



Ag Decision Maker



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Sometimes expectations are met

By Chad Hart, extension economist, 515-294-9911, chart@iastate.edu

The September updates for USDA's Crop Production and World Agricultural Supply and Demand Estimates (WASDE) reports were highly anticipated this year. There were several reasons for that anticipation, as these reports would incorporate the first round from the objective crop yield surveys for corn and soybeans (where USDA representatives physically examine the crops) and would also incorporate the acreage data gathered by the USDA Farm Service Agency (FSA), a month earlier than usual. Add in the uncertainty created by weather events, including the ongoing drought and the impacts of a few tropical storms, and the stage was set for potential volatile reports. However, in the end, the reports mostly reflected and returned the pre-trade expectations, providing a salve to downward-trending markets. While there remains some uncertainty on the supply side (the effects of Hurricane Ida were not fully worked into the estimates), the September updates revealed

the crops will be large, but usage remains strong as well.

Let's start with crop acreage: in the week leading up to the reports, it was announced that USDA National Agricultural Statistics Service (NASS) would incorporate information from the FSA acreage data released in late August to potentially update their crop acreage figures. Normally, these adjustments are made in October. The early move created some chatter within the trade. However, once the acreage adjustments were made, the production estimates for both crops landed squarely in the middle of trade expectations. For corn, national planted area was increased on 612,000 acres to a total of 93.3 million. This moved the estimate for national harvested (for grain) area to just over 85 million acres. While most of the state adjustments were rather small, there were some big shifts. Corn plantings in Illinois, Iowa and Minnesota were reduced by 200,000 acres each.

Kansas corn shrank by 100,000 acres. Those losses were more than offset by gains in Arkansas (100,000), Missouri (300,000), Nebraska (200,000), North Dakota (500,000) and South Dakota (100,000).

Handbook updates
For subscribers of the handbook, the following updates are included.
Change in Corn Prices by Two-Week Period – A2-17 (2 pages)
Change in Soybean Prices by Two-Week Period – A2-18 (2 pages)
Please add these files to your handbook and remove the out-of-date material.
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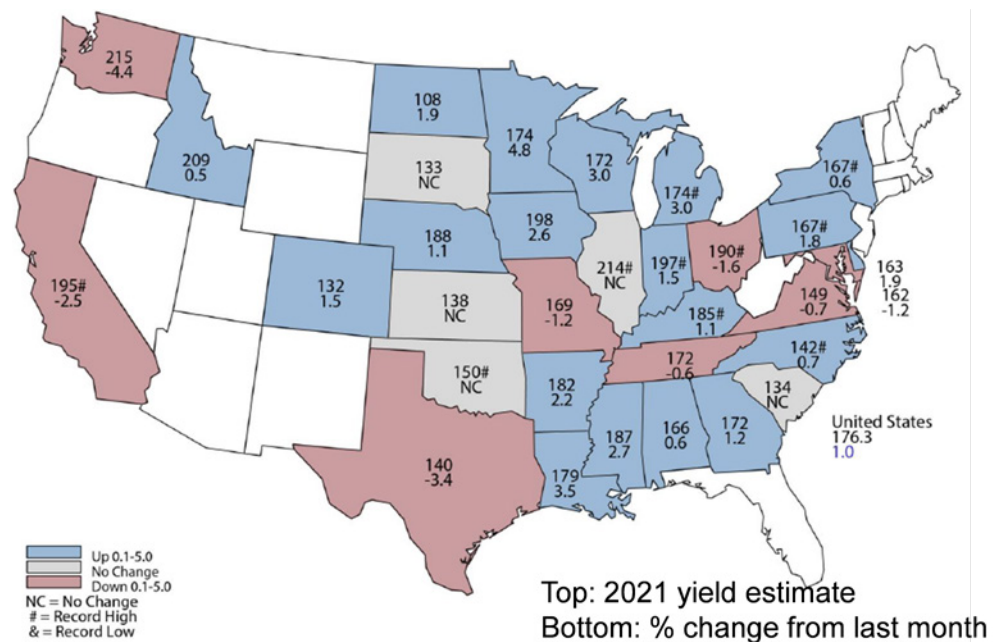
Some of those corn acreage shifts show back up again in the soybean area. Nationally, total planted area for soybeans was reduced by 320,000 acres, to 87.235 million acres, so the national acreage shift was smaller, but the number of states involved was higher. Iowa and Nebraska added 200,000 acres each. Indiana added 250,000 acres. North Dakota increased by 100,000 acres, but those gains were offset by declines in Illinois (100,000), Kansas (150,000), Michigan (150,000), Missouri (200,000), Tennessee (150,000), and Wisconsin (100,000).

The next piece to the supply puzzle is the yield. The September yield estimates are a combination of the data from USDA's objective yield survey and the simultaneous farmer yield survey. Figure 1 shows the current yield estimates and how they have changed. The national average corn yield estimate rose 1.7 bushels to 176.3 bushels per acre. The pattern of yields across the country remained consistent with earlier estimates, with record yields projected in the eastern Corn Belt and lower yields in the west. However, the September update revealed slightly better corn crops across most of the nation. Iowa's corn yield estimate increased by five bushels to 198 bushels per acre. Wisconsin's corn yield rose by five; Minnesota's went up by eight. North Dakota and Nebraska each increased by two bushels. Putting together the acreage and yield updates, USDA found evidence to support a 15 billion bushel corn production projection. So we are back to talking about the potential for a record corn crop.

Like the acreage comparison, the yield adjustments for soybeans were smaller on a national scale, but more varied at the state level. The national average soybean yield estimate came in at 50.6 bushels per acre, up 0.6 bushels. The general pattern remains for record crops in the east and drought-stressed crops in the west. Iowa's soybean yield estimate increased by a bushel to 59 bushels per acre. Kentucky, Missouri, North Dakota and Virginia gained a bushel as well. Minnesota and Louisiana were the big gainers, with Minnesota up four bushels and Louisiana up three. However, the soybean crops from South Dakota to Kansas, in Texas, and in the northeast shrank a bit. Overall, national soybean production is projected at 4.374 billion bushels, which would be the third largest, trailing only the 2017 and 2018 crops.

The usage side of the ledger was also updated in these reports. The main storyline was a slight pullback in old crop usage and a slightly bigger boost to new crop usage. For corn, the recent slowdown in ethanol production translated into a 40 million decline in corn grind out of the 2020 crop. Export sales out of the 2020 crop were reduced by 30 million bushels as well. With the 70 million bushels added back to stocks, the 2020-21 corn ending stocks are projected at 1.187 billion bushels.

Figure 1. US corn yield estimates in September



Source: USDA NASS

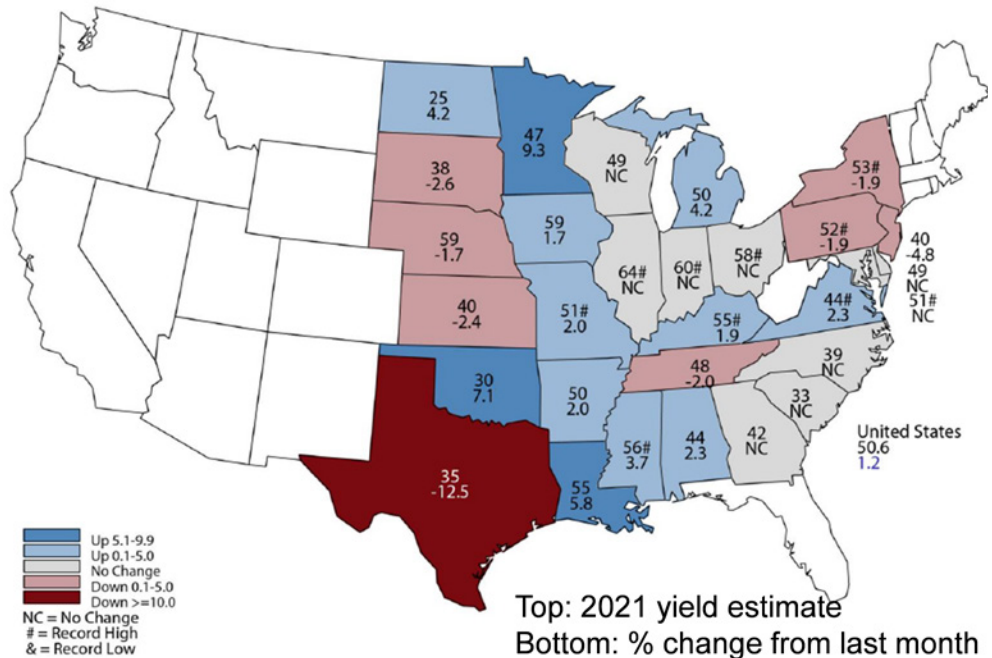
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But the increase in stocks didn't impact the 2020-21 season-average price estimate, as it increased five cents to \$4.45 per bushel. This shows that USDA is factoring in more sales from earlier in the marketing year. For the new (2021) crop, feed/residual usage was increased by 75 million bushels and exports were boosted by 75 million. However, given the increase in stocks and the higher production projection, 2021-22 ending stocks are now set at 1.408 billion bushels, up 166 million from last month. The 2021-22 season-average price estimate fell 30 cents to \$5.45 per bushel.

For soybeans, the usage adjustments reduced domestic consumption, but increased international sales. For the 2020 crop, domestic crush was reduced by 15 million bushels, mainly being driven by the need (or smaller lack thereof) for soybean meal. That change boosts the 2020-21 ending stocks to 175 million bushels, which indicates soybeans are still in a very tight market. The 2020-21 season-average price estimate is steady at \$10.90 per bushel. For the 2021 crop, that reduction in domestic crush is extended, taking away another 25 million bushels as we look forward. However, the positive change in export sales, increased by 35 million bushels, offsets that loss. Factoring back in the production increase, 2021-22 ending stocks are projected at 185 million bushels, up 30 million from last month. And the 2021-22 season-average price estimate fell 80 cents to \$12.90 per bushel.

Figure 2. U.S. soybean yield estimates in September



Source: USDA NASS

Over the past couple of weeks, traders had been preparing for these reports, with the results being a lowering of prices. With many of the adjustments coming in near trade expectations the price reaction to the reports was mild at first, showing little movement in prices, but as the day wore on and corn and soybean prices rose. The supply uncertainty diminishes with each passing report, and the relative importance of usage expectations grows. For both crops, those usage expectations moved higher. Most of that growth is once again focused on the international markets. While USDA still sees smaller numbers of bushels moving through exports over the next year, the gaps from the 2020 records look to be smaller than first anticipated. Continued strong export sales during harvest and the winter months will be key to maintaining positive price momentum. The seasonal patterns for corn and soybean prices show we should be near the lowest prices for the year. Export sales will determine if that holds true this year.

For more details on the impact of these reports, view the latest [Ag Outlook Presentation video](#), <https://youtu.be/7Gy8HsjHlBE>.

Iowa beginning farmer tax credits and loan programs

By Steve Ferguson, tax credit program, steve.ferguson@iowafinance.com, 515-452-0467; Tammy Nebola, loan programs, tammy.nebola@iowafinance.com, 515-452-0468; Iowa Agricultural Development Division,

Obtaining enough capital to pursue a career in production agriculture can be challenging. The Iowa Ag Development Division (IADD) is a division of the Iowa Finance Authority that may be able to help. A summary of programs available is included below. Further details on specific programs and how to apply can be found on the [IADD website](http://www.iowafinance.com/beginning-farming-programs/), www.iowafinance.com/beginning-farming-programs/.

Beginning Farmer Loan Program (BFLP)

The Iowa Beginning Farmer Loan Program assists new farmers in acquiring agricultural property by offering financing at reduced interest rates. Beginning Farmer Loans are financed by participating lenders with the issuance of federal tax-exempt bonds by the Iowa Finance Authority; contract sellers also receive a state tax exemption on the interest income. The tax-exempt interest income earned by lenders and contract sellers enables them to charge borrowers a lower interest rate, which will typically result in about a 25% rate reduction using the program. IADD's Beginning Farmer loan is often used with the USDA Farm Service Agency (FSA) Direct Farm Ownership Down Payment Loan Program (5/45/50).

For this program, applicants must be below 30% of the county median for land ownership. Eligible projects include land, machinery, equipment, breeding livestock, or farm improvements. The program maximum is adjusted annually and can be found on the IADD website, or by contacting the authors. The loan terms are set by the lender or contract seller.

Loan Participation Program (LPP)

The Loan Participation Program assists low-income farmers to secure loans and make down payments. IADD's participation can be used to supplement the borrower's down payment, helping a farmer secure a loan more readily. The lender's risk is also reduced because the IADD provides a "last-in/last-out" loan participation for the financial institution.

Eligible projects include land, machinery, equipment, breeding livestock or farm improvements. Funding is available for up to 30% of the project cost, up to \$200,000 with interest rate equal to the Wall Street Journal Prime Rate as of January 1 of the current calendar year; rate to be fixed for the 10 years.

Beginning Farmer Tax Credit Programs (BFTC)

This tax credit program provides an incentive to lease to a beginning farmer in order for the asset owner to receive a tax credit to reduce their state of Iowa income taxes.

Agricultural Assets Transfer Tax Credit

The Agricultural Assets Transfer Tax Credit, commonly referred to as the Beginning Farmer Tax Credit program, allows agricultural asset owners to earn tax credits for leasing their land, equipment, and/or breeding livestock to beginning farmers.

The maximum credit is \$50,000 per application with the same asset owner and beginning farmer. Terms include a 5% tax credit for cash rent leases or a 15% tax credit for crop share leases. Lease terms and duration are set by the asset owner but must be a two- to five-year lease term. Flexible leases may be submitted, but no tax credit is available for the bonus portion of a flexible lease if there are variable factors used to determine the bonus; the asset owner will receive a 5% tax credit on the base cash rent that is stated in the lease.

All tax credit applications must be submitted by August 1 to be considered for that tax year.

More Information

Operating expenses for the IADD are derived from modest application and service fees paid by program participants. The IADD also earns interest from a trust fund, but it does not receive any state tax dollars.

More information on the programs described in this article and how to apply is available at www.iowafinance.com/beginning-farming-programs/.



The atmosphere is like a bathtub

By Don Hofstrand, retired extension value-added agriculture specialist

Reviewed by Eugene Takle, retired professor emeritus Iowa State University

This article is the seventh in a series focused on the causes and consequences of a warming planet

The earth's atmosphere is like a big bathtub. As long as we pour water into a bathtub, the bathtub will continue to fill with water. Similarly, as long as we emit carbon dioxide into the atmosphere, the atmosphere will continue to fill with carbon dioxide.

Even if we reduce the flow of water into a bathtub, the bathtub will continue to fill with water—it just won't fill as fast. Similarly, if we reduce the rate of emissions of carbon dioxide into the atmosphere, the atmosphere will continue to fill with carbon dioxide, just not as fast. Only by stopping the emissions of carbon dioxide into the atmosphere can we be assured that the buildup of carbon dioxide in the atmosphere will stop.

There is a drain in the atmosphere just like there is in a bathtub. The atmospheric drain is carbon dioxide being drained into "carbon sinks." A carbon dioxide sink is a reservoir that accumulates and stores carbon dioxide. Currently about half of the carbon dioxide emitted into the atmosphere goes into two types of sinks, the oceans and plant growth.

Oceans are a carbon dioxide sink because water absorbs carbon dioxide. However, this additional carbon dioxide in the oceans is turning the water acidic and negatively impacting marine life.

Plants grow by taking in carbon dioxide through photosynthesis. The increased atmospheric concentration of carbon dioxide stimulates additional plant growth which increases the removal of carbon dioxide from the atmosphere. Trees appear to be the major users of this additional carbon dioxide. Even old growth trees continue to grow and increase in mass.

Even with these sinks, the amount of carbon dioxide emissions pouring into the atmosphere overwhelms the amount escaping into the sinks. Therefore, the atmosphere continues to fill with carbon dioxide.

This demands that we move to "zero emissions" if we are serious about stopping global warming.

See the [Ag Decision Maker website](http://www.extension.iastate.edu/agdm/energy.html#climate) for more from this series, www.extension.iastate.edu/agdm/energy.html#climate.



Tools to manage volatile markets

By Lee Schulz, extension livestock economist, 515-294-3356, lschulz@iastate.edu

Cattle producers must choose a time and a price to sell. Futures and options markets offer producers pricing opportunities every day. A few forward pricing tools producers can use are selling futures contracts, buying put options and forward contracting.

Pertinent questions when evaluating a pricing opportunity include: Is the price acceptable? Is the price likely to move higher or lower? If the price moves, how far and how fast might it move? Can your business withstand a big, possibly abrupt, price move lower? In short, can you survive a volatile market?

Producers can use a combination of the various pricing mechanisms. For example, a pricing strategy may consist of a portfolio where some production is forward contracted, some hedged with futures, some protected with options or a price risk insurance product like Livestock Risk Protection (LRP), and some “unprotected” and sold at the prevailing cash market price.

Understand the probability distribution

The goal of pricing strategies is to improve odds for a favorable outcome, reduce odds for a bad outcome, and ideally both. Producers face a range of possible prices with various odds of each occurring, which is a price probability distribution. The various pricing mechanisms can change the shape of the price distribution. In varying degrees, different pricing tools can cut off part of the downside price risk (for sellers) but may simultaneously cut off some upside potential. Producers can choose pricing tools that allow them to adjust the amount of risk they face.

The futures market eliminates the benefit of prices moving higher, but locks in an expected price, subject to basis risk. Basis risk is substantially lower than price risk. Forward contracts and options change the price probability distribution. Forward contracting with a packer locks in the price and makes the probability of that price occurring equal to one. But this price certainty is not free. Packers typically bid less than the consensus forecast for accepting the risk

that the price could go lower. Packers can cover their forward cash contract price risk by hedging the cattle in the futures market.

Put options have a very different effect on the price probability distribution. Buying puts truncates the lower tail and shifts the probability to higher prices. The exact effect of a put option depends on the market. Recognize that as implied volatility rises, which is currently the case, option premiums become more expensive.

Implied volatility measures risk

Implied volatility is the market’s forecast of likely future fluctuations in a commodity’s price. Analysts often think of volatility as a proxy of market risk. The implied volatility cannot be directly analyzed. Instead, it functions as part of a formula used to predict the price move of an underlying asset. Our underlying asset of interest here is live cattle futures.

The futures market forecasts a point estimate for price. Options on futures in essence allow participants to bid on insurance rates given the amount of risk they see in the market. For example, suppose December 2021 live cattle futures are trading at \$128.225. The premium to buy a put option at \$123 (strike price out of the money) is \$2.075. That \$2.075 premium is the market’s consensus opinion as to what it would cost to insure the put option buyer that they will receive no less than the \$123 strike price on the put option.

Understanding volatility skew

A concept in option pricing is **volatility skew**. It’s a bit complicated. Essentially, different strike prices on puts and calls, even on the same underlying futures and expiration date, can trade at different implied volatility levels. This can be relative to different strike prices within puts or calls or the relative value of puts versus calls. The shape of the volatility curve differs based on the perceived likelihood of outsized moves in the price of the underlying futures contract. This is helpful in understanding the most likely, optimistic, and pessimistic price forecast.

Tools to manage volatile markets, continued from page 6

A common skew pattern is the reverse skew or volatility smirk. That is, the implied volatility is higher on options with lower strike prices. It often occurs for live cattle. The popular explanation why the reverse volatility skew occurs is that market participants fear big market crashes and buy puts for protection. In some respects, fearing downside risk is not too surprising. Slaughter capacity issues, for example, have arisen in the not so distant past and are always possible for several reasons and have shown the potential to send prices sharply lower.

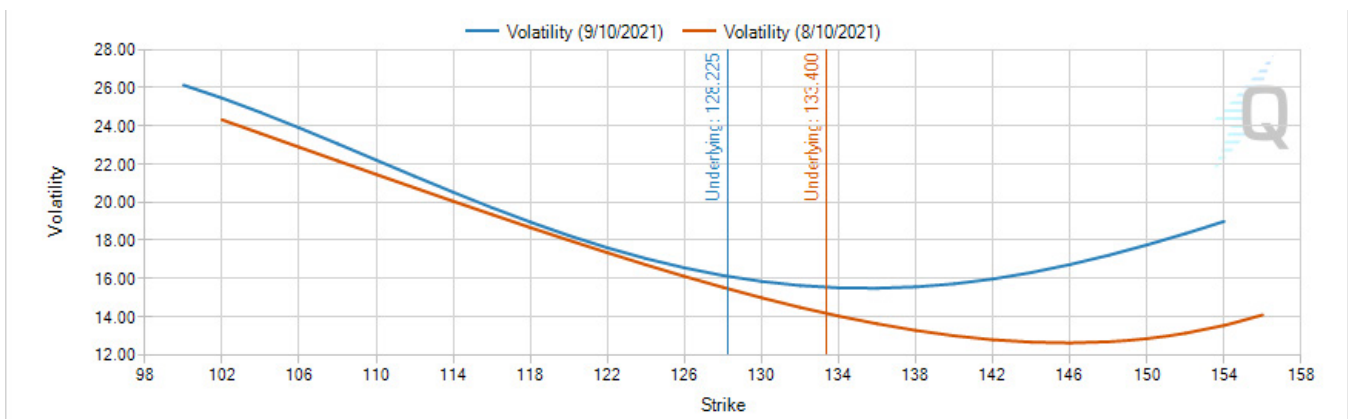
The volatility skew is represented graphically by plotting implied volatilities against strike prices. The CME Group has the QuikVol® Tool from QuikStrike® that lets you chart and analyze volatility data. The two charts below show the volatility skew for December 2021 and June 2022 live cattle. They compare the skews on September 10, 2021 with one month prior.

Skew shifts give insight into market direction

The curve changes, shifts up or down or tilts, as the underlying price moves. This change often gives insight into which direction the market thinks the underlying futures price may move.

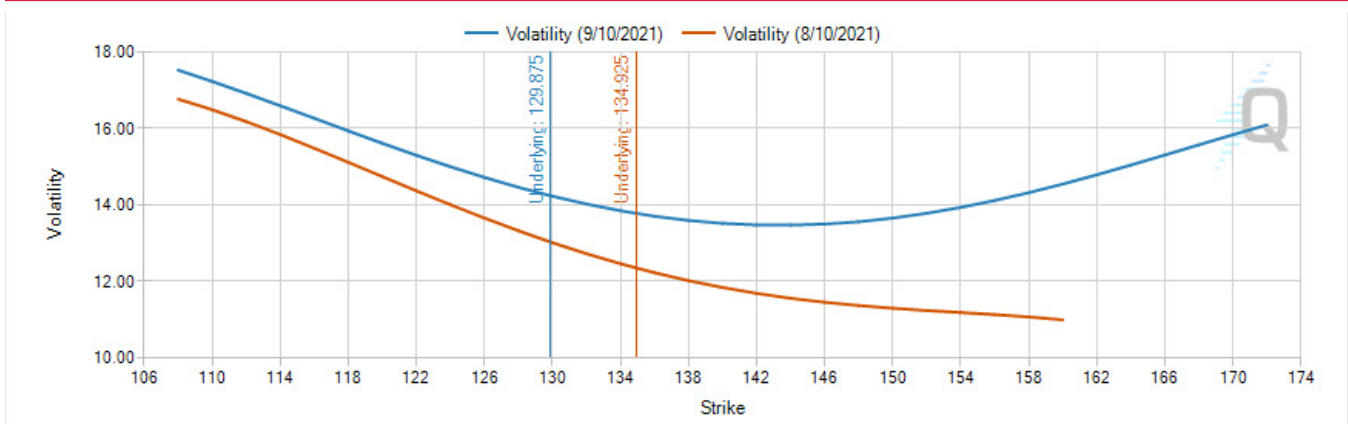
The December 2021 live cattle futures contract declined \$5.175 from August 10 to September 10. The contract was as high as \$137.400 on August 24. This price movement caused a more pronounced curve. Expectations of lower prices fuel interest among sellers (think producers). Sagging cattle futures directly impact producers' bottom lines, so they will look to purchase put options to limit downside risk. On the other hand, if a sharp move lower occurs, some participants may think the contract is oversold and expect it to reverse direction and rebound higher. This shows buying pressure exists for upside out of the money call options.

DECEMBER 2021 LIVE CATTLE VOLATILITY VS. STRIKE PRICE



Source: [CME Group, QuikVol® Tool](http://www.cmegroup.com/tools-information/quikstrike/pricing-volatility-strategy-tools/quikvol-tool.html), www.cmegroup.com/tools-information/quikstrike/pricing-volatility-strategy-tools/quikvol-tool.html

JUNE 2022 LIVE CATTLE VOLATILITY VS. STRIKE PRICE



Source: [CME Group, QuikVol® Tool](http://www.cmegroup.com/tools-information/quikstrike/pricing-volatility-strategy-tools/quikvol-tool.html), www.cmegroup.com/tools-information/quikstrike/pricing-volatility-strategy-tools/quikvol-tool.html

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The volatility skew for longer term options, June 2022 live cattle in this case, is flatter compared to shorter term options, such as December 2021 live cattle. The volatilities of short-dated options are more sensitive to market changes as compared to volatilities of long-dated options. As such, volatility skews are larger for short-dated options. In other words, over the longer maturity more jumps could occur so the jumps average out in a way; whereas over the short-term, a jump can make a bigger difference and hence the risk of a jump increases demand for an option.

The change in the June 2022 volatility skew from August 10 to September 10, suggests that out-of-the-money calls are in much greater demand. In August and September, USDA raised its 2022 annual price forecast, from the month prior, for fed steers based on tighter expected supplies of fed cattle and firm demand. Second quarter 2022 beef production is now forecasted to be 5% lower than second quarter 2021 production. When traders anticipate tighter supply, they drive up demand for out-of-the-money calls.

The term **volatile** has an origin in chemistry. It means easily vaporized. In futures, profits can rapidly disappear into thin air if you are on the wrong side of a big market move.

Updates, continued from page 1

Internet Updates

The following [Information Files and Decision Tools](#) have been updated on www.extension.iastate.edu/agdm:

How to Grow and Sell Carbon Credits in US Agriculture – A1-76 (11 pages)

Assessing Economic Opportunity of Improving Mortality Rate in Wean-to-Finish Swine Production – B1-78 (4 pages)

Pig Survivability Project: Wean-to-finish mortality economic modeling – B1-78 (Decision Tool)

Current Profitability

The following [profitability tools](#) have been updated on www.extension.iastate.edu/agdm/info/outlook.html:

Corn Profitability – A1-85

Soybean Profitability – A1-86

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15

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