

Kenneth Scott Zuckerberg, Senior Economist

Knowledge Exchange Division, CoBank, ACB

Telephone: (917) 538-0129 | Email: kzuckerberg@cobank.com





About Me





Kenneth Scott Zuckerberg
CoBank, ACB

Knowledge Exchange Division

Metro New York

Telephone: (917) 538-0219

Email: Kzuckerberg@CoBank.com

Profile

- Institutionally-trained securities analyst and investor
- Proven track record of return and strategic value creation
- Subject matter expert in food, agriculture, finance, technology

Career

- Lead Economist & Strategist, CoBank ACB
- Sector Manager, Food & Ag Industry Advisors, Wells Fargo
- Executive Director, Food & Ag Research (FAR), Rabobank
- Senior Managing Partner, Carlan Advisors Group
- Senior Analyst, Smith Barney (Morgan Stanley), Moody's Investors Service, Keefe Bruyette & Woods, Lazard Asset Mgmt.

Education & Credentials

- Graduate of University of Pennsylvania / Wharton Executive Education General Management Program (GMP)
- Bachelors of Science in Finance, University of South Florida
- Accredited Investment Fiduciary AIF®, Accredited Financial Analyst AFA®
- Chartered Financial Analyst (CFA) program Levels I and II

Core Presentation

Grain and Feed Sector Review

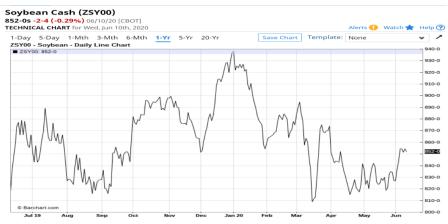
Grain Prices: Corn, Soybean and Cotton Rising since April Lows, Wheat Decline Continues Since January



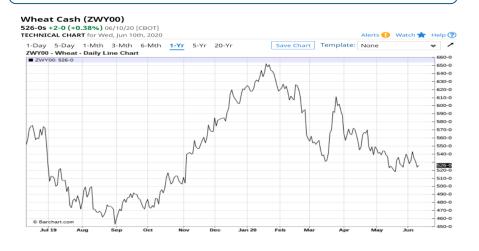
CORN



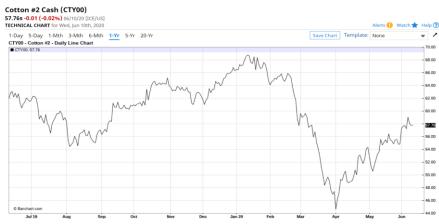
SOYBEANS



WHEAT



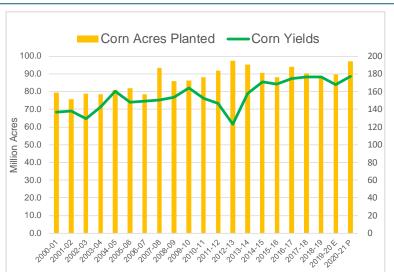
Cotton

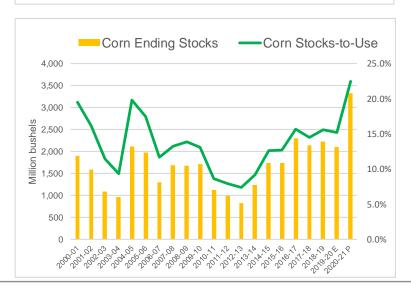


Corn and Soybean Fundamentals (new WASDE report out today!)

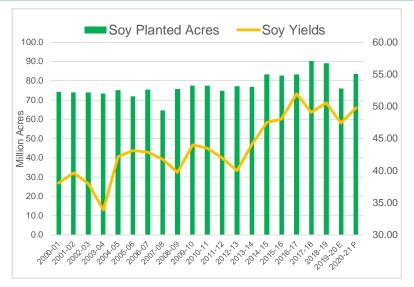


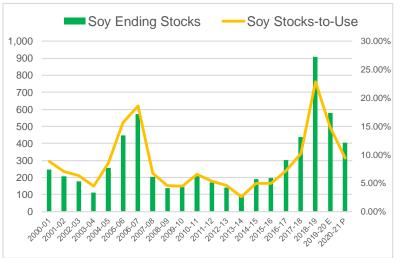
Corn





Soybeans





U.S. Crop Progress Is Going Extremely Well



Corn Planted

Soybeans Planted

| Week Ended | % Planted |
|----------------|-----------|
| June 7, 2020 | 97% |
| June 7, 2019 | 78% |
| 5 Year Average | 94% |

| Week Ended | % Planted | | |
|----------------|-----------|--|--|
| June 7, 2020 | 86% | | |
| June 7, 2019 | 54% | | |
| 5 Year Average | 79% | | |

Corn Emerged

Soybeans Emerged

| Week Ended | % Planted | | |
|----------------|-----------|--|--|
| June 7, 2020 | 89% | | |
| June 7, 2019 | 57% | | |
| 5 Year Average | 84% | | |

| Week Ended | % Planted | | |
|----------------|-----------|--|--|
| June 7, 2020 | 67% | | |
| June 7, 2019 | 30% | | |
| 5 Year Average | 61% | | |

And in Contrast to 2019, This Year's Growing Season Has Benefitted From Favorable Conditions

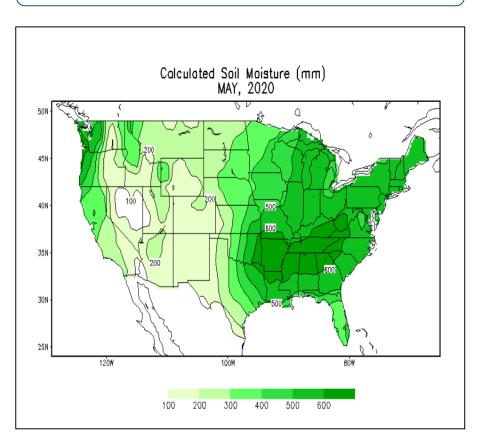
L - Long-Term impacts, typically greater than 6 months (e.g. hydrology, ecology)



Drought Monitor

United States Drought Monitor Map released: June 11, 2020 Data valid: June 9, 2020 United States and Puerto Rico Author(s) U.S. Affiliated Pacific Islands and Virgin Islands Author(s) Brad Pugh, NOAA/CPC Curtis Riganti, National Drought Mitigation Center The data cutoff for Drought Monitor maps is each Tuesday at 8 a.m. EDT. The maps, which are based on analysis of the data, are released each Thursday at 8:30 a.m. Eastern Time Intensity and Impacts D3 (Extreme Drought) → - Delineates dominant impacts D0 (Abnormally Dry) D4 (Exceptional Drought) 5 - Short-Term impacts, typically less than 6 months (e.g. agriculture. D1 (Moderate Drought)

Soil Moisture



Source: NOAA National Weather Service Climate Prediction Center https://droughtmonitor.unl.edu/

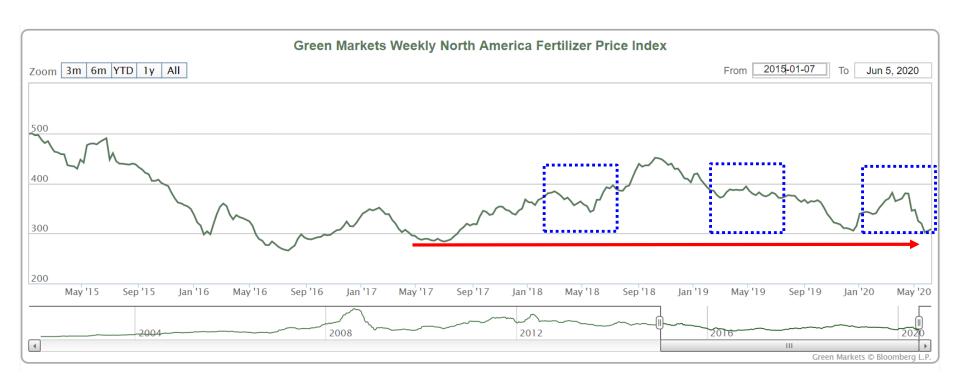
D2 (Severe Drought)

Center https://www.cpc.ncep.noaa.gov/products/Soilmst Monitoring/US/Soilmst/Soilmst.shtml#

Source: NOAA National Weather Service Climate Prediction

Fertilizer Prices Have Begun Their Seasonal Decline, But Are Now Nearing 2017 Price Levels





Forex Matters



Recent weakness in the US Dollar has made U.S. soybean and wheat exports considerably more competitive with Brazil and the Black Seas regions, respectively





Accumulated Exports Point to Weakness in Corn, Offset by Growth in Soy and Wheat



| Accumulated Exports by Marketing Year | Corn | Soybeans | Soy Meal |
|--|--------|----------|----------|
| Total Volume Change (1,000 Metric Tons): | | | |
| Current Period (as of 6/4/2020) | 30,252 | 36,219 | 8,280 |
| Year Ago Period | 41,259 | 35,653 | 8,431 |
| | | | |
| Percentage Change | -27% | +2% | -2% |

Recent Developments in U.S. Animal Protein (Will Sawyer of CoBank)



Retail food and meat sales growth has slowed and restaurant sales are showing signs of improvement, albeit still significantly below year ago levels

Instances of COVID-19 in the mostly rural communities around meat plants have surpassed the U.S. national average

Meat and poultry production continues to contract with pork and beef capacity utilization contracting to multi-decade lows

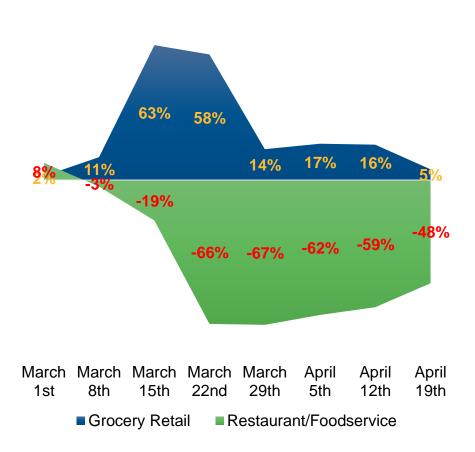
Livestock producer margins remain significantly unprofitable and in most cases have declined in the last two weeks

President Trump has signed an Executive Order keeping meat and poultry plants open

Food Stockpiling by Consumers in March, Consumption "Normalizing" in April



Food Sales Growth At-Home vs Away-from-Home



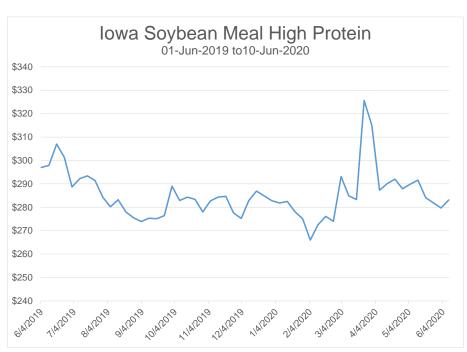
Retail Grocery Sales Growth

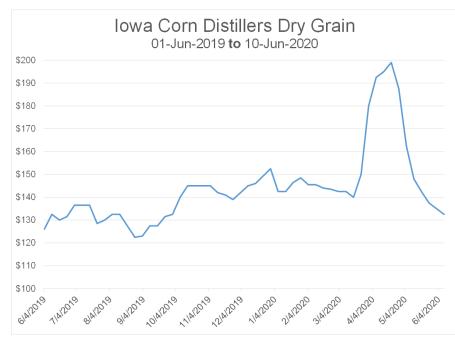


What's the Deal with Feed Costs?



Soybean meal and DDG prices have declined following the initial COVID spike





Addendum

Preview of Upcoming Ethanol Industry Outlook Report

Preview of Upcoming Report



Ethanol Industry Outlook: "Readjustment Today, Rationalization Tomorrow"

| "WHAT" | □ New Chart-book report on the U.S. ethanol sector □ Expected release in mid-June 2020 □ Scope = current state of affairs and implications |
|------------|--|
| "SO WHAT" | □ The global economic shutdown since March was very disruptive to ethanol and corn markets □ Our research focus was to determine: To what extent would demand fully recover? The likely level of excess productive capacity? and Whether strategic options exist for value creation? |
| "NOW WHAT" | □ By 2025, we expect the U.S. ethanol complex to transform in 3 stages □ The end result will be fewer better capitalized players with revenue diversity beyond fuel ethanol |

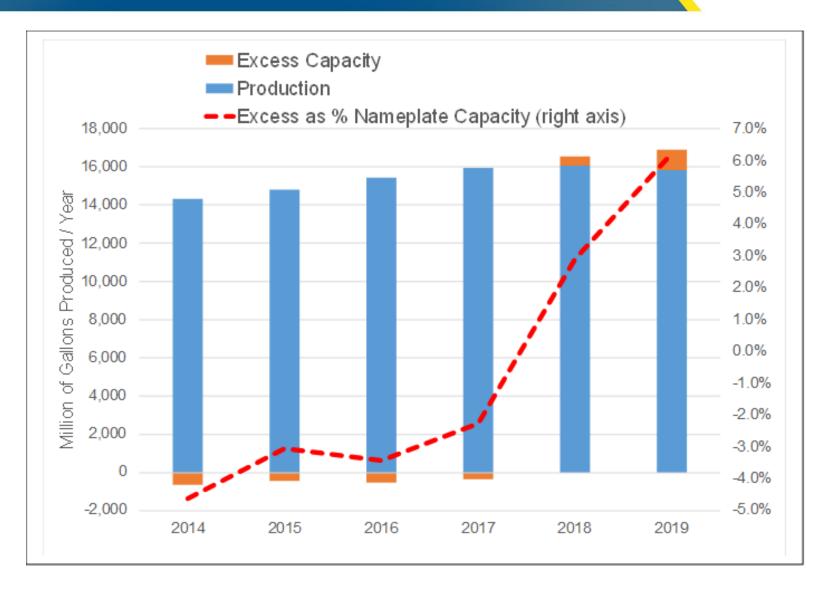
Five Observations





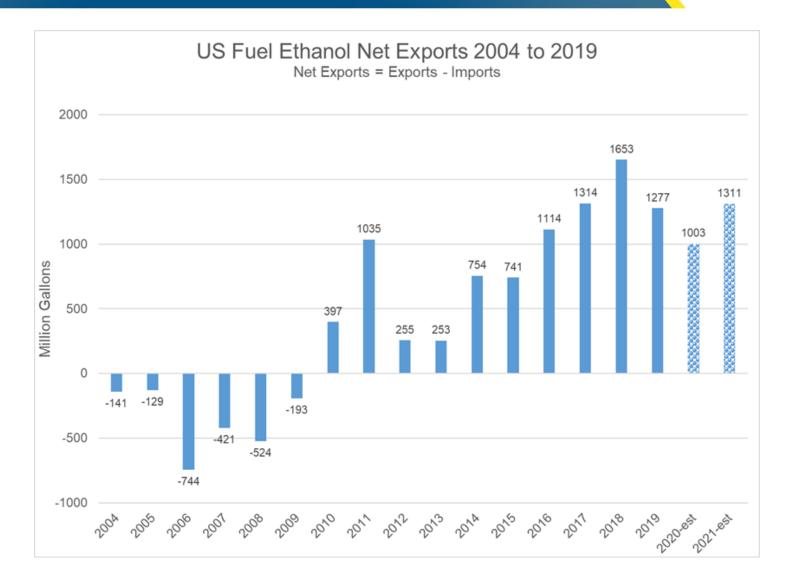
Observation #1 - U.S. Ethanol Began 2020 with 1 Billion Gallons of Excess Capacity





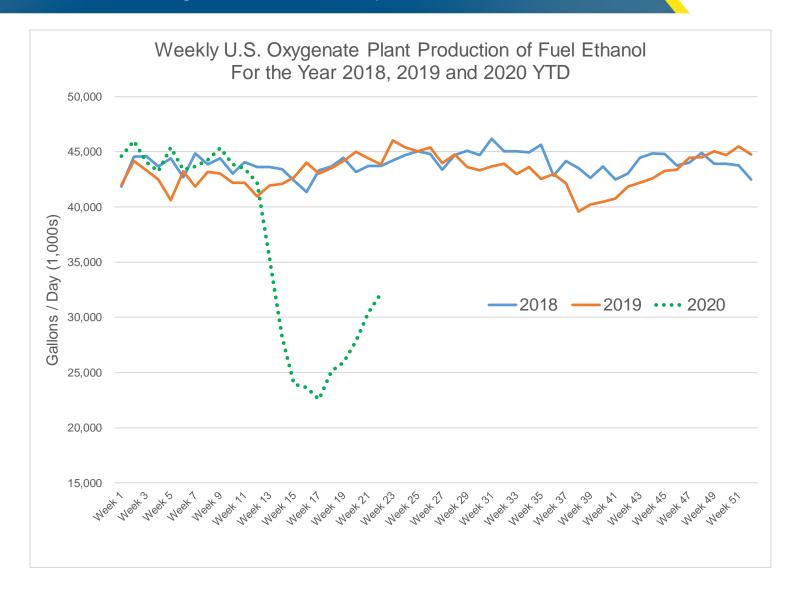
Observation #2 - Ethanol Exports Peaked in 2018 (at least for now)





Observation #3 – Following April's Sharp Decline, Production Has Begun the Recovery Process





Observation #4 – However, Industry Excess Capacity May Rise to Over 2.0 Billion Gallons in 2021



US Fuel Ethanol Supply, Demand and Production Dynamics

| | Excess | | | | | | |
|----------|------------|------------|----------|--------------|-------------|-------------|-------------|
| | Nameplate | | Excess C | Capacityas % | Domestic | | Total |
| | Capacity | Production | Capacity | Nameplate | Consumption | Net Exports | Consumption |
| 2014 | 13,681 | 14,313 | -632 | -5% | 13,444 | 730 | 14,174 |
| 2015 | 14,369 | 14,807 | -438 | -3% | 13,947 | 775 | 14,722 |
| 2016 | 14,903 | 15,413 | -510 | -3% | 14,356 | 1,074 | 15,430 |
| 2017 | 15,584 | 15,936 | -352 | -2% | 14,485 | 1,248 | 15,733 |
| 2018 | 16,542 | 16,061 | 481 | 3% | 14,420 | 1,505 | 15,925 |
| 2019 | 16,868 | 15,819 | 1,049 | 6% | 14,579 | 1,187 | 15,766 |
| 2020-est | 17,020 (a) | 13,128 (b) | 3,892 | 23% | 12,366 | 1,059 | 13,425 |
| 2021-est | 17,025 (a) | 14,667 (b) | 2,358 | 14% | 13,491 | 1,187 | 14,678 |

⁽a) Nameplate Capacity estimates by PRX

⁽b) Production estimates from EIA STEO Report dated June 9, 2020

Observation #5 – Export Competition plus Excess Capacity Will Drive Business Model Transformation



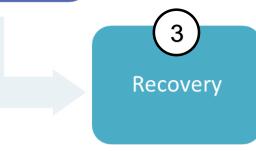
The Industry's Evolution Will Happen in Three (3) Stages



- · Short-Term lasting about 12 months
- Bottom-tier operations will attempt to raise capital or consolidate; those that cannot will exit the industry
- Middle-tier operators will draw down credit lines and raise new equity capital



- Medium Term, starting in 12 and ending in ~ 24 months
- Middle-tier operators with free cash flow will pay down debt and make capital improvements, including technology
- Top-tier operators will consolidate assets to gain greater scale and product diversification



- Longer Term, beginning after 36 months
- Consolidation will accelerate and result in fewer but larger players with concentrated market shares
- Exports likely to show incremental recovery but may not reach historical peak levels

Thesis in Summary Form





Ethanol experienced a demand shock in late March / April in response to COVID-19 restrictions / reduced gasoline consumption



Motor gasoline and ethanol consumption and production have rebounded over the past 7 weeks as economies reopen



We do NOT see a 100% recovery, near-term, due to structurally high unemployment, reduced public gatherings, and WFH



Our analysis points to 2 billion gallons or more of excess capacity in 2021 or ~12% of nameplate capacity



We expect the a rationalization of some of the excess capacity and business model transformation / expansion of ethanol co-products



Presentations by:

Dan Kowalski, Vice President, Knowledge Exchange Division



Tanner Ehmke, Manager, Knowledge Exchange Division

E-mail: KED@cobank.com



