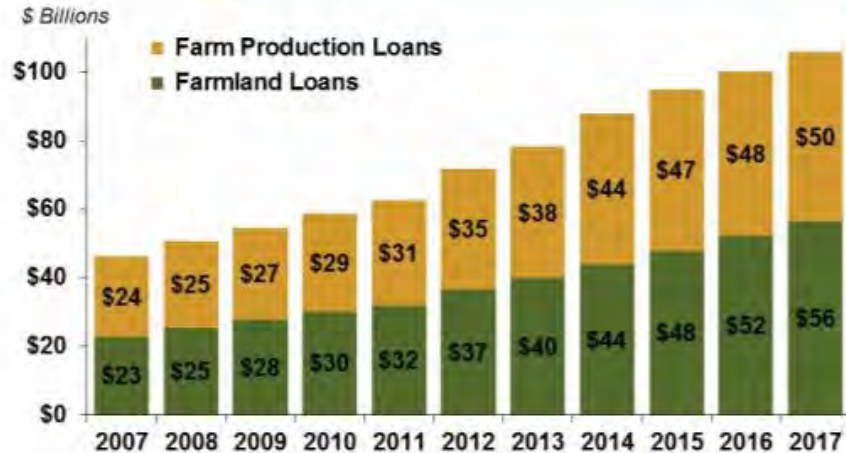
- US agricultural exports have leveled off since 2011
- High-value agricultural goods are making up more of the total volume of exports. What does this mean for commodity agricultural goods?





# Agricultural Lending in 2018

## Farm Banks Exhibit Solid Farm Loan Growth



Source: Federal Deposit Insurance Corporation & American Bankers Association Analysis

© 2017 American Bankers Association

Figure 2. U.S. Farm Debt and Debt-to-Asset Ratio  
August 2018 Projection



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Source: USDA ERS

## Main Takeaways

- In 2018, total US agricultural debt hovered around \$400B
- Debt to Asset Ratio (a common measure of financial health) rose slightly in 2018
- Agricultural lending can come from a combination of both farm banks and federal credit providers
- Demand for all types of agricultural loans increased in 2018
- More than 96 percent of farm banks were profitable in 2017, with more than 55 percent reporting an increase in earnings.
- Farmland loans, across the board, increased more than production loans



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# What is Affecting These Trends?

## Factors Affecting Farm Profitability

- **Climate**
- **International & Domestic Production (Total Supply)**
- **Government Subsidies**
- **Technology and Product Differentiation**
- **Crop Health and Disease**
- **Input prices**
- **Equipment prices**
- **Debt prices**
- **Labor availability and pricing**
- **Yield**
- **Farm size**

# How can technology help with farm profitability?



Yield Improvement/Breeding



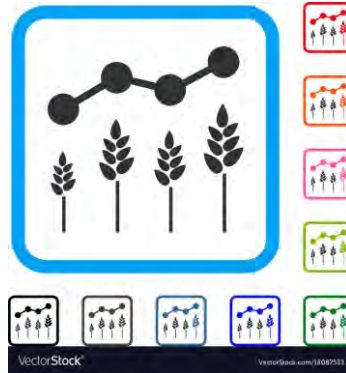
Inputs Reduction



Labor Automation



Crop Diversification



Analytics and Diagnostics



Improved Resistance



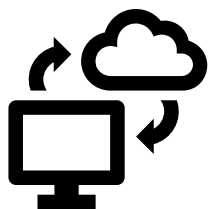
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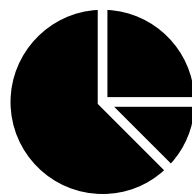
# Main Takeaways on Improving Farm Profits

*Farm profitability is complex and influenced by many factors. What, at least thematically, do we need to provide to farmers?*



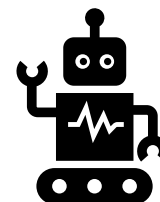
## Increased Information

*Increasing the access to data and information that farmers have creates a more even playing field*



## Diversification

*Increasing crop diversification can create opportunities for new revenue streams and greater differentiation (higher price points)*



## New Technology

*Increasing differentiation in quality and efficiency in production can enable farmers to demand higher prices and reduce costs*

## Examples:

- Groups like FBN/Conservis are working to give farmers greater bargaining power/info
- Agricultural operations with beef production tend to have higher net farm income; new crops like hemp or alternatives like Kultevat offer potentially differentiated products
- Automation on the farm can reduce labor costs and increase overall efficiency



# Spotlight: Farmers Business Network



# FARMERS<sup>SM</sup>

## BUSINESS NETWORK

### Product Highlights & Thesis

- Working to improve farm level insights via multiple data layers
- Create more equitable marketplace of crop inputs and seed genetics that gives farmers more insight. Information discovery creates a better situation for farmer profitability.
- Helps farmers find the best prices to sell crops & products
- *Thesis: solving an inefficient market where the producer has limited insight or capacity into the marketplace*



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## Startups, Exits, Customers & Thesis



# Deal Sourcing Review: Farm Profitability

## Early Stage Startups

agrilyst

 **CROP PRO**  
INSURANCE



The logo for Cropin features the word "Cropin" in blue, with a green leaf icon above the "i".

 **TrAlve**

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## Later Stage Players to Watch

 **FARMERS**<sup>SM</sup>  
BUSINESS NETWORK

 **indigo**<sup>TM</sup>

 *conservis*

 **FarmersEdge**<sup>TM</sup>

# Precedent Exits in Farm Profitability

## ■ Climate Corporation



- M&A: \$1.1B by Monsanto in 2013
- Company: Provider of weather insurance aided by massive weather data sets to provide clearer risk assessment to farmers.
- Reason for acquisition: The idea is to sell more data and services to the farmers who already buy Monsanto's seed and chemicals.

## ■ Granular



- M&A: \$300M by DuPont in 2017
- Company: Farm management software for enhancing farm level decision making and profitability
- Reason for acquisition: Similar thesis to the Climate Acquisition, access to customers

## ■ Takeaways

- If new platforms are looking to serve farmers more efficiently or give them more choices, when they are purchased by larger players looking to consolidate the market, can farmers really ever win?



## Analysis and Discussion

# Key Findings Summary

## ■ Problems:

- Farm profitability (net farm income) hit a 9-year low in 2018, though the years of 2008-2013 were exceptionally high by industry standards
- Farmers traditionally receive the lowest end of the “Food Dollar”, and are susceptible to a wide variety of variables

## ■ Potential Solutions:

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- Lots of noise and various solutions in the agricultural technologies space; it can be difficult to make decisions
- Sources of debt financing are generally less available for smaller scale farmers

## ■ The Impacts & Opportunities

- Farmers, with greater access to information, differentiation and resources have immense power as food producers; finding ways to consistently increase their profit share represents a massive opportunity for value capture

# Thoughts & Thesis

## ■ Where should we consider investment?

- We should continue to dive deeper into opportunities for creative financing utilizing data that is now more available than ever
- We should continue to look into technologies with demonstrable ROI from the offset
- Are there agricultural datasets that aren't available today that could prove valuable? What are those datasets and what enabling technologies give access to them?

## ■ Where should we be cautious?

- Farm management software generally is very crowded and it seems the acquisition price will continue to come down
- Direct to farmer selling is very challenging; preferable to have some sales channels within the existing infrastructure with strong distributors

## ■ Questions still to be answered?

- What is the upper limit of farming profitability? Is farming inherently a challenging business from a profits standpoint?
- If more value from the food supply chain is being captured later on (% of Food Dollar), should we simply be focused there from an investment standpoint?





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