

The logo for AgReview, featuring a stylized green and blue circular graphic to the left of the word "AgReview" in a large, blue, serif font.

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A close-up photograph of a brown cow's head, looking directly at the camera. The cow has two yellow ear tags, one on each ear. The tag on the left ear has the number "8420" and a small logo. The tag on the right ear has a small logo. The cow's fur is a rich brown color, and its eyes are dark. The background is slightly blurred, showing other cows in a field.

2017 Cow/Calf Profitability

Biofuels' Cloudy Political Future

The Ongoing EU Wheat Futures Battle

Oilseed Opportunities in Southeast Asia

Spring Fertilizer Outlook

Technology and the Agricultural Economy

WORLD PERSPECTIVES: AG REVIEW

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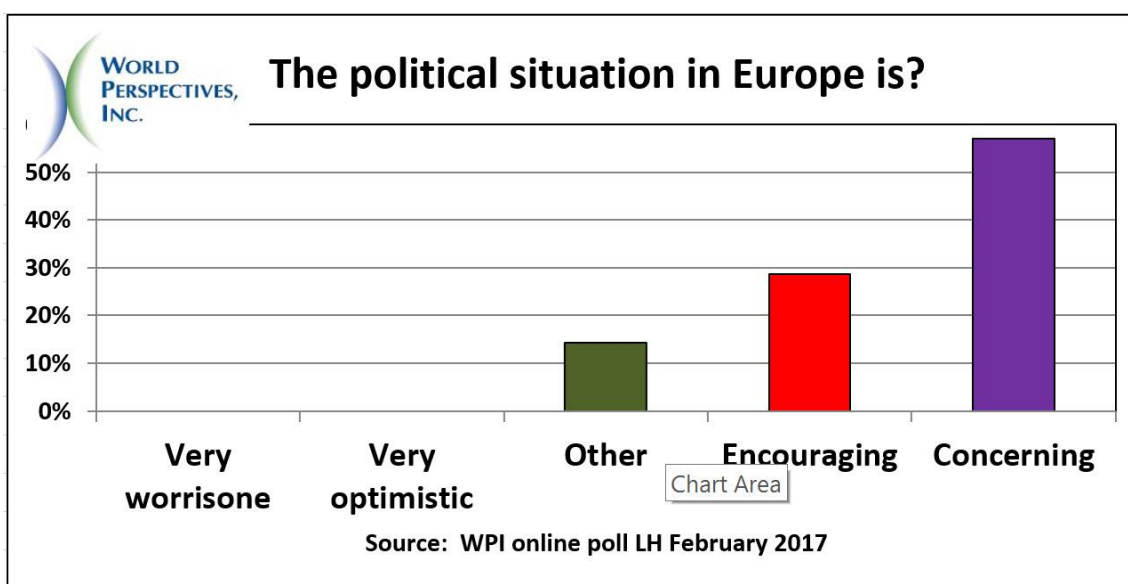
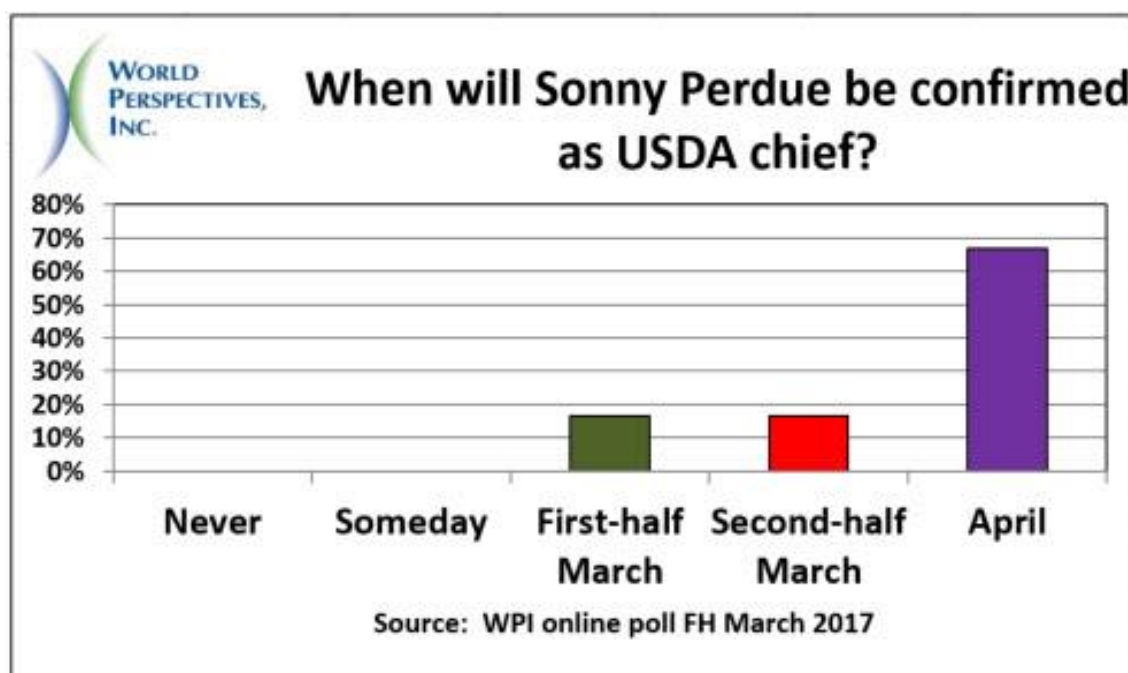
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The big shall survive, the new will prosper, evolve or die.	

WPI POLLING

Below are the results of two recent WPI polls. Visit www.worldperspectives.com to cast your vote in our current survey.

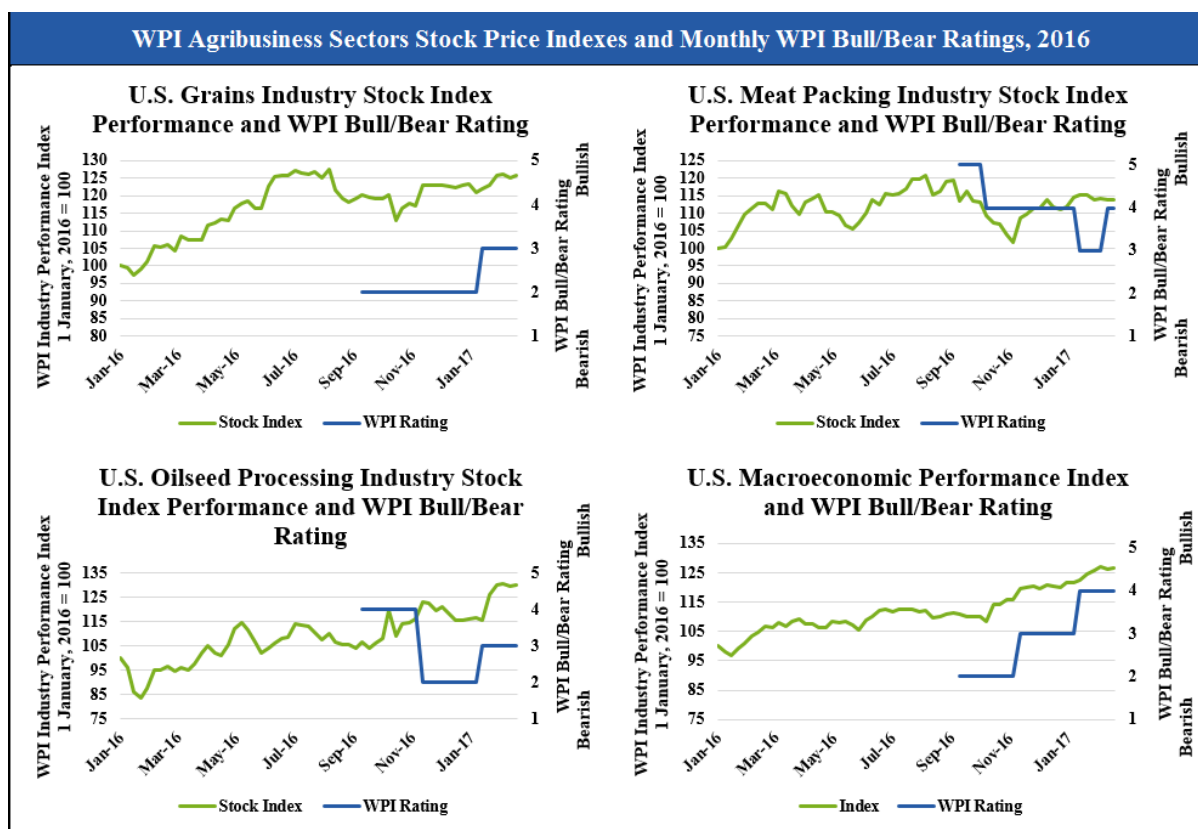


WPI AGRIBUSINESS SUBSECTOR OUTLOOK

By Matt Herrington

Since the February 2017 issue of *Ag Review*, the U.S. stock market has continued to rise, with the S&P 500 index gaining 0.5 percent and the Dow Jones Industrial Index up nearly the same. The slower growth in stock indexes is reflected in (and partially driven by) more modest growth in WPI's Agribusiness Sectors indexes. The indexes for Grains, Oilseeds, Meat Packing, and Farm Machinery remained nearly unchanged since February. WPI's index for Farm Inputs, however, fell 1.2 percent as bearish fertilizer and other input fundamentals caught up to share prices. Surprisingly, WPI's Ethanol and Biodiesel

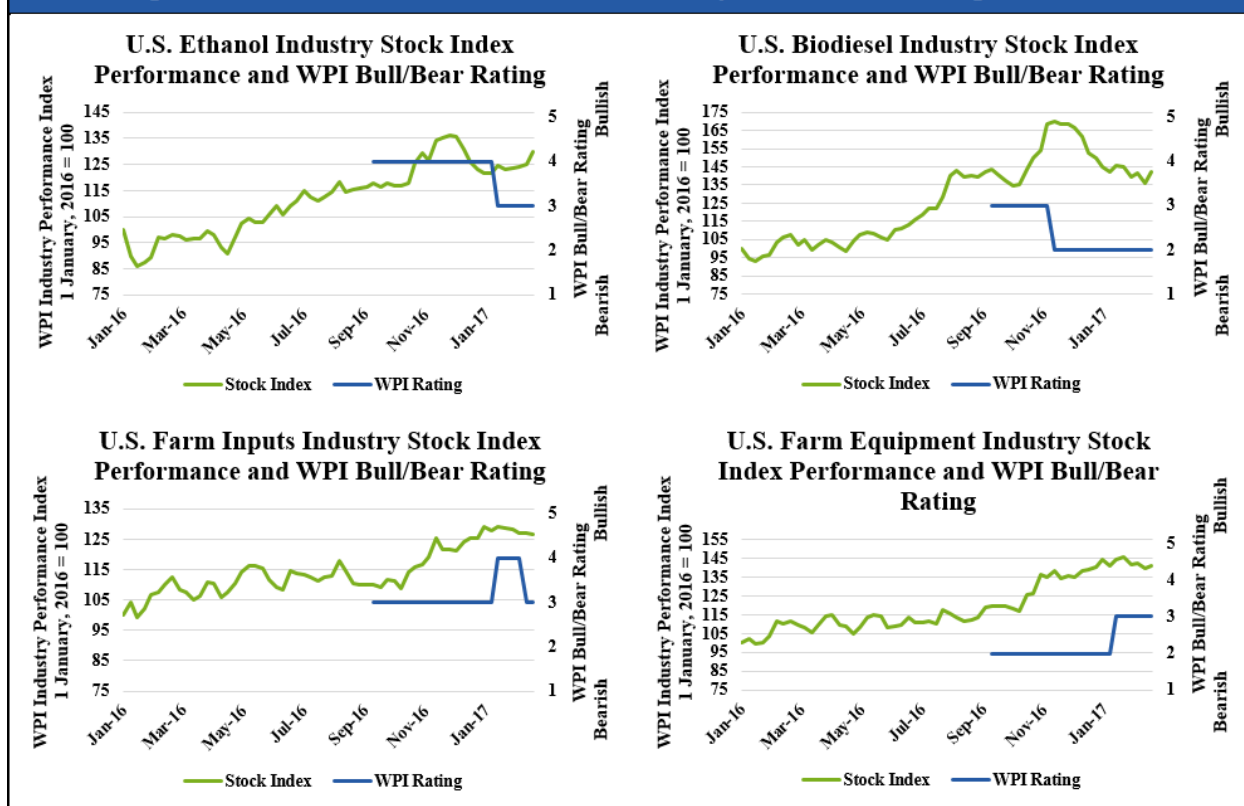
indexes outperformed the others, with ethanol rising 5.2 percent and biodiesel 2.2 percent from February. Despite their recent share price gains, WPI's view is still neutral/fairly valued for ethanol companies and bearish for biodiesel producing firms. Overall, however, WPI views investment in most agribusiness sectors as opportunities that still have upside potential. The current political environment, however, is generating substantial uncertainty which much be monitored carefully¹.



¹ Editor's note: Due to customer feedback from the February issue of *Ag Review*, comments on WPI's

Agribusiness Sector indexes was again published in place of the "Harvested Data" article.

WPI Agribusiness Sectors Stock Price Indexes and Monthly WPI Bull/Bear Ratings, 2016, Continued

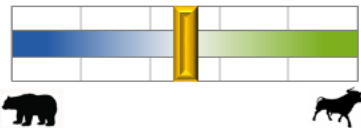
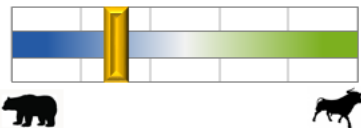
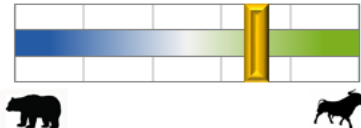
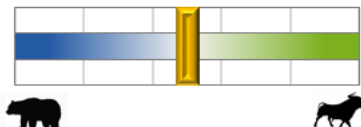
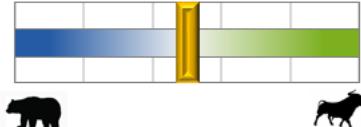


Source: WPI

WPI BULL/BEAR LEANINGS FOR AGRIBUSINESS IN 2017

By WPI Staff

Note: Due to special reports on aspects of the grains and oilseeds industries, WPI's Bull/Bear Ratings for those agribusiness sectors are omitted from the chart below.

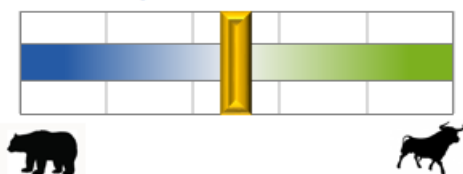
Industry	WPI Industry Bull/Bear Rating	Predominant Influencing Factors
Biofuels		
<i>Ethanol</i>		<ol style="list-style-type: none"> 1) Uncertainty regarding future biofuels policy. 2) Ethanol production may exceed RFS cap, but China is no longer importing. 3) China imposed tariffs on U.S. DDGS, sending prices for a key profit component falling.
<i>Biodiesel</i>		<ol style="list-style-type: none"> 4) The blenders' tax credit is expired, which historically means lower profits. 5) Imports from Argentina may fall this year, which would put upward pressure on biodiesel and vegetable oil prices in the U.S.
Meat & Livestock		
<i>Packers</i>		<ol style="list-style-type: none"> 1) Feed prices remain low. 2) Packers will see higher throughput from herd/flock expansion. 3) Domestic economic growth will boost consumer spending. 4) Moderating retail prices are lifting demand for higher grade cuts. 5) Export strength continues from 2016, but maintaining this pace is key.
<i>Cow/Calf Operations</i>		<ol style="list-style-type: none"> 1) Lower feed prices will put returns over feed costs near \$200/cow. 2) Regional pasture grazing rent increases will be not be widespread. 3) Good beef demand will support modest calf prices this fall. 4) Non-feed costs will increase from 2016 but energy costs will fall. 5) Economic profits will be negative but accounting profits more upbeat.
Farm Inputs		<ol style="list-style-type: none"> 1) Spring planting demand is met with high inventories and big import lineups. 2) Nitrogen prices are lower and DAP prices steady after a two month rally. 3) Urea prices are intuitive while DAP prices are on the high end of historic norms. 4) Chinese coal prices are higher, raising production costs.

Policy Factors

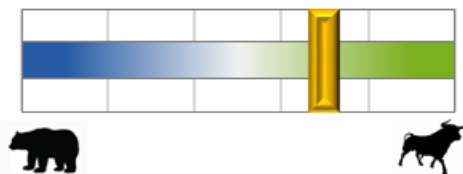
- 1) Economic growth and technology remain bullish.
- 2) Production agriculture is holding at neutral.
- 3) Bearish conventional agricultural chemicals and food retailing.

WPI Bull/Bear Ratings for Policy Factors Influencing Agribusinesses

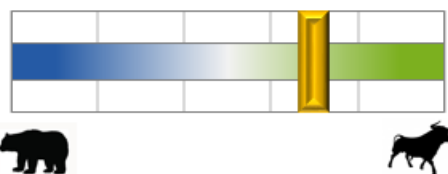
Trade Policy



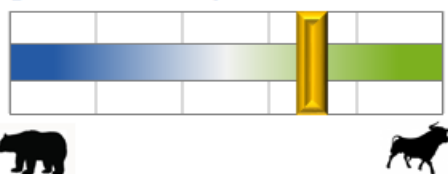
Food Policy



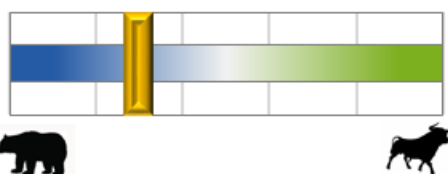
Macroeconomics



Agricultural Policy



Geopolitics



WHEAT MARKET RISKS AND NEW REALITIES

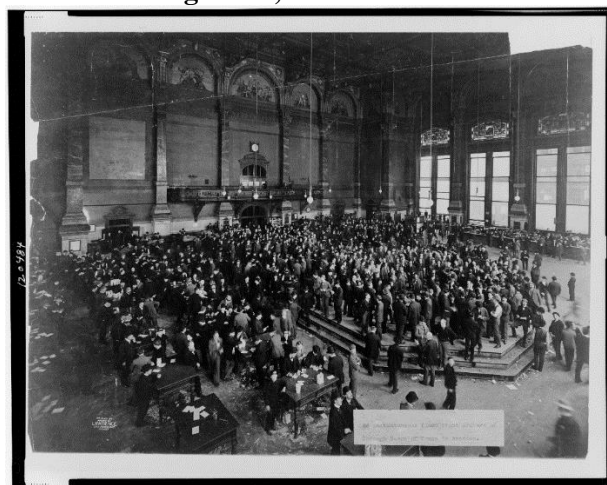
By Robert W. Kohlmeyer

Price discovery and risk management for wheat is changing across the globe. Once the bell weather for world wheat prices, the CBOT's legacy soft red winter (SRW) wheat futures contract is losing much of that pricing relevance. This has given rise to the popularity of wheat futures contracts on other commodity exchanges. Notably, Euronext's Paris milling wheat contract has become a popular risk management tool since 2010 due to its location within a major wheat exporting region: the EU. The rising popularity of EU and Black Sea wheat and the declining export volume of U.S. wheat are threatening the Chicago Board of Trade (CBOT) SRW wheat contract's role as a global pricing tool. In response to this, the CME Group launched its own EU wheat contract in 2016 to capture a share of this growing market. It seems only one EU wheat contract can survive, and the probable success or failure of either the CME or Euronext contract is both rooted in history and shaped by changing dynamics.

The CBOT was formed in the 1840s by traders who literally started meeting on a street corner to buy and sell supplies of grain grown in areas tributary to Chicago, by then a major commercial center. Wheat was prominent in this early ad hoc trading of grain. Eventually, the contract terms used by CBOT traders for the purchase and sale of various grains were standardized and included specifications for quantities, qualities, delivery timing and terms, payment details, and other factors. Standardization made it easier to buy and sell grain for future as well as immediate delivery. By the mid-1860s, the buying and selling of physical grain for future delivery evolved into a form of trading of future obligations to deliver or receive delivery of grain by traders. This step in

the evolution of commodities trading gave rise to the futures markets of today.

CBOT Trading Floor, Circa 1900



Source: Wikipedia Commons

Long after its origins, the CBOT was acquired by the Chicago Mercantile Exchange, now collectively the CME Group, in 2007. The CME Group later acquired other futures exchanges, including the Kansas City Board of Trade (KCBOT) and its futures contract for hard red winter wheat (HRW). Acquiring that futures contract complimented its original soft red winter wheat (SRW) wheat contract that made the CBOT famous. The CME Group has expanded other types of product offerings as well, and it has become the world's largest operator of derivative markets. Virtually all the trading in futures contracts offered by the CME Group is now done electronically via computers on its Globex platform, which allows instant access to markets by traders all over the world.

Editor's note: This is a special report taking the place of *Ag Review's* typical outlook for the agribusinesses in the grains industry.

The CME Group's futures contract for SRW is by far the most widely-traded wheat futures contract in the world. Its recent average daily trading volume has been running at around 110,000 contracts, and its average daily open interest (the number of open contracts) has been running at around 435,000 contracts recently. No other wheat futures contract in the world comes close to these volumes. With its long market history and relatively high level of market liquidity, speculators wishing to trade in wheat will usually go to the CME SRW contract to do so.

U.S. cropland in wheat production has declined in recent years. Wheat was once the largest field crop grown in the U.S., but it has now fallen far behind corn and soybeans in both planted acreage and the volume of production. With the development of high-yielding and shorter maturity seed varieties, corn and (especially) soybeans have become more profitable for farmers than wheat. Farmers located in traditional wheat-growing regions in the northern and central Great Plains are planting more of both on what used to be wheat land. The area planted to winter wheat in the U.S. in the autumn of 2016 is the smallest in nearly 100 years. The U.S. used to be the world's dominant wheat exporter, routinely commanding over 40 percent of the world trade. In recent years, however, its share has fallen to less than 15 percent. During the 2015/16 crop year, the U.S. fell into fourth place among world wheat exporters, behind the European Union (EU), Russia and Canada.

While the U.S. was the leading wheat-exporting country, the CBOT wheat futures market served as a proxy for the global trade. The market was widely used for world wheat price discovery and to offset price risks for wheat produced in other countries. The fact that the CBOT wheat contract specifically represented the value of SRW instore or delivered to distinct interior locations seemed not to deter global traders, nor were they put off by the fact that SRW accounted for barely 20 percent of U.S. wheat production and only 1-2 percent of world wheat trade.

There may have been some logic behind the role of the CBOT SRW contract as the world's wheat futures market while the U.S. dominated world trade and basically set world wheat prices. That logic, though, has diminished considerably as U.S. wheat's role in world trade has declined, especially in recent years as it no longer sets or even strongly influences world wheat values. Wheat price leadership has been assumed by other origins that are now much more important to the world wheat market – Russia, Ukraine and the EU. Collectively, Russia, Ukraine and Kazakhstan are known as exporters of Black Sea wheat, occasionally joined by Romania, Bulgaria and Serbia. Black Sea wheat is often the lowest priced, thus setting world wheat price values with EU origin close behind.

Under these circumstances, the CME SRW contract is no longer a reasonable proxy for world wheat values or the world wheat market. This has been demonstrated numerous times in the last four years when the price of SRW futures contracts and world wheat prices have moved in different directions for substantial periods of time. In fact, it is fair to say that world price values set by Black Sea exporters or EU wheat and the prices and market action of the CME SRW contract have little to do with one another.

It has often seemed in recent years that U.S. wheat, as represented by the CME contract, and wheat offered from the Black Sea or the EU were entirely different grains with very little in common.

There are some other wheat futures markets around the world. Futures contracts for Canadian HRS and durum are traded in Winnipeg. The Zhengzhou Commodity Exchange in China has a contract for "strong gluten wheat." The Italian Borsa

trades a durum contract, and ICE Futures Europe has a feed wheat contract. The most prominent wheat futures contract outside the U.S. has been the milling wheat contract originated by the Marche a Terme International de France (MATIF) in Paris. The MATIF was acquired by Euronext when it took over the Paris Bourse. It is

When the U.S. was the leading wheat exporter, it hardly mattered that the CBOT contract was for a minor wheat variety and delivery was at interior locations. The market was used globally to price wheat and manage risk.

properly called the Euronext wheat futures but often still referred to as MATIF.

In 2005, the MATIF wheat futures trading volume was very small. It was less than 1 percent of CBOT volume, about 3 percent of the KCBOT's volume and roughly 10 percent of the volume traded in the spring wheat contract at the Minneapolis Grain Exchange (itself a small-volume exchange). Since then, however, and especially since 2010, the Euronext wheat futures trading volume has grown significantly. In 2010, the Russian government suddenly embargoed wheat exports to preserve domestic supplies from a poor wheat crop, and the EU and U.S. filled the gap left by that embargo. Until then, the Paris wheat futures market was a minor parochial market having little to do with world wheat trade.

Euronext wheat trading volume has grown substantially since 2005. It is currently averaging about 36,000 contracts per day, and open interest has been 325,000-350,000 contracts. Due to the shift of world wheat trade and pricing away from the U.S. to Eastern and Western Europe, the Euronext market has grown from about 3 percent of the KCBOT's trading volume in 2005 to where it is now almost equal

The world wheat market leadership move away from the U.S. to the Black Sea has changed the role and importance of the Euronext wheat market. While it has become an important vehicle for world price discovery and price risk management, the Euronext market has a long way to go to match the CME SRW wheat contract volume. However, it seems to be supplanting the U.S. role in price discovery.

No one has been more aware of this change than the CME. Amid considerable fanfare in 2013, the CME Group launched a Black Sea wheat futures contract that was based on physical delivery of regionally-grown wheat at a number of Russian and Ukrainian ports located on the Black Sea. However, regional wheat exporters failed to

support it because it was not seen as commercially viable, and it has languished with very little trading ever since. More recently, Euronext announced it too is working on a Black Sea wheat contract, although it has not taken steps to formalize one thus far.

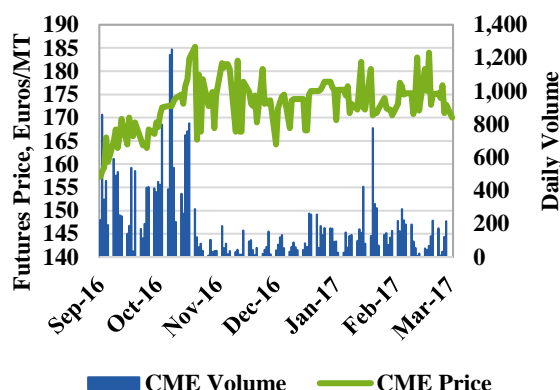
The CME EU wheat and Euronext wheat contracts are almost identical with one important distinction: the CME contract allows for delivery based on warehouse receipts in 12 interior terminals in France.

In June 2016, the CME announced that it would introduce an EU milling wheat contract to compete with Euronext with trading to begin in September of that year. The details of both

contracts are virtually identical with one important exception. The Euronext wheat contract is based on delivery only in export terminals located in Rouen and Dunkirk (France). The CME EU wheat contract is also priced basis Rouen, but it allows for delivery based on electronic warehouse receipts in approximately 12 interior terminals that are located in the wheat-growing areas of northern France with locational differentials from Rouen.

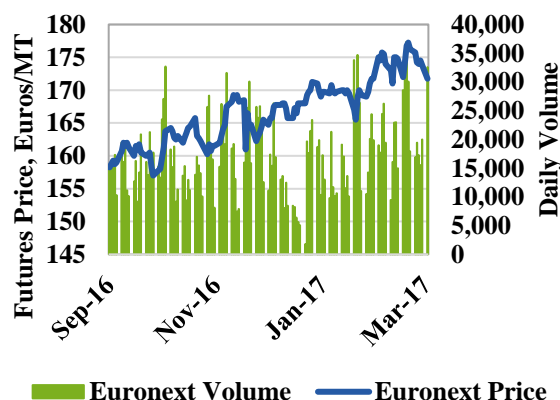
Trading in the new CME EU wheat contract began 12 September 2016. For the first few weeks, the CME contract attracted decent trading volume for a brand new market. 65 lots were delivered on the CME December EU contract, and there have been exchanges of CME EU contracts to price cash, signaling some commercial participation. After the flurry of the first few weeks, however, trading volume in the new contract slumped. CME EU wheat futures prices began to climb for no apparent reason, and this seemed to discourage trading. Recently, the CME EU wheat contract has averaged a daily trading volume of about 300 contracts and an open interest of about 1,100 contracts. Unclear, though, is how much of that contract's trading volume, starting right from its inception, has been from market makers encouraged by the CME to create it. In any case, the current CME EU wheat futures trading volume does not represent much of a challenge to Euronext.

CME EU Wheat Futures Price and Trading Volume



Source: DTN, WPI

Euronext Paris Milling Wheat Futures Price and Trading Volume



Source: DTN, WPI

The 2016/17 crop year has been a relatively difficult one for wheat traders and markets. Excessive rains falling on mature wheat caused some production loss and considerable loss of quality in France, the largest EU wheat producer, and elsewhere across northern Europe. A great deal of wheat did not meet the quality required for delivery for either market, which diminished their effectiveness. It was a particularly tough environment in which to launch a new wheat futures contract. Current prospects are that the 2017 EU wheat crop should be larger and of better quality than the one in 2016. If so, it will provide a much better test for the CME EU wheat contract and its ability to compete with the existing Euronext contract.

It is always difficult to start a new futures contract, especially in competition with a successful existing one. The one key ingredient for any futures contract is trading volume. A new start-up market must attract enough of it so that there appears to be sufficient liquidity to entice the participation of commercial and speculative traders. If a contract starts out with limited volume, potential traders who are needed to provide more of it may be discouraged from participating. It becomes a classic “catch 22” situation. This will be a major problem that the CME must overcome if its new EU wheat contract is to survive.

It seems clear that only one EU wheat contract is needed, and thus only one can survive. The Euronext contract has the advantage of being a known quantity as a market and having a history as well as the trading volume. However, it is unclear if the CME contract can successfully pry enough volume away or generate enough new volume to survive. The Euronext also has the “home field advantage” of having originated in Europe, and this may make some traders there reluctant to leave it. The CME’s major advantage is its gigantic worldwide scope, reach and reputation. It can provide easy arbitrage possibilities that Euronext cannot match. The CME’s EU wheat contract has a very long way to go in attracting the critical mass of commercial or speculative trading volume. If only one EU wheat futures market can survive, the Euronext market currently holds a substantial advantage as noted above, making it the probable victor. Whether or not the CME’s contract can steal away enough commercial and speculative trade to supplant it remains to be seen.

Current prospects for a larger EU wheat crop in 2017 will provide a better test of the CME EU wheat contract and its ability to compete against the Euronext contract.

THE NEXT BIG DRIVER OF GLOBAL SOY DEMAND

By John Baize

It is no secret that China has been the main driver of global soybean demand for the last quarter-century. Its usage has grown from only 9.715 in MY 1990/91 to a forecasted 101.1 MMT for MY 2016/17, an increase of 941 percent. During that period, China accounted for over 40 percent of the 227.1 MMT global demand growth. This year China is forecast to import almost 63 percent of all the soybeans exported globally. Its almost insatiable soybean demand has been driven by that for soymeal (to produce feed for the swine, poultry and aquaculture sectors) as well as soyoil (mostly for human consumption).

While China's soybean demand continues to rise about 4-5 percent annually, some are concerned that its future growth will be much slower and lead to burdensome supplies on the market. However, at the same time China's soy demand may be dropping, an even more populous region of the world is just beginning to see what promises to be explosive soybean demand growth. That region is the Asian subcontinent, comprised of India, Pakistan, Bangladesh and Sri Lanka.

These four key nations of the Asian subcontinent are estimated to have a combined population of 1.667 billion in 2017, which is forecast by the U.S. Census Bureau to increase by almost 238 million to 1.905 billion by 2030. If realized, it would be almost 36 percent greater than China's expected 2030 population of 1.404 billion. Just as important is the fact that the average age of the population of countries in the Asian subcontinent will be much younger than that of China. Younger people are more productive and require more food than the old.

Asian Subcontinent Population (million people)			
Country	2017 Estimate	2030 Forecast	Change
Bangladesh	158	177	19
India	1,282	1,461	179
Pakistan	205	243	38
Sri Lanka	22	24	2
Total	1,667	1,905	238

Source: U.S. Census Bureau, International Data Base, WPI

For years, the countries of the Asian subcontinent saw relatively anemic economic growth for several reasons. India's arcane bureaucracy and religious tensions were factors there, while Pakistan has been burdened by its ongoing conflict with that country and terrorism. Internal political battles in Bangladesh clearly have been an anchor holding back its growth. In Sri Lanka, the civil war between the central government and the Tamil Tiger from 1983 to 2009 kept the country from reaching its potential. However, there are signs these constraints may be easing with political changes, but the potential for intra-country and intercountry conflicts are still present and may impede economic growth.

The two major religions of the region, Hinduism and Islam, are also likely to slow demand for soybeans and soy products. Muslims do not eat pork while Hindus do not eat beef, and many of the latter do not eat meat at all. Nevertheless, all Muslims along with increasingly large numbers of Hindus can and do eat chicken and eggs when they can afford them. Additionally, believers of both religions consume seafood that increasingly is being farm-raised. As the countries further

Editor's note: This is a special report taking the place of Ag Review's typical outlook for agribusinesses in the oilseeds industry.

urbanize, it is likely the restraints on meat consumption will wane.

India is by far the most populous country on the subcontinent and is already its largest consumer of soymeal and soyoil. Its soymeal consumption in 2016/17 is forecast at 5.2 MMT, up from only 2.75 MMT in 2010/11. India remains a net exporter of soymeal, owing to its production of about 11 MMT of soybeans in 2016. However, those exports fell to only 409,000 MT in 2015/16 from a high of 5.169 MMT in 2010/11 because of greater domestic use and a poor crop in 2015 that curtailed exportable supplies. It is quite likely India will become a net importer of soybeans in the next few years as domestic demand exceeds production. Its production of poultry meat is growing at an annual rate of about 8 percent with that of farm-raised seafood expanding even faster. Both require soymeal in their feed. Direct use of soybeans for food is also rising.

Asian Subcontinent Soymeal and Soyoil Consumption (000 MT)		
Soymeal		
Country	2012/13	2016/17 Forecast
Bangladesh	654	1,304
India	3,504	5,200
Pakistan	682	1,850
Sri Lanka	150	219
Total	4,990	8,573
Soyoil		
Bangladesh	475	848
India	3,000	5,500
Pakistan	46	595
Total	3,521	6,943

Source: USDA, WPI

India is already the world's top importer of soyoil with 2015/16 imports estimated at 4.217 MMT, up from only 1.08 MMT in 2012/13. It is likely the country will increasingly import and process soybeans in the future to meet growing demand for that as well as soymeal.

Pakistan and Bangladesh have seen sharp increases in domestic soymeal demand for their

animal sectors. Historically, they imported most of their needs from India, but because of that country's declining exports, companies in both countries have installed soybean crush plants to process mostly imported soybeans. As a result, their soybean imports have increased dramatically. Both also continue to import soymeal.

Bangladesh and Pakistan Soybean/Soymeal Imports (000 MT)		
Soybeans		
Country	2012/13	2016/17 Forecast
Bangladesh	388	1,200
Pakistan	-	1,750
Soymeal		
Bangladesh	362	300
Pakistan	682	500

Source: USDA, WPI

There is every reason to believe consumption and imports of soybeans, soymeal and soyoil will rise in the future as the economies and populations of countries in the Asian subcontinent expand. This will contribute greatly to future global demand growth for soybeans produced by the U.S., South America and elsewhere around the world.

Several major companies stand to gain by the growth in demand in Bangladesh, India, Pakistan and Sri Lanka. Cargill, ADM and Bunge are already players in the Indian oilseed processing and vegetable oil sectors, and they can easily expand their operations as demand rises. Unilever and Wilmar are major players in the Indian vegetable oils and food sectors and can also do the same in the other countries. Cargill is a leader in the animal feed sector and can expand there as well as in the other countries of the region. All of these companies are very likely to expand their investments in the Asian subcontinent as demand rises for animal feeds, vegetable oils and other commodities.

THE U.S. BIOFUELS INDUSTRY

By Dave Juday

Top Five Reasons WPI is Neutral Ethanol, Bearish Biodiesel

- The biofuels industry is highly dependent on federal renewable energy policy, and there is a great deal of uncertainty over the future of that policy.
- Ethanol production is on pace to produce up to 16 billion gallons of ethanol, 1 billion gallons more than the Renewable Fuel Standard (RFS) cap of 15 billion gallons for domestic use.
- China has imposed new tariffs on DDGS, pushing their value down nearly 40 percent from 2016.
- The biodiesel blenders' tax credit has expired, which, historically, means reduced profitability.
- Expectations are for biodiesel imports to decline this year. They helped meet an aggressive RFS volume in 2016, but there would be upward price pressure if left to domestic production, not only on biodiesel but also on feedstock vegetable oils that could cut into margins.

The state of the biofuels industry is highly dependent on federal energy policy, particularly regarding renewable energy; thus, the sector is facing great uncertainty right now. The situation is much different from the bright, unfettered future that seemingly was ahead of it in 2006. In a Senate Agriculture Committee hearing on 26 April of that year, then-Chairman Saxby Chambliss said, "I believe we have a bright future and have already taken the right steps to get us there Two of the most notable provisions in the energy bill as they relate to our topic today are the creation of a national renewable fuels standard and the extension of the biodiesel tax credit."

As of 2017, however, the total volume of biofuels is nearly 5 billion gallons below the level prescribed by the RFS. Moreover, that shortfall will only grow as the RFS prescribes biofuel use to increase over the next five years by more than 16 billion gallons cumulatively. A total of 12 billion gallons or 75 percent of that growth is scheduled to come from cellulosic biofuel, although the industry has yet to produce more than 300 million gallons in any given year. Meanwhile, corn-based ethanol production this year is on trend to exceed the RFS-provided 15-

billion-gallon cap on its use. Finally, the biodiesel tax credit has expired – for the fifth time.

The RFS is also plagued by a number of administrative issues. The U.S. Environmental Protection Agency (EPA), which manages the RFS, reported through its Inspector General's Office, said last year that it had missed several of the oversight reports it owed Congress. Two such reports due in 2009 and 2010 will now be completed in 2024. Then there is the matter of promulgating regulations that would allow e15 blends of ethanol. Additionally, there are calls for reforming the compliance process under the "point of obligation." Currently, refiners and importers are the parties held responsible for complying with the RFS volumes, and some have proposed to move that responsibility downstream to blenders and position holders.

Markets on Edge Pending Reform

On 28 February, it appeared there was a grand master biofuels policy plan that struck a compromise package on a number of pressing issues. News reports, which cited the Renewable Fuels Association (RFA) and quoted its officials and members, referenced a planned executive

order to move the point of obligation downstream to blenders and position holders. While the RFA and others oppose changing that, according to the news reports, they were willing to accept the change in order to obtain a volatility waiver that would allow use of e15. Also, the overall package reportedly included a legislative initiative to reinstate the biodiesel credit as a producer credit rather than a blender credit. The initial news of the package was quite bullish for biofuel feedstocks like corn and soyoil. However, it also was premature. After the leak, the White House denied that an executive order on the point of obligation was in the works and that there was a major package deal. The announcement sent the market back down before the day's close.

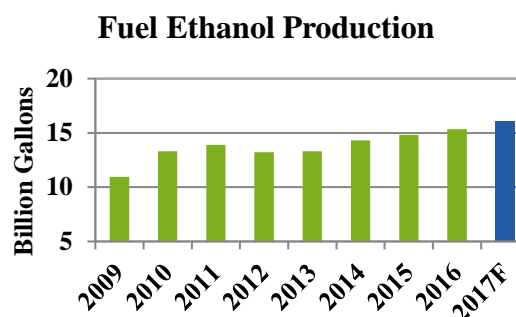
Congressional attention has turned decisively toward RFS reform.

Since then, congressional attention has turned to RFS reform. Representative John Shimkus (R-Illinois), chairman of the Environment subcommittee of the House Environment and Public Works Committee, has confirmed he's preparing legislative reform options for the RFS. Shimkus said he is working with Representative Bill Flores (R-Texas), who has a RFS reform proposal to cap ethanol use at 9.7 percent of the fuel supply. Additionally, Representative Bob Goodlatte (R-Virginia) introduced a proposal that eliminates corn-based ethanol requirements, caps the amount of ethanol that can be blended into conventional gasoline at 10 percent, and requires the EPA to set cellulosic biofuels levels at production levels. Additionally, the proposal decreases the total volume of renewable fuel that must be contained in gasoline sold or introduced into commerce for years 2017-2022. Separate reform efforts are also developing in the Senate.

Ethanol

Ethanol production this year has been strong on lower corn prices. USDA's March WASDE report raised corn to be used by ethanol production in MY 2016/17 by another 50 million bushels to a total 5.4 billion bushels. Approximately 90 percent of the corn use for fuel ethanol is by dry mills and 10 percent by wet

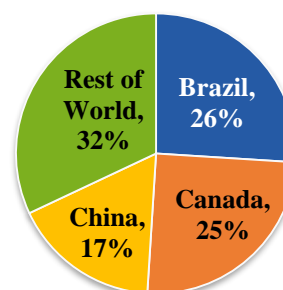
mills. Corn consumption for fuel alcohol in January totaled 476 million bushels, 7 percent more than the same month last year, and the marketing year production is running 5 percent higher than year-ago levels. In terms of calendar YTD, the weekly average production of ethanol is more than 1.047 million barrels per day, which would result in 16.05 billion gallons on an annualized basis.



Source: EIA, WPI

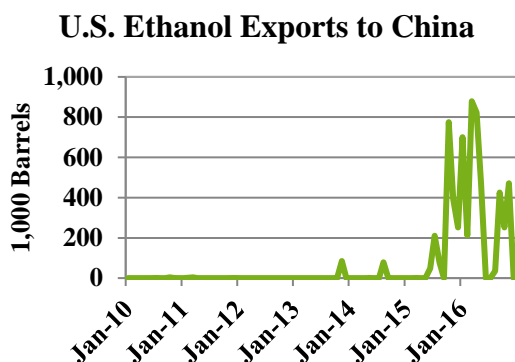
With a cap on conventional ethanol use of 15 billion gallons under the RFS, there is obviously a large amount of U.S.-produced ethanol that needs to find a home. According to the EPA's analysis in setting the required volume obligations (RVOs) for 2017, at least 14.4 billion gallons are to be used domestically in the fuel supply. That would leave 1.6 billion gallons to be distributed between exports or inventories. Last year, per the Renewable Fuels Association (RFA), ethanol exports hit 1.05 billion gallons and were shipped to 60 countries. Slightly more than two-thirds of all exports, however, went to just three destinations: Brazil, Canada and China.

2016 U.S. Ethanol Exports



Source: RFA, WPI

In 2016, China was the fastest-growing market for U.S. fuel ethanol exports as it lowered its tariff on them to a temporary 5 percent. By December, however, it imported no ethanol as plans were in the works to slide the tariff rate back up to 30 percent. It did just that in January of this year; causing the cancellation of shipments booked prior to the new tariff.



Source: EIA, WPI

The new tariff was imposed to provide relief to China's domestic industry and will likely stay in place or increase. According to a statement from the Chinese ministry of finance, "In order to give full play to the protection of tariffs on domestic industries, in 2017 the modified ethanol import tariff rates will be adjusted accordingly."

As part of the new tariff scheme, China also imposed tariffs on U.S.

DDGS as the result of an antidumping investigation. As recently as 2015, China accounted for 51 percent of all DDGS exports. According to a letter sent to President Trump by RFA, another biofuel trade association, Growth Energy, and the U.S. Grain Council:

...China imposed in September 2016 a preliminary antidumping duty of 33.8 percent against U.S. DDGS, as well as a countervailing duty of 10 to 10.7 percent. These duties were implemented despite the fact that China's investigation did not find any evidence of dumping or injury to domestic industries." The letter went on to state, "In 2015 (i.e., prior to initiation of the Chinese antidumping

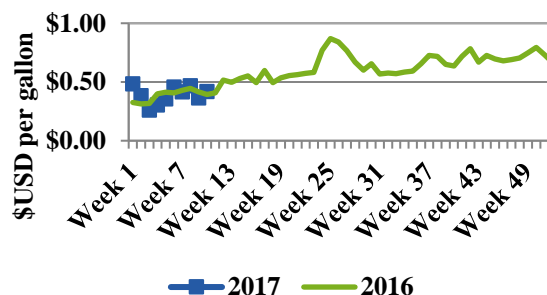
As recently as 2015, China accounted for 51 percent of all U.S. DDGS exports.

investigation), DDGS exports to China averaged 538,522 metric tons per month. By November 2016, exports to China had plummeted to 61,575 metric tons—a dramatic 89 percent reduction. In January 2017, with its final determination, China raised the antidumping duty rates on U.S. DDGS in to a range of 42.2 to 53.7 percent and increased countervailing duty rates to 11.2 to 12 percent.

The groups are asking the administration to challenge the Chinese tariffs within the World Trade Organization.

The impact of the new tariff squeezed DDGS prices, which in February were down an average of 39 percent from June 2016 when ethanol mill margins were at their peak. Lower DDGS prices will cap margins for ethanol mills moving forward.

WPI Estimated Gross Margins for Ethanol (Including Corn Oil Extraction)



Source: USDA, WPI

Biodiesel

Unlike ethanol, the biodiesel supply has dropped off this year, in large part because of the expiration of the biodiesel blenders' tax credit. As Scott Irwin of the University of Illinois wrote:

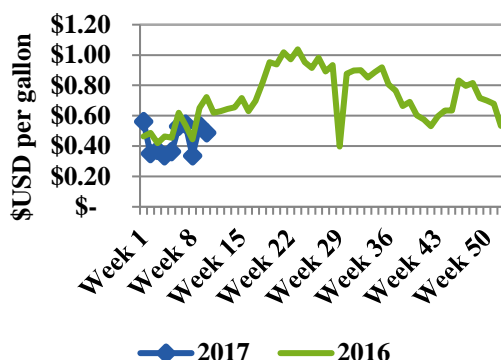
The U.S. biodiesel production industry

Unlike ethanol, the biodiesel supply has dropped off this year, in large part because of the expiration of the biodiesel blender's tax credit

has a distinct "feast or famine" pattern in terms of profitability. The industry made very large profits in 2011 and 2013, but losses in most years previous to 2011 and losses again in 2014 and 2015. The feast or famine pattern is closely tied to expiration of the \$1 per gallon biodiesel tax credit

In terms of gross margins, the industry is following the same pattern in 2017 absent the tax credit.

WPI Estimated Biodiesel Gross Margins for Soyoil Methylester



Source: USDA, WPI

EPA data shows that the generation of biodiesel renewable identification numbers (RINs) dropped to 196 million in January from 535 million in December 2016 when the credit was still in place. This is following the same pattern as previous years when the credit had expired, including 2010, 2012 and 2014.

In January 2017, the generation of biodiesel RINs dropped to 196 million from 535 million the previous month.

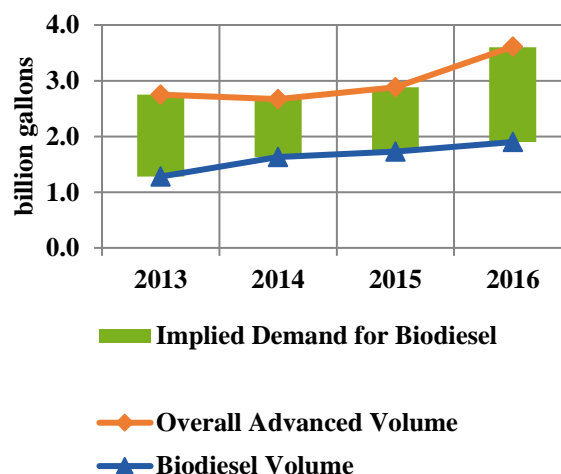
An additional aspect of the tax credit is its impact on imports. The credit applies to the blending of biodiesel regardless of the fuel's origin. The two years with the highest biodiesel imports were also the most recent ones when the blender credit was in place, 2013 and 2016. These imports were critical to meeting the established volumes for biodiesel and overall advanced biofuels under the RFS. The sharp drop-off in RINs also reflects a

severe reduction in imported biodiesel from Argentina early in the year.

While the mandated volumes for biodiesel under the RFS have been increased over the past several years, the EPA was particularly aggressive on setting the overall advanced biofuel mandate in 2016, which is where the biodiesel volumes are nested.

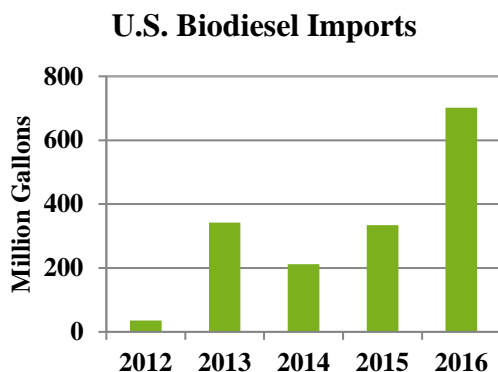
With the lack of cellulosic biofuel supply and imports of sugar-based ethanol from Brazil as well as other qualifying advanced biofuels, the EPA has implicitly relied on biodiesel to meet the growing mandates for advanced.

Implied Demand for Biodiesel



Source: EPA, WPI

As a result of the overall advanced volume becoming the de facto biodiesel demand and also catalyzed by the tax credit, imports of biodiesel helped fill the void and boosted overall supplies. Approximately two-thirds of the increased imports in 2016 came from Argentina.



Source: U.S. Census Bureau, WPI

While the aggressive volumes for biodiesel (both direct and implied) under the RFS would normally benefit biodiesel producers, this year will be different. Imports are expected to fall without the tax credit. This will put upward pressure on biodiesel and feedstock vegetable oils prices, ultimately cutting into producers' margins, especially as petroleum prices look to remain stable.

THE U.S. MEAT AND LIVESTOCK INDUSTRY

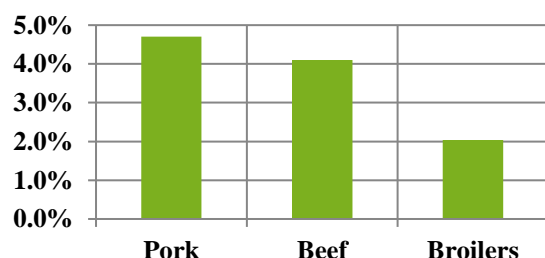
By Dave Juday

Top Five Reasons WPI is Bullish the Meat and Livestock Industry

- Feed prices remain low.
- Packers and processors will see increased throughput with expanded herds and flocks.
- The domestic economy is growing, which will boost consumer spending.
- Moderating retail prices have shifted beef demand toward premiums grades.
- Export markets showed strength in the last quarter of 2016, and that which has carried over to early 2017, but maintaining the pace of exports sales is critical.

Total meat and poultry production set a record level last year, and it is forecast to hit another record high at 100.7 billion pounds this year. This would be an overall increase of 3.2 percent, led by pork and beef production.

**Meat and Poultry Production:
2017 Forecast Increase over
2016**



Source: USDA, WPI

Lower feed costs have helped herd and flock expansion for all species, beef production, and dairy (also set to hit record production this year). A key factor has been improved forage conditions. Indeed, many auction barns in the South and Southeast have seen a run-up in grass cattle prices, which should continue into summer when there will be an increase in calves turned

out to pasture. The wildfires that have consumed more than 1.4 million acres in the Great Plains could be a negative factor for beef producers regionally, but only in the short run.

Moreover, these regional impacts will not exert any national influence. Ultimately, this large throughput of livestock and poultry will give packers and processors plenty of supply. The key to packers' profitability will then be demand.

Export demand picked up late last year and has been strong early this year. Beef shipments were up 17 percent from a year earlier and set a record for the month of January, accounting for 12.2 percent of total production. Pork exports were up 21 percent versus a year ago and accounted for 26.2 percent of total pork production. January is typically the slowest

month for broiler exports, but they had a good start this year with

Lower feed costs have helped herd and flock expansion for all species.

Contrary to seasonal patterns, broiler exports continued their strong pace from late 2016 into January.

shipments up 12 percent from January 2016 and destined to 113 countries, according to the USDA.

Predicted economic growth is an encouraging sign for meat and poultry demand.

Domestically, economic growth is an encouraging sign for meat and poultry demand. The stock market is performing well, gaining 991 points since the beginning of February to the time of this report. The February

U.S. Department of Labor reports showed strong gains in employment and payrolls, both of which should lead to greater consumer purchasing power. The unemployment rate was 4.7 percent, 10 basis points below the Federal Reserve's target of 4.8 percent. Hourly wages were up 2.8 percent while total hours worked were up 1.4 percent. As a result of these factors, total wages in February were up 4.3 percent from the year prior.

Beef

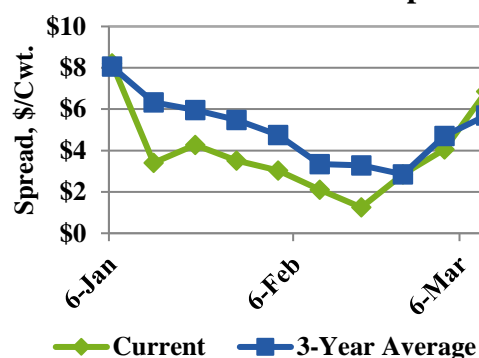
Retailers report that beef loin and rib cuts demand is up, which is seasonally early as middle meat demand generally doesn't pick up until the summer grilling season. Lower retail prices compared with recent years' record highs are driving larger consumer purchases and pushing consumers toward higher grades of beef.

The choice-select spread rebounded from a low of \$1.25 in mid-February to \$6.86 as of the week ending 10 March. Normally, choice and select beef are essentially interchangeable during the winter months, which accounts for a lower spread. With higher steak demand around the holidays and in the summer, the spread increases

because its primary drivers are the loin and rib primal values.

Lower retail prices are driving larger consumer beef purchases, and pushing consumers towards higher grades of beef.

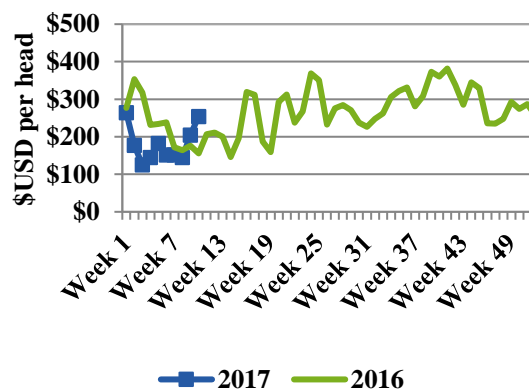
Boxed Beef Choice/Select Spread



Source: USDA, WPI

The sharp increase in the spread (see preceding chart) to beyond the three-year average is a sign of higher choice beef demand. This should result in cattle feeders keeping cattle longer, thus boosting the price of fat cattle. Indeed, as the spread has grown from mid-February, the negotiated dressed cattle price has increased \$11.79/cwt., but gross packer margins have increased \$102/head. As long as there is consumer demand, packers can pass that cost on.

WPI Estimated Beef Packer Gross Margins



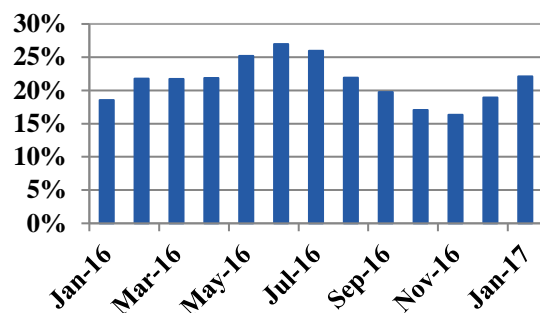
Source: USDA, WPI

Pork

Pork demand remains strong. As with beef, moderate retail pricing after the record highs of 2014 and 2015, which were driven by the short hog supplies that were induced by Porcine Epidemic Diarrhea virus (PEDv), has helped spur demand. During the second half of 2016, packer

margins went through the roof at the expense of producer profitability. That was not a sustainable situation for increased pork output. Going into this year, though, there seems to also be a bigger margin for producers despite retail prices levelling off, and this should help keep supplies larger for packers.

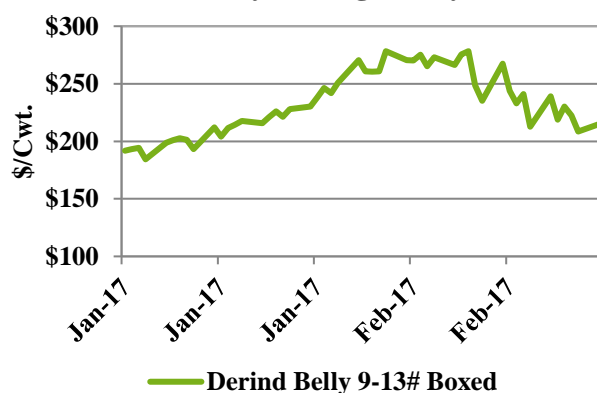
Producers' Share of Retail Pork Price



Source: USDA, WPI

Belly cutout values have been driving pork prices this year. Seasonally, belly prices are normally low at this time, but they recently reached near-record highs, boosting the cutout values.

Pork Belly Average Daily Price



Source: USDA, WPI

Higher cutout values eroded packer margins early this year, but belly prices are dropping back to more normal seasonal patterns at the same pace that they increased, and packers are seeing margins rebound. The question will be what belly prices do in the spring and summer, especially in late summer when garden tomatoes ripen and

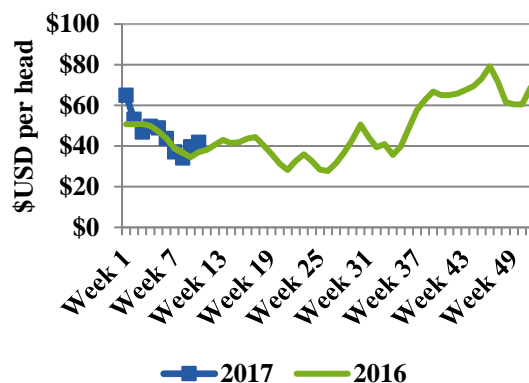
retail demand booms for bacon-lettuce-tomato (BLT) sandwiches; one of the highest seasonal demand points for bacon.

Assuming retailers build their inventories starting at the end of this month and continue into the

Memorial Day holiday, packer margins should remain healthier than earlier this year. If retailers gamble on prices and buy in a “just-in-time” fashion, there could be more volatility ahead.

If retailers gamble on prices and buy “just-in-time”, there could be more volatility ahead for the pork market.

WPI Estimated Pork Packer Gross Margins

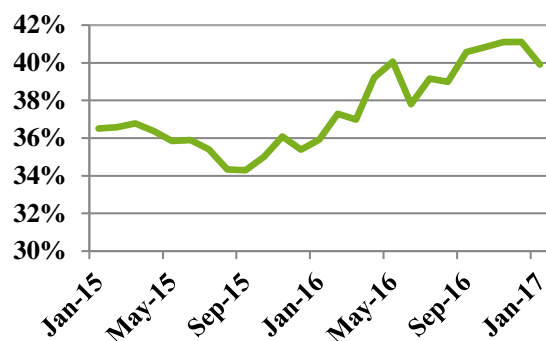


Source: USDA, WPI

Broilers

Wing prices, which have been helping drive the composite chicken price, have dropped as retailers completed building inventory for the NCAA basketball tournament in March. Despite slackening retailer purchases, food service demand for wings remains strong. Also, breast and leg prices are up due to demand. Wholesale prices in early March hit their highest levels since the grilling season last summer. This is particularly welcome for breast meat as that has been experiencing a softening of demand; its 2016 price peak was lower than in 2015. While chicken prices are up, they are competing strongly with ground beef even though red meats supplies are growing at twice or more the rate of broiler meat.

Whole Chicken Price as a Percentage of Ground Beef Price



Source: USDA, BLS, WPI

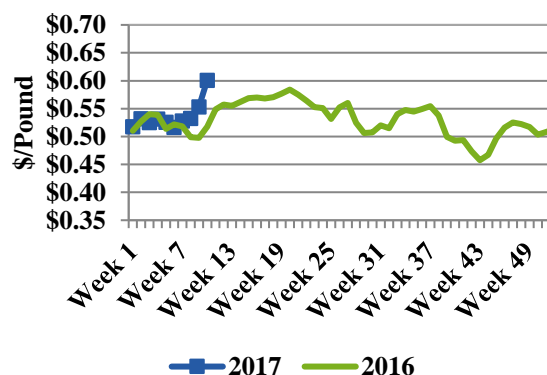
Plants equipped to supply the retail sector are maintaining a flat supply. That is price supportive, especially when paired with strong food service demand. However, two other trends are at play. First, the demand for smaller birds is high and looks to continue for the year, according to retailers. This keeps total marginal pounds of production down compared to red meat. Broiler chicks placed are up 2 percent on the year, and broiler-type egg settings are up 3 percent, while per capita consumption is projected to be up 0.9 percent. Of the three species, broiler production is probably the most balanced with demand. Second, broiler production is meeting consumer preference for “never-ever” antibiotic use. According to the National Chicken Council, about 33 percent of all broilers are in never-ever programs; up from only 3 percent as recently as 2014.

Of the three species, broiler production is the most in balance with consumer demand.

Notably on 5 March, USDA’s Animal and Plant Health Inspection Service (APHIS) announced the discovery of a highly pathogenic strain of avian influenza (HPAI) on a commercial broiler breeder farm of 73,500 birds in Tennessee, located in the Mississippi flyway. Subsequently, on 16 March, avian influenza was discovered across the state line in Alabama and pathogenicity tests are currently ongoing. Additionally, a low pathogenic strain of H5N8

influenza was discovered in Wisconsin earlier this year.

WPI Estimated Gross Broiler Feed Margin Excluding Chick Costs and Grower Payments



Source: USDA, WPI

There have been a number countries impose a ban on imports, but only regionalized to Tennessee, Wisconsin and Alabama. Tennessee accounts for about 2 percent of total production and Wisconsin about 0.4 percent, but Alabama is the third largest producer contributing 12 percent of U.S. production. Neither outbreak is expected to disrupt the U.S. domestic market. Of course, HPAI outbreaks have been a major issue across Asia and Europe this year and with global supply problems, none of the bans on U.S. exports are expected to be more than regional.

Exports

The U.S. is forecast to add 3.1 billion marginal pounds of total red meat and poultry supplies versus last year. Exports will be vital to clearing the market and maintaining packer margins, and thus the key to the sector’s profitability. Specific risks to the export outlook include a stronger U.S. dollar and the scheduled NAFTA renegotiations.

The currently rocky U.S. relationship with Mexico, in particular, is a fundamental concern. Mexico is the third-largest market for U.S. beef exports and the largest for U.S. pork. In fact, more than 30 percent of U.S. pork exports go to

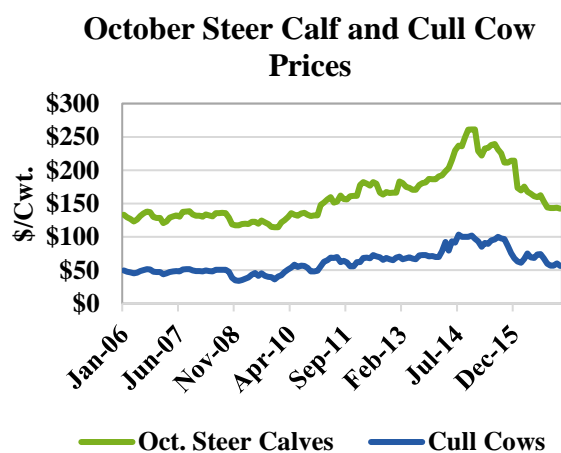
Mexico, which accounted for 8 percent of total U.S. pork production in 2016. It is also the leading market for U.S. broiler exports, accounting for 21 percent of total shipments and 25 percent of leg quarter exports.

Cow/Calf Returns in 2017

By Matt Herrington

High beef and fed cattle prices in the past few years produced windfall profits for the nation's cow/calf sector with per-cow returns exceeding \$300. This year, however, the outlook for cow/calf operators is more bearish with a return to "normal" profits. The primary factors are low calf prices that will depress revenue streams and "sticky" input prices. Efficient operations will remain profitable, but others will have difficulty keeping income statements in the black.

Feeder calf prices have taken a tremendous tumble since the record highs of 2014 where Kansas feeder steers traded over \$250/cwt. Using February futures quotes data and expected October feeder calf basis, current estimates put October 2017 Kansas feeder calf prices at \$142/cwt. for steers and \$124/cwt. for heifers. Moreover, cull cow prices have retreated from lean-beef-supply-shortage highs, falling from \$100/cwt. in July 2015 to \$56/cwt. in February 2017.



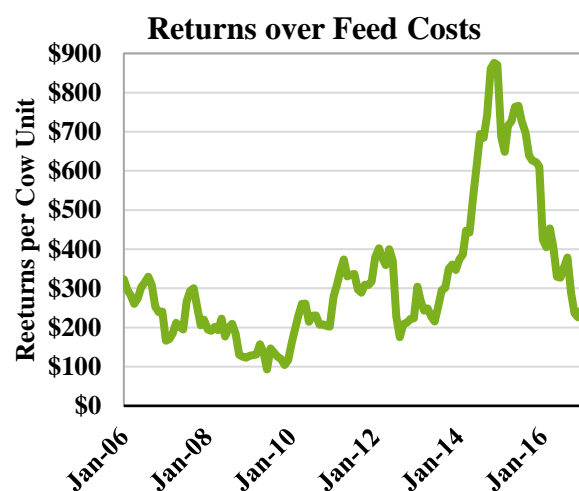
Source: USDA AMS, WPI

Note: Cull cow prices are weighted average of breaker and boner prices.

While prices for both feeder calves and cull cows are above the averages observed from 2006 to 2011, feed costs remain elevated and will push returns above feed costs to near-2012 levels.

Critically for feed prices, pasture rents in the southern Plains are high and only slightly below recent peaks. The current drought situation throughout Kansas, Oklahoma, Texas, Missouri and into the Delta states will keep rents high through the summer. Additionally, dryness in eastern Colorado, northeastern New Mexico, as well as parts of Wyoming and South Dakota could reduce forage availability on owned or leased pastures in mountain states, likely increasing the need for supplement feed. In total, although corn and hay prices have fallen, pasture rent increases will partially offset these lower prices. The effect of lower calf prices and modest feed cost reductions will push returns over feed costs to near \$200 per cow.

High pasture rents and mild drought across key cow/calf areas of the U.S. will keep feed costs somewhat higher in 2017. Returns above feed costs are estimated at \$200 per cow unit.



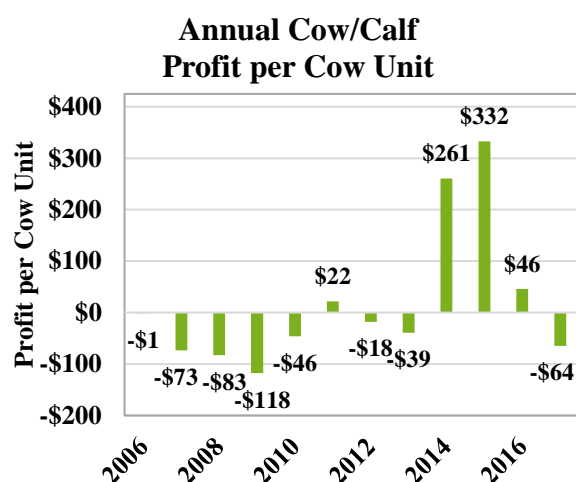
Source: Kansas State University, USDA AMS, USDA ERS, and WPI

Falling calf prices offer one advantage to cow/calf producers: the lowering of replacement heifer costs. Lower replacement female costs are

reducing total non-feed costs for producers even as labor, veterinary, breeding, marketing and machinery costs all increase slightly into 2017. Low energy prices are proving beneficial to cow/calf operations, and total utility, gas, fuel and oil costs will rise slightly but remain well below recent levels. Total non-feed costs are estimated at \$288 per cow unit, the lowest since 2010.

For 2017, cow/calf profitability will cyclically return to negative returns over total costs. Annual projections suggest the average Kansas cow/calf operation will net -\$64 per cow unit this year, down from \$46 in 2016 and \$332 in 2015.

cow/calf operations, and while some cost cutting will occur, 2017 will not see dramatic shifts in operational tactics of cow/calf producers.



Source: WPI

While profitability will certainly be down from recent years, the situation is likely not as bleak as the numbers suggest. WPI's model accounts for the opportunity cost of unpaid labor to the operation (along with other factors), which results in estimated *economic* profits. Economic costs, which account for opportunity costs, are often higher than pure *accounting* costs, leaving economic profits lower. This phenomenon is well known to agricultural economists, and as one professor remarked regarding wheat production, "You can still make a good living off -\$50 per acre economic profits". The same is true of

Despite negative economic profits, 2017 will not bring dramatic shifts in operational tactics of cow/calf producers.

FARM INPUTS

By Joost Hazelhoff

Top Four Reasons WPI is Bullish the Farm Inputs Industry

- Fertilizer S/D: Seasonal spring planting demand in North America and Europe as well as buying in Latin America are met with high inventory levels and a strong import lineup.
- Price patterns: Nitrogen prices have retreated somewhat while DAP prices have stabilized after a two-month rally.
- External price drivers: Historical correlation between crude and fertilizers suggests current urea prices are intuitive with DAP levels on the high end. Corn prices suggest urea could move higher modestly. In the U.S., anticipated cuts in corn planting seem to keep a lid on seasonal urea buying strength.
- Production cost/margins: Thermal prices have moved higher, increasing Chinese cost of urea production. In combination with seasonal demand, exports from China may be limited.

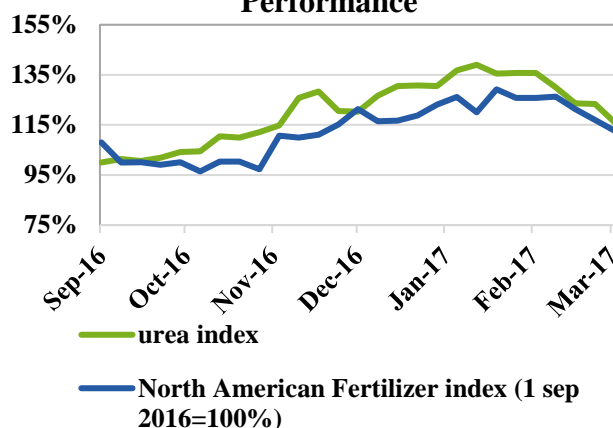
In the February 2017 edition of *Ag Review*, a slightly more optimistic tone in the fertilizer industry was noted due to slowing capacity growth and average 2017 fertilizer prices that are likely to be higher than in 2016. However, a near-term correction in fertilizers with new supply starting to affect prices was also anticipated.

As illustrated below, the fertilizer industry's share price performance takes its cue from developments in international fertilizer prices. In line with that relationship, the correction in fertilizer prices, especially in the nitrogen segment, has caused fertilizer share price performance to do likewise.

In phosphates, DAP prices came down in the second week of March after a steady climb during most of January and February on the back of decent seasonal demand. At the same time, the DAP supply is still under pressure with high FOB prices in China.

year-to-date export numbers there are below levels of a year ago.

Fertilizer Prices versus Industry Performance



Source: CSI Datasystems, WPI analysis.

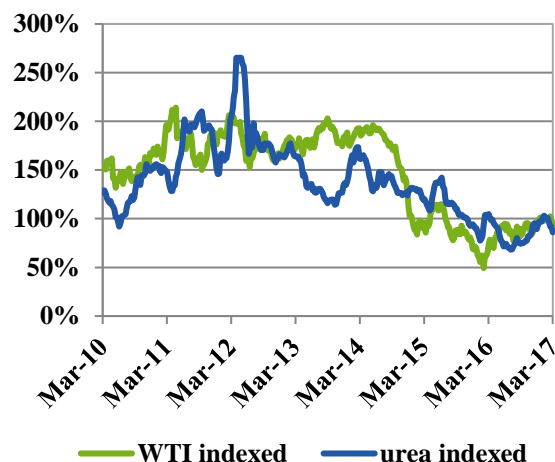
Note: the Index is the unweighted average of PCS, Agrium, Mosaic and CF.

Crude Oil versus Fertilizers

As has been the case for the past few months, current urea prices remain in the range of the

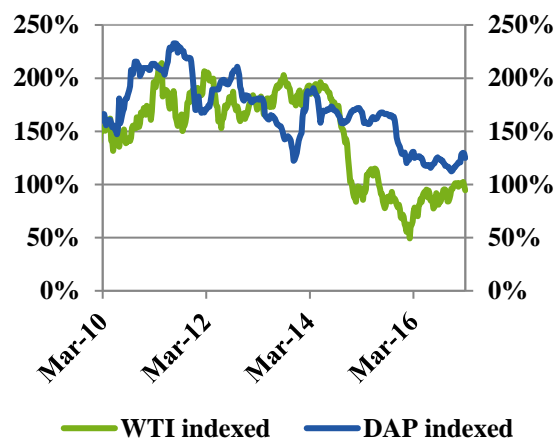
historical price band between crude oil and urea. To reiterate a point made last month, the recent rally in DAP prices has pushed DAP values relatively high from a crude perspective.

Crude Oil versus Urea Prices



Source: UA Dataservice, WPI analysis (NB: 1 May 2009=100%)

Crude Oil versus DAP Prices



Source: UA Dataservice, WPI analysis (NB: 1 May 2009=100%)

Currently, there is not much crude oil-driven support for fertilizer values anticipated. It was also noted last month that OPEC supply discipline represented upside and the U.S. shale supply could be growing once again by the resulting higher prices. This now appears to be materializing with initial optimism regarding OPEC's efforts to curtail output more than offset

by rising output and stocks levels in non-OPEC origins. The effect is especially notable in the U.S. where drillers have been adding rigs to capitalize on the initial price recovery.

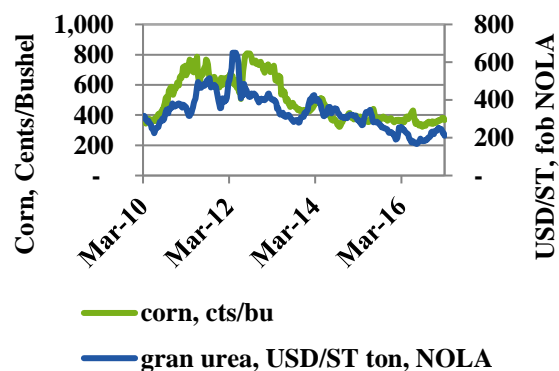
Near-Term Gains -versus Fertilizers

On 31 March, USDA will publish its planting intentions report. There are few, if any, other agricultural data points in the crop year that drive sentiment in the fertilizer industry as much as this report. The current soybean-corn price ratio seems to suggest a

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moderate bias toward soybeans, and a corn acreage reduction is indeed what most in the trade are looking for. This helps to explain the current sense of apprehension in North American fertilizer buying and weakening prices. Current urea prices are slipping south of the historical urea-corn band. Last month it was noted that while "preliminary first takes on the 2017/18 corn crop call for a tighter balance sheet, we're not sure the difference is big enough to justify a significant move higher for fertilizer prices." We still stand by that message.

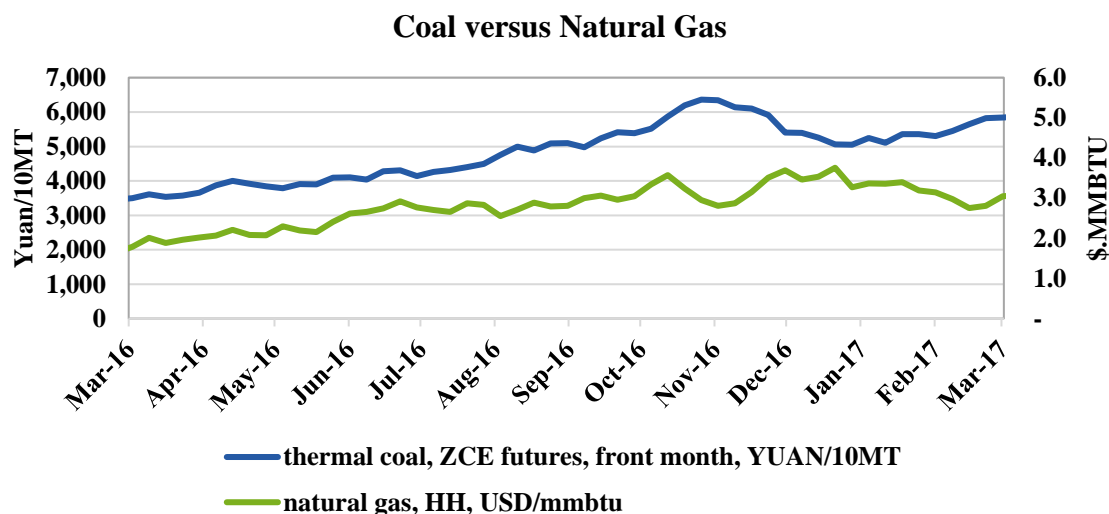
Corn versus Urea Prices



Source: CME, WPI analysis

Nitrogen Cost of Production: Gas-Based versus Coal-Based

For some time now, U.S. nitrogen production margins based on spot cost of natural gas have benefitted from lower gas prices in the U.S., whereas coal-based (Chinese) production has been dealing with ever-increasing (thermal) coal prices. Over the past few years, more than 10 MMT of inefficient Chinese urea capacity has already been forced to shut down, and higher thermal coal prices have only been compounding the predicament the Chinese nitrogen industry is facing. Consequently, Chinese FOB values for urea remain elevated. For the near term, the margin benefit for U.S. gas-based production versus Chinese coal-based nitrogen does not appear to have plateaued yet.



Source: CME, CSI data, WPI analysis

POLICY TRENDS

By Gary Blumenthal

Top Three Reasons WPI is Bullish Macroeconomic Trends for Agribusiness

- Economic growth and technology remain bullish.
- Production agriculture is holding at neutral.
- Bearish is conventional agricultural chemicals and food retailing.

Sector Status

Low to no profits continue to weigh on the agricultural sector. U.S. farmers are demanding an increase in their subsidy programs and European farmers, which already employ schemes such as geographical indicators to trick more money out of consumers, continue to fight downstream buyers and overseas competitors. COPA COGECA was recently criticized by Sao Paulo for disparaging the quality of Brazilian meat. USDA paints a continuing dreary picture but there is a contrary view. The Food and Agricultural Policy Research Institute (FAPRI) is a credible academic organization and it has come out with a glass half-full analysis.

After suffering a 31-percent drop in net cash income in three years, FAPRI sees the U.S. farm sector experiencing stable to modestly rising income in the coming years. Not so much for land owners, however, as farmland values are predicted to fall another 11 percent before leveling off at the end of this decade. In the nearby market, February saw long positions in actively managed commodity funds reach their highest level since 2014. Keeping it going will require demand because farmers in South America will now be adding on to supplies.

Notably, farmers themselves remain confident. The Purdue/CME Agricultural Economy Barometer of farmer attitudes dropped slightly

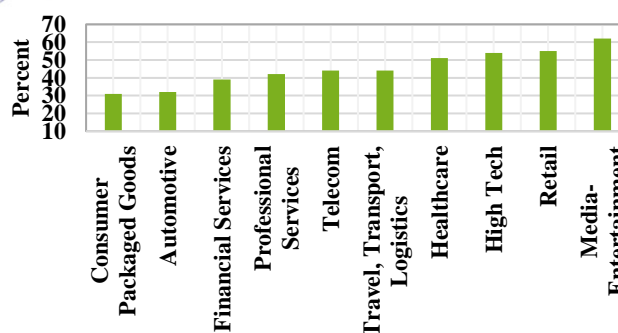
last month but remains well above last year's level.

Big Data Farming

It is rapidly becoming a digital world but the adoption rate varies greatly by industry (see graph below). A study several years ago measured the uptake of digital switches and found that agriculture lagged behind the automation rate of manufacturing. A separate study in the 1980's found that U.S. food processing was the most advanced in the world. Competition was so acute that a major American export was used food processing machinery with relatively few hours of use. A more recent survey by McKinsey & Company finds the consumer packaged goods sector to lag behind many others in terms of utilizing information technology.

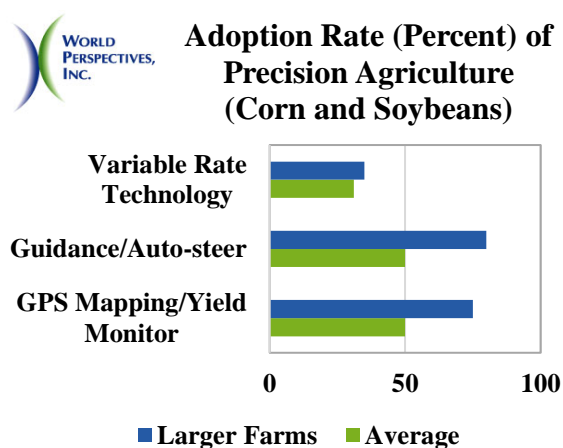


Digital Uptake by Industry



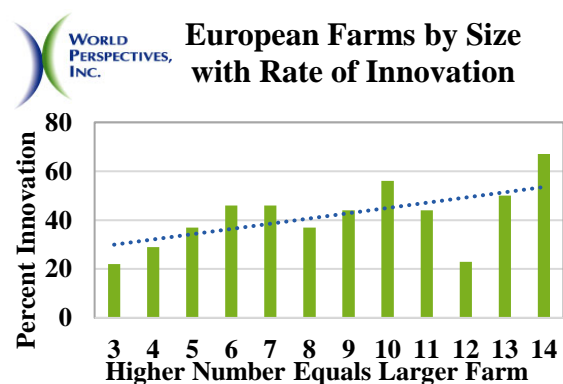
Source: McKinsey & Company, WPI

However, the availability of more digital tools for farming and the increased availability of investment capital during the last bull market has likely aided the industry. Investment in precision agriculture was reportedly \$661 million in 2015, up 140 percent from 2014. The results of a survey by USDA's Economic Research Service (see graph below) reveal that the uptake of technologies like GPS monitoring of soil and yields, auto-steer and variable rate applications has been faster by corn and soybean farms. Moreover, the larger the farm the greater the adoption rate of technology.



Source: USDA Economic Research Service, WPI

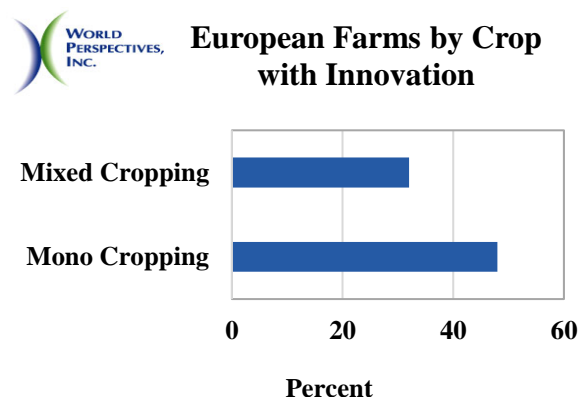
Researchers in Europe found the same correlation of farm size class and innovation (see graph below).



Source: Wageningen Economic Research, WPI

Notable for EU policymakers given their encouragement of mixed cropping (see Juncker

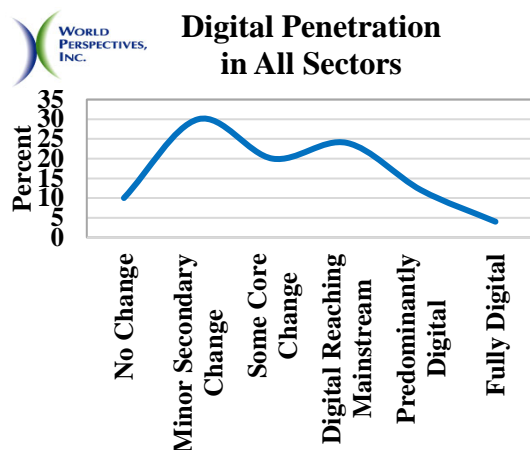
below) is the greater innovation rate by farms with a specific crop specialty (see graph below).



Source: Wageningen Economic Research, WPI

The per firm adoption rate of information technology more or less follows a typical bell curve (see graph below) and tends to separate farms into princes and toads. McKinsey calculates that one-quarter of companies will lag in digitalization and they will see softer revenues and smaller profits as a result. By contrast, one-quarter of the business community will more rapidly adopt information technology and they will benefit disproportionately, particularly if they find digitally disruptive approaches. The Economic Research Service calculates that both operating profits and net returns are higher for farms adopting precision agriculture.

One-quarter of the business community will more rapidly adopt information technology and they will benefit disproportionately.



Source: McKinsey & Company, WPI

Chemical Attacks

Meanwhile, old-style technology continues to be under vicious attack by chemo-phobes. Endocrine disruptors, neonicotides, antibiotics, pesticides – criticism of the chemistries used in production agriculture has been unrelenting. The latest trend has been to file lawsuits against glyphosate based on the skewed analysis by the International Agency for Research on Cancer (IARC). Never mind that every other credible scientific organization refutes the finding by IARC. Anti-chemical warriors are aghast that the European Chemicals Agency has now given glyphosate a clean bill of health – it is not carcinogenic to consumers. Europe's policy makers now face the challenge of extending the approved use of the herbicide based on the science, or transparently blocking it based on the politics.

Activists are now trumping up charges against glufosinate, an herbicidal microbe that is naturally in the soil. These zealots will absolutely flip out when they see the next generation of plant protection products since they will largely be genetically modified.

Ironically, the demand for non-GMO food continues to grow rapidly just as the technology begins to

Ironically, demand for non-GMO foods is growing rapidly just as the technology begins to deliver real benefits to consumers.

deliver real benefits for consumers. The non-browning apple seems like mere convenience relative to new products such as low-acrylamide producing potatoes and corn without aflatoxin. The mega-mergers in the crop chemical sector will bear fruit eventually, but they will be burdened for in the interim.

Retail Blood Bath

Discount supermarket chain Lidl has now joined fellow German food retailer Aldi in an invasion of America. Traditional retailers had already caused Whole Foods (aka Whole Paycheck) to close stores as they began marketing more high end specialty food products. Now these traditional U.S. supermarkets that have long battled Walmart's pledge of low prices are being challenged further by private brands and heavy discounting. It is a sector traditionally burdened by low growth rates and tight profit margins due to competition.

Top U.S. retailer Kroger was called a good buy for 2016 by investment adviser and television personality Jim Cramer – its stock fell by over 12 percent and it has continued falling thus far in 2017. Safeway peaked at \$1.30 per share on October 24, 2016 and has descended ever since. Whole Foods' share price has descended 45 percent over the past two years. All of this has occurred before Lidl has even opened one store.

United States

The economy has gotten frothy enough to warrant a rate rise by the Federal Reserve, and it was suggested that two more hikes are coming later this year. While it has been coined the Trump rally, mostly based on the new Administration's promise of tax reform and de-regulation, concurrently companies are listing the new president as a risk factor to their portfolios due to his threats to global trade and penchant for being bombastic.

Agricultural policy development is on hold while the Senate Agriculture Committee reviews the paper-based qualifications of nominee Sonny Perdue to be USDA chief. The House Agriculture

Committee has begun holding a series of hearings on farm bill topics. Hearings thus far have covered: the rural economy (not so good), nutrition assistance (limit types of eligible foods; block grants to states), conservation (proposed cuts), trade (increase market development spending), energy (ethanol is important), taxes (cuts), research (important but possible cuts), livestock and dairy (the latter needs help).

European Union

On the upside, the European economy is getting stronger in that industrial activity has increased along with inflation. On the downside, retail sales fell in January for the third month in a row. Some argue that General Motors selling off its money-losing Opel division to Peugeot was a no-confidence vote on Europe, but that is divining a whole economy off of one company's troubles. That aside, Mark Rutte's victory in the Netherlands over the nationalist Geert Wilder in the race for prime minister should provide further economic encouragement.

The problem is that Europe's status quo policymakers continue to do themselves no favors. Agriculture provides a keen example: the sector is demanding policy simplification and the politicians talk simplification, but then they constantly dream up new obligations. The latest is a food waste reduction requirement.

Earlier, Commission President Jean-Claude Juncker had larded up sustainability

requirements for agriculture and suggested the Common Agricultural Policy should encourage

"more labor intensive integrated farming"

and a shift toward agro-ecology. He had listened to smallholders demanding food sovereignty and activists opposing intensive monoculture practices but not the farmers producing the Continent's bounty. Multi-tasking has been shown to hurt productivity amongst bureaucrats

The EU Commission recently suggested that policies should encourage "more labor intensive integrated farming" and a shift toward agro-ecology.

like those in Brussels and it will have similar impacts in the wheat and sugar beet fields of member states.

Global Market Tenor

Despite Mr. Trump and challenges from similar nationalists in various European elections this year, the markets are indicating optimism. Central banks have slain the deflation beast and economic activity indices are rising broadly. Perhaps a key signal was China's trade deficit in February, the first monthly trade deficit in three years.

The scars of the last financial crisis are still fresh in mind despite the recovery being in its eighth year. Trend analysis of recoveries indicate the odds are that growth will continue to at least 2019. A log scale analysis of recoveries by quantitative analyst Alan Clement would caution that it is a consolidating market moving sideways that prompts greedy activity and thus risk to the market. The bottom line is: remain aware.

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