

The Starch Source

News and Information Impacting the Corn Wet Milling and Starch Manufacturing Industries Volume 1, Issue 2

GLOBAL INTERCONNECTIVITY

Today's higher specialty ingredients and industrial paper starch prices are related to a broad web of cost drivers that stretch far beyond the simple price of a bushel of corn.

The contents of the latest USDA Planting Intentions report reverberated through the commodities markets at the end of March. Farmers, it said, would plant 8% fewer acres of corn this year in favor of soybeans. The news sent the price of corn soaring, driven by fear that there would not be enough corn to meet demand in 2009. Meanwhile, soybean futures fell.

The problem is that the news comes at a time when demand for grains for both food and industrial applications (e.g., bio-fuels) is growing at an appreciable rate, and the world has experienced several seasons of weather-related crop shortfalls. As a result, world grain stockpiles, a key buffer to fight famine around the world, have fallen to the lowest levels in decades. This means that no matter how farmers parcel out their plantings in the short term, concern is there still won't be enough corn or beans to meet next year's demand. And should Mother Nature choose to bestow inclement weather this year, the results for global agriculture could be disastrous.

This precarious framework is further exacerbated by the rising cost of fuels and agricultural inputs. All these factors are driving grain prices, and the prices of products that rely on grains as raw materials, to unprecedented levels.

Growing Demand

The world's developing countries have been growing by about 7% per year — an accelerated rate by historical standards. As incomes rise, consumers demand greater quantity and



better quality of food, including meat. The Food and Agricultural Policy Research Institute 2008 World Agricultural Outlook forecasts that sustained income and population growth will raise world meat trade by 28.7% in the coming decade. Demand is already growing in China. The Chinese now consume an average of 110 pounds of meat per person per year, compared to 44 pounds in 1980. As producers seek to meet this escalating demand, they require more grain.

Food isn't the only sector competing for limited crops. Demand from the industrial sector is also growing. Last year, federal regulations

called for the production of renewable fuels, including ethanol (made predominantly from corn in the U.S.) and biodiesel (which can be made from soybeans), to increase to 36 billion gallons — a fivefold increase over current levels — by 2022.

Recent mandates have proved effective in upping biofuel production. A new World Bank report found that from 2004 to 2007 almost all of the increase in global corn production was diverted to U.S. ethanol production, which means that the corn supply for other uses has remained flat. The International Food Policy Research Institute expects the current pace of biofuels expansion to raise corn prices by over 65% by 2020.

Supply Side

Increasingly, the price of grains is interrelated. When a drought in Australia decimates its wheat crop, the resulting surge in wheat prices encourage farmers elsewhere to plant wheat instead of other crops. So although starch prices are dependent upon the price of corn, corn prices fluctuate in response to movements in other competing crops.

Last year, U.S. farmers cut back the land they planted in soybeans by almost 12 million acres because price ratios favored corn over beans. This led to a smaller soybean harvest amidst strong global demand, and as a result carryover stocks declined from a stocks-to-use ratio of 18.7 to 5.5%. Analysts expected South American countries to increase soybean plant-

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UPDATE: ENERGY

In May, crude oil futures set a new price record of \$126.50/barrel, and prices continue to soar. The Energy Information Agency (EIA) now expects the cost of West Texas Intermediate to average \$101/barrel for 2008 (up from its January 2007 forecast of \$87/barrel). Analysts attribute the high prices to speculative buying by U.S. hedge funds. As the Federal Reserve continues to cut interest rates and the U.S. dollar declines against world currencies, U.S. denominated crude, along with other commodities, is seen as a safe hedge against the falling dollar. As a result, money is flowing into crude and commodities, and bidding up prices.

Some analysts say that pure speculation related to this hedging effect is currently overwhelming any pricing impact related to inventories, demand, geopolitical instability or other crude fundamentals. However, speculation couldn't drive prices this high if strong supply/demand fundamentals didn't support the price levels. The speculative buying does inject added volatility into an already volatile market, which makes it harder for the specialty ingredients and industrial paper starch industries to predict feedstock price trends.

High prices usually stimulate increased

production, which in turn improves supply and brings prices down with time. OPEC members recently declined to increase production, explaining that supply and demand are well balanced. However, John Brynjolfsson, a commodities fund manager at Pimco, thinks there may be other factors in play. He told *Fortune* that increasing production generates income that must be invested. Given current interest rates, oil producing countries, like Saudi Arabia, earn a better rate of return by leaving the oil in the ground, he said.

Natural gas prices have also climbed since the fall. Cold weather in the first quarter maintained pressure on prices. Market speculation is also active in the natural gas market, although it doesn't appear to be as volatile. Chemical Market Associates, Inc. (CMAI) forecasts moderating natural gas prices over the summer months as heating demand declines and expects higher prices in 2009.

In traditional supply/demand metrics, high prices tend to dampen demand but that's not happening in today's environment. While the International Energy Agency (IEA) forecasts a 2% contraction in U.S. oil demand this year, the drop will be easily offset by a 4.7%

rise in demand from both China and India. Overall, worldwide demand will grow by 2% this year, driven primarily by growth in emerging markets, the IEA says.

Demand is especially strong in countries like China where oil products are subsidized, consumers are shielded from the impact of rising global prices and, therefore, have little incentive to curtail demand. "Subsidies of commodity prices buffer populations in oil emerging economies from price increases. This has the effect of increasing fuel demand," Edward Morse, chief energy economist at Lehman Brothers, told *Bloomberg*.

As emerging economies exert greater impact on oil demand, they will increasingly influence prices. A hot summer could inflame Middle East power needs and easily raise prices by \$20/barrel, Morse says.

High energy prices have a direct effect on specialty ingredient and industrial paper starch prices. They increase transportation costs for raw materials, like corn, and finished product. They also drive up processing costs. The impact: continued inflationary price pressure on specialty ingredient and industrial paper starches.

UPDATE: TAPIOCA

Soaring global grain prices, high fuel and fertilizer costs, unstable weather patterns and the weakness of the U.S. dollar are all driving up the price of tapioca starch used in specialty ingredients.

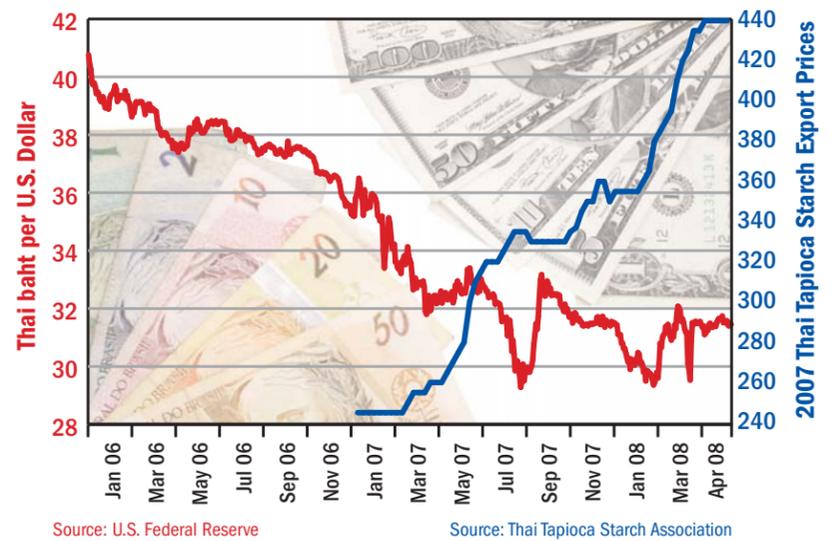
Thailand supplies much of the tapioca starch used in the U.S., but competition is limiting supply. Higher energy prices continue to favor the development of alternative fuels. In Thailand, sales of biodiesel and gasohol, a mix of petrol and ethanol made predominantly from sugarcane, doubled in Q1 2008 and are expected to remain strong through the rest of the year. As a result, Thai farmers are planting more acres to fuel crops. And, if ethanol producers offer competitive prices, they may choose to divert tapioca production from the food and starch markets to the ethanol market.

Tapioca supply is tight and many starch mills, already running far below capacity, are bidding up prices in order to keep mills operating. Limited root supply is forcing some mills to source roots further afield, which increases the transportation cost of the starch.

Competition for limited supply is also coming from unexpected markets. Rising global grain prices and drought in New Zealand, one of the world's leading dairy producers, are forcing New Zealand dairy farmers to look for alternative feed for their cows. Starch-rich tapioca can be substituted for grain in livestock feed. New Zealand recently imported Thai tapioca to feed to dairy cows and maintain milk production.

Farmers are upping their use of fertilizers to increase the productivity of their crops, which is also adding to costs. In a move to curtail cost inflation in the agricultural sector, the Thai government froze domestic fertilizer prices. However, since Thailand imports the majority of its chemical fertilizer, this hasn't had a dramatic impact on costs. Last year, 14% of the country's fertilizer imports came from China. This year, Chinese authorities boosted the export tax on fertilizer in an attempt to keep the chemicals for domestic consumption. This will impact costs. With Thai fertilizer demand rising sharply, this could add inflationary pressure or even cause fertilizer shortages, which would impact yields,

Thai baht/U.S. Dollar vs Tapioca Prices



Source: U.S. Federal Reserve Source: Thai Tapioca Starch Association
Since January 2006, the U.S. dollar has declined 23% against the Thai baht. In 2007, tapioca starch prices rose 47%. By April 2008, prices had climbed an additional 22%.

depress supplies and drive crop prices higher.

Like many other commodities, tapioca prices are already on the rise. Export prices for Thai tapioca starch were up 47% in 2007, according to the Thai Tapioca Starch Association. By mid-April 2008, prices had climbed an additional 22% and are forecast to continue to rise by 4-6% per month in the short term.

Finally, the weak U.S. dollar continues to raise the cost of imported goods. Since the beginning of 2006, the U.S. dollar has dropped 23% against the Thai currency, which also contributes to the higher cost of Thai tapioca.

All of these factors, in addition to escalating global transport costs, continue to drive up the cost of tapioca-based specialty ingredients.

Global Connectivity *Continued from page 1.*

ings in response, but that didn't happen. The countries' farmers only planted 2% more soybean acres and, because of crop problems in Brazil and Argentina, this amounted to only a 1% increase in production. This also means that the world has almost no backup stocks. When back-up stocks dwindle, price volatility increases.

Despite a bumper corn crop last year, corn carryover stocks also reached very low levels. Insatiable demand continues to draw down reserve stocks, eroding the safety cushion should there be any problem with crops in coming years. This is also contributing to higher prices and increased market volatility.

In some years, the USDA March planting report sets the tone for the entire crop year. Weather, of course, is always a wildcard. Despite the uncomfortably low level of soybean carryover stocks, the price gyrations that followed this year's report recast the market economics and sent a clear signal to farmers to plant more corn. "The pendulum has swung decidedly in favor of corn at this point," Darrell Good, an economist at the University of Illinois, told the Associated Press. "For a lot of the central and northern Illinois farms, corn pencils out easily to be \$200 an acre more profit than soybeans."

Will they plant?

Farmers could indeed decide to plant more corn. However, the favorable economics may not be enough incentive to overcome two hurdle issues: soil fertility and escalating input costs.

In recent years, demand from the ethanol boom has led many farmers to forego traditional crop rotation and plant one corn crop after another. Corn is a nutrient-hungry crop that depletes soil fertility; whereas soybeans help to fix nitrogen in the soil. Regular crop rotation, planting corn one year and soybeans the next, preserves soil fertility and ensures higher yields. Farmers may not be willing to sacrifice fertility for another year of corn.

In addition, corn is more expensive to grow than soybeans because it requires more fertil-

izer. Farming input costs have climbed substantially. Diesel is up 44% this year compared to the same time last year. Global fertilizer costs climbed 200% last year, driven by high energy costs and increased demand from the world's farmers, according to the International Center for Soil Fertility & Agricultural Development. Some analysts estimate that it may cost farmers twice as much to plant corn this year as it did last year. Farmers may be reluctant to go to the bank for the substantially larger loans needed to finance this year's corn crop. Analysts suggest that farmers may lack the stomach for such risk, especially given current market volatility.

Market Volatility

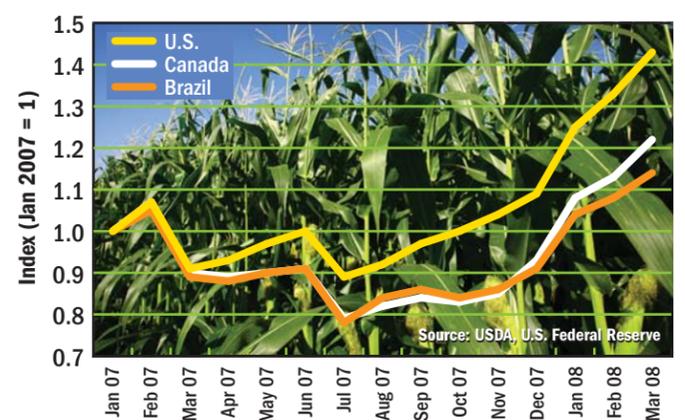
Farming has always been risky, but with hedge funds dramatically increasing their participation in commodity markets, farmers now have a lot more than weather and yields to worry about. Funds continue to take out long positions in corn and soybeans. *Barron's* March 31 cover story contends that speculators hold nearly 60% of bullish commodity positions. The problem is that commodity markets aren't nearly as liquid as other financial markets, and any irrational move, whether to buy or sell, can quickly disrupt price equilibrium.

In addition, ongoing problems in the stock market and the continued subprime meltdown mean that funds could be forced to liquidate commodity holdings to cover margin on other losses. Those kinds of large-scale movements can quickly drop prices. As a result funds are now as important a fundamental as weather, and just as unpredictable.

Mother Nature

This year, traders are concerned that wet

Relative Corn Prices



Exchange rates affect local corn prices. Since January 2007, Corn prices have increased by 43% in the U.S., while prices in Canada increased by 22% and in Brazil by only 14%. This means that what appears as a clear "plant" signal to U.S. farmers is muted when prices are translated into Brazilian reals and evaluated by local farmers. As a result, farmers don't respond fast enough.

spring weather will negatively affect the corn crop. The latest crop progress report indicates that as of May 11, farmers had planted only 51% of the corn crop, compared to the five-year average of 77% for this time of year.

Earlier plantings generally translate into higher yields, ensuring that plants are mature enough to withstand the onset of hot summer temperatures. But first, the fields have to dry up enough to support heavy planting machinery. If wet weather continues to delay planting in the corn belt, farmers may decide to plant less corn in favor of soybeans instead. This would send corn prices soaring.

Impact on Food and Paper Industries

All of these factors demonstrate the increasingly precarious state of global agriculture in the new ethanol age. Volatility is compounded by recent economic events and increasing speculation in commodities. Farmers have always planted corn and will continue to do so. How much they plant and how well it grows remains to be seen. How the market decides to value that corn is also unknown. What is known is that these factors all point to increasingly high corn prices in the short term.