Conservation practices: EQIP and CSP cost-share and stacking carbon payments
By Alejandro Plastina, extension economist, 515-294-6160 | plastina@iastate.edu

While carbon farming is a relatively new topic, most farmers are well aware that there are multiple carbon initiatives trying to enroll acres in conservation practices like cover crops and no-till to sequester carbon or reduce the carbon intensity of agricultural commodities.

As a group, these private, voluntary carbon initiatives offer farmers a large menu of options to contract with them and get paid based on the implemented practices, the carbon sequestered through those practices, or the carbon intensity of the commodities produced.

For example, some initiatives compensate farmers at a rate of $5 per acre to implement cover crops, while others pay $15 per metric ton of carbon dioxide sequestered in the field through cover crops. Since farms in the Corn Belt sequester, on average, about 0.3 metric tons of carbon dioxide per acre with cover crops, a payment of $15 per metric ton of carbon dioxide would be equivalent to $4.50 per acre. Another modality to incentivize carbon farming is to compensate participating farmers with price premiums for “low-carbon” commodities. For example, participating farmers might receive 2.5 cents per bushel as a price premium for “low-carbon” corn, if the corn crop was grown with cover crops or in a no-till system. A farm with an average yield of 200 bushels of corn per acre would receive a “low-carbon” premium equivalent to $5 per acre.

The goal of carbon payments is to induce farmers and ranchers to implement conservation practices that reduce and sequester greenhouse gas emissions in a way that can be verified and certified, so those efforts can be later monetized by selling carbon credits or low-carbon intensity commodities.

Farmers have multiple motivations to adopt conservation practices beyond the economic calculation, but knowing their implementation costs is a great starting point to make informed decisions.

While the USDA incentivizes the adoption of conservation practices...
practices through many programs, the Environmental Quality Incentives Program or EQIP, and the Conservation Stewardship Program or CSP are the largest programs for working lands. These programs provide technical and financial support to qualifying farms, and are intended to help farmers address local resource concerns like the degradation of the soil, water, air, plant, animal, or energy resources. Learn more about these programs in AgDM File A1-39 “Financial Support for Conservation Practices: EQIP and CSP,” https://go.iastate.edu/AGDMA139.

However, these programs do not particularly target carbon sequestration but global environmental benefits. Additionally, private carbon initiatives might or might not allow the “stacking” of carbon payments with cost-share from EQIP and CSP on the same practices. Depending on the carbon initiative, and the timing of farmers’ decisions, farmers can receive around $30 per acre per year over 10 years for implementing no-till and cover crops in Iowa. Learn more about the interaction of carbon payments with EQIP&CSP cost-share payments in AGDM File A1-40 “Carbon Farming: Stacking Payments from Private Initiatives and Federal Programs,” https://go.iastate.edu/AGDMA140.

Unfortunately, there is no fast and easy rule to identify profitable carbon farming opportunities. Net returns depend on multiple variables, such as the implementation cost for the contracted conservation practice, the payment regime (per outcome versus per practice), the soil type and weather patterns that affect how much carbon can be sequestered by different conservation practices, the actual conservation practices to be implemented, farmers’ experience with the conservation practice, and the availability of cost-share payments. Ag Decision Maker File A1-78 “Net Returns to Carbon Farming” (https://go.iastate.edu/AGDMA178) can help agricultural producers organize the information and think through the agronomic and economic variables affecting the net returns to carbon farming for 66 conservation practices in each county of the United States. After checking whether carbon farming would be profitable and before signing a carbon farming contract, farmers are strongly encouraged to ask plenty of questions to clarify: what kind of information they would need to share with the carbon initiative and how frequently, the contract length and its exit clauses, the methods used to measure and verify the carbon sequestration, and any penalties in the event that the contract cannot be executed as planned.
Beef cow herd keeps shrinking cyclically
By Lee Schulz, extension livestock economist, 515-294-3356 | lschulz@iastate.edu

Different data gatherers within USDA align the definition of a cow with how analysts will use the data. USDA’s Agriculture Marketing Service (AMS) focuses on marketing characteristics. AMS defines a cow as “A female bovine that has developed through reproduction or with age, the relatively prominent hips, large middle and other physical characteristics typical of mature females.”

USDA’s National Agricultural Statistics Service focuses on production and inventory characteristics. NASS defines a cow as “A female bovine that has had at least one calf.” NASS further distinguishes milk (dairy) cows from beef cows. A milk cow, is a cow, excluding a nurse cow, regardless of breed kept primarily to produce milk for home use or for sale. Dairy cows and dairy replacement heifers make up 14% of all cattle and calves in the United States.

A beef cow, is a cow, regardless of breed, kept primarily to raise or nurse calves. Beef cow inventories largely determine the number of feeder cattle entering feedlots and eventual slaughter supplies. The number of cattle slaughtered is the primary determinant of the supply of beef. The interaction of supply and demand determines the market price level.

Beef cows and beef replacement heifers make up 35% of all cattle and calves.

**Head count changes drive cattle cycle**
Analysts watch changes in estimated beef cow and beef replacement heifer inventories for clues on whether producers are shrinking or expanding beef herds, and by how much.

Based on producer surveys for the biannual Cattle report, USDA NASS estimates the July 1, 2023 US beef cow inventory at 29.4 million head (Table 1). This is down 800,000 head or 2.6% from July 1, 2022. This is the fifth consecutive year-over-year decline in the July 1 beef cow herd and the lowest mid-year beef cow inventory in the history of the data going back to 1971.

The milk cow inventory is unchanged from July 1, 2022, at 9.4 million head. Dairies are facing compressed margins

**Table 1. US cattle inventory by class and calf crop. Source: USDA-NASS.**

<table>
<thead>
<tr>
<th>July 1 inventory *</th>
<th>2022</th>
<th>2023</th>
<th>2023 as % of 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle and calves</td>
<td>98,600.0</td>
<td>95,900.0</td>
<td>97.3</td>
</tr>
<tr>
<td>Cows and heifers that calved</td>
<td>39,600.0</td>
<td>38,800.0</td>
<td>98.0</td>
</tr>
<tr>
<td>Beef cows</td>
<td>30,200.0</td>
<td>29,400.0</td>
<td>97.4</td>
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<tr>
<td>Milk cows</td>
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<tr>
<td>Heifers 500 pounds and over</td>
<td>15,600.0</td>
<td>15,000.0</td>
<td>96.2</td>
</tr>
<tr>
<td>For beef cow replacement</td>
<td>4,150.0</td>
<td>4,050.0</td>
<td>97.6</td>
</tr>
<tr>
<td>For milk cow replacement</td>
<td>3,750.0</td>
<td>3,650.0</td>
<td>97.3</td>
</tr>
<tr>
<td>Other heifers</td>
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<td>7,300.0</td>
<td>94.8</td>
</tr>
<tr>
<td>Steers 500 pounds and over</td>
<td>14,400.0</td>
<td>13,900.0</td>
<td>96.5</td>
</tr>
<tr>
<td>Bulls 500 pounds and over</td>
<td>2,000.0</td>
<td>1,900.0</td>
<td>95.0</td>
</tr>
<tr>
<td>Calves under 500 pounds</td>
<td>27,000.0</td>
<td>26,300.0</td>
<td>97.4</td>
</tr>
<tr>
<td>Feeder cattle outside feedlots</td>
<td>35,700.0</td>
<td>34,400.0</td>
<td>96.4</td>
</tr>
<tr>
<td>Cattle on feed</td>
<td>13,400.0</td>
<td>13,100.0</td>
<td>97.8</td>
</tr>
<tr>
<td>Calf crop **</td>
<td>34,464.5</td>
<td>33,800.0</td>
<td>98.1</td>
</tr>
</tbody>
</table>

*1,000 head, **First half of 2023 estimate plus second half of 2023 expectations. Full report: https://downloads.usda.library.cornell.edu/usda-esmis/files/h702q636h/6682zm254/1v53mc975/catl0723.pdf
in 2023 with both supply and demand pressures influencing milk prices. But dairies are not liquidating. One reason is dairies are relatively high fixed cost operations. In the short-term, dairies minimize losses by maintaining full production as long as prices cover variable costs.

Heifers held for beef cow replacement on July 1, 2023 totaled 4.05 million head, 2.4% below the 4.15 million head on July 1, 2022. This is the lowest July 1 beef replacement heifer inventory on record dating back to 1973 when the data series began. Dairy heifers held for replacement totaled 3.65 million head, which is the smallest number since 2004.

**More market data on crossbreds would be useful**

The availability and rising adoption of sexed semen allows dairies to focus artificial insemination on the highest quality dairy cows and heifers for producing dairy replacement heifers. Dairies can breed the remaining dairy cows and heifers to beef breeds to produce beef-dairy crossbred calves. Crossbreds have better feed efficiency, gain, etc. in feedlots as well as more favorable carcass yield and muscle conformation, compared to straight dairy animals, which brings their value closer to beef breed calves.

USDA AMS collects data on dairy replacement heifers and cows collected from packers. AMS only offers two fed cattle categories: beef or dairy. Therefore, packers may report purchases of beef-dairy crossbred cattle as either dairy or beef.

USDA AMS does publish head count, dressing percent, weight range, weighted average weight, price range, and weighted-average price for fed dairy steers and heifers separately from beef breed fed cattle. Given the growing share of beef-dairy crossbred cattle in feedlots, collecting and publishing beef-dairy crossbred fed cattle information would greatly aid in efficient price discovery.

**Dairy producers show some optimism**

USDA NASS surveys producers on prices received for animals sold for dairy herd replacement. NASS publishes those prices in the January, April, July and October Agricultural Prices reports. Nationally, for July 2023, the average price received for milk cows was $1,760, an increase from April 2023 of $40.00 (up 2%). Year-over-year the increase was $50 per cow (up 3%). The July 2023 price was the highest since April 2016. Despite current dismal dairy profits, stronger dairy replacement prices suggest producers expect economic conditions to improve. Sales of culled dairy cows and bulls, as well as dairy bull (steer) and heifer calves not held as replacements that enter the beef system as feeder cattle provide additional income for milk producers. Those prices remain exceptionally strong.

**Projecting feedlot placements**

Analysts assess the number of cattle outside feedlots available for placement into feedlots by adding the number of steers 500 pounds and over, other heifers 500 pounds and over, and calves under 500 pounds and then

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**Figure 1. July 1 feeder cattle supplies outside feedlots, US. Data Source: USDA-NASS. Compiled by the Livestock Marketing Information Center.**
subtracting the total number of cattle currently on feed. These categories include beef breeds, dairy breeds and beef-dairy crossbreds. Other heifers are heifers that will not be bred as replacements for the beef or milk herd but will instead be destined for feedlots.

The number of feeder cattle not currently in feedlots is 34.4 million head, which is smaller by 3.6%, or 1.3 million head, than at this time last year (Figure 1). This is the second smallest feeder cattle supply in the data series back to 1973. Only 2014 was smaller by 100,000 head.

From the supply side of the equation, calf, feeder cattle and fed cattle prices are all expected to continue increasing. This may or may not result in high returns. Costs remain high, and demand is key.

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Maximize revenue generated from cull cows

Cows that are greater than 42 months old are eligible for USDA carcass quality grades of Commercial, Utility, Cutter, and Canner. These grades, however, do not reflect common trade practices for slaughter cows. Instead, slaughter cows are commonly procured based on body condition scores (a measure of live animal fat cover). Body condition scores range from 1 (extremely emaciated) to 9 (very obese).

Breakers (or Breaking Utility) are slaughter cows with a body condition of 7 or higher and are expected to yield carcasses in the range of 75-80% lean and are processed into various cuts.

Cows with a body condition score of 5 to 7 and an estimated red meat yield of 80-95% are classified as Boning (or Boning Utility) and yield a few merchandisable cuts but are mostly used for boneless beef.

The Lean classification refers to cows with a body condition score of 1 to 4 and an estimated red-meat yield of 85-90% and yield at most a few merchandisable cuts with the majority of the carcass used for boneless beef.

Some cows fed a high-grain diet may develop a white fat and be designated Premium White and have an estimated red meat yield of 65-75%.

Market reports sometimes differentiate slaughter cows within each class, according to dressing percentage estimated as low, average, or high.

From the Sioux Falls Regional Livestock Auction - Worthing, SD report, published by the USDA Agricultural Marketing Service Livestock, Poultry, & Grain Market News and the South Dakota Department of Ag Market News, Breakers have represented roughly 26% of the head count so far in 2023 while Boning cows have represented 32%, Lean 36%, and Premium White 6%.

Producers who sell slaughter cows should pay close attention to market reports about the price differentials of the cows in these classes. Cows that can be fed enough to gain body condition to step up in classifications can add weight, and value, at the same time. The average price so far in 2023 for Premium White cows of average dressing has been $115.25 per cwt. according to the South Dakota report. Breaker cows have averaged $104.67 per cwt., Boning cows have averaged $96.13 per cwt., and Lean cows have averaged $86.45 per cwt.

Slaughter cow prices are typically lowest in the fall as many producers sell cull cows right after weaning. This offers opportunities to add value through adding weight, improving quality, and taking advantage of seasonal price patterns. The Cow Sell Calculator Decision Tool, www.extension.iastate.edu/agdm/livestock/html/b2-35.html, available from the Iowa State University Extension and Outreach Ag Decision Maker website compares opportunities for marketing cows at weaning or incurring additional costs to target other (later) markets.
High farm liquidity cushions against low margins
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The recently updated AgDM File C1-12 “Liquidity Analysis of Iowa Farms”, www.extension.iastate.edu/agdm/wholefarm/html/c1-12.html, explores in detail the evolution of financial liquidity among mid- and large-size Iowa farms in 2022 against a backdrop of strong but declining accrued net farm income. All indicators point to a smaller share of farms in vulnerable liquidity situations, and an overall reduced need for working capital financing in 2023, except maybe for farms with vulnerably liquidity.

The 2022 average net farm income in Iowa was the second highest on record, at $265,013. A high income continued to improve the overall financial situation of most Iowa farms. In particular, financial liquidity improved to levels not seen since 2012, and total debt declined to 2016 levels.

The average current ratio climbed to 6.87 in December 2022, becoming the second-highest ratio after the 7.08 level from 2012 (Figure 1). Having $6.87 in cash, inventories, and other liquid assets per dollar in debt that will come due over the next twelve months means that the average farm should be able to comfortably cash flow its normal operation (not accounting for any expansion plans) in 2023, despite lower profit margins. Short-term liabilities declined by 26% in 2022, accumulating a 48% decline since their peak in 2017, while short-term assets remained stable.

Multi-year trends suggest that overall farm liquidity has continued to improve in 2022, almost fully offsetting the persistent erosion of liquidity observed between 2014 and 2020.

Figure 1. Ending current ratio and average liabilities (by maturity) of Iowa farms.
The egg market has experienced significant supply and demand swings over the past few years. From the COVID-induced demand spike in 2020 as the pandemic forced many to prepare a greater proportion of meals at home to the supply cuts caused by the loss of layers to High Pathogenic Avian Influenza (HPAI) in both 2015 and 2022, egg pricing and availability have been more volatile. To provide some guidance on the potential path forward for both the industry and consumers, we have examined a few key historical relationships and utilized those relationships to project future movements within the egg market.

Over the past 10 years, monthly egg prices have topped $1.50 per dozen for four periods. Two of those periods were demand-driven, the 2018 spike was related to strong domestic demand (along with a HPAI outbreak in international markets) and the 2020 run associated with COVID. Two of those periods were supply-driven, the 2014-15 surge and the 2022 market, with both heavily influenced by the HPAI outbreaks in the United States. Figure 1 displays the relationship between the price of eggs and the ratio of table eggs to total eggs in the industry. As the graph shows, egg prices tend to return to more normal levels much quicker after a demand shock than a supply shock.

Typically, 86-87.5% of the eggs produced within a month are consumed and 12.5-14% of the eggs are hatched to add birds to the flock. The demand shocks tend to be short-lived and often can be handled within the normal seasonal movements of the industry. For example, both the 2018 and 2020 price spikes dissipated within two months and the industry was able to maintain the ratio of table eggs to total eggs within the typical range.

The supply shocks tend to have impacts that extend for multiple months and force significant changes for both producers and consumers. The loss of birds due to diseases like HPAI can be significant to the industry, as producers must devote more eggs to rebuilding their flocks, reducing the ratio of eggs headed to consumption. When the ratio falls below 86%, egg prices move higher and tend to remain elevated until the ratio once again exceeds 86%. That was the challenge in 2015 and 2022, as the reoccurrence of HPAI in the US in the fall of 2022 has forced the retention of more eggs for flock development. While the ratio has not surpassed 86%, the seasonal swings (or lack thereof) in the ratio have shifted to enhance egg production and lower egg prices. This shift can be better seen in Figure 2.

Figure 1. The ratio of table eggs from total eggs and egg prices.
Figure 2 displays the seasonal pattern within the egg ratio. This graph, along with the two following it, contain the five-year average pattern for the variable (the black line), last year’s pattern (the blue line), this year’s projection based on beginning of year (January) data and the five-year average (the orange line), and this year’s actual data (the red line). As the ratio data shows, the trend over the past couple of years was for a smaller table-to-total egg ratio, meaning more eggs were retained to increase flock size. There is a consistent pattern of retained more eggs during the summer and less in the winter. And while the 2022 HPAI event definitely induced more egg retention than usual, the seasonal pattern was still maintained. However, in 2023, egg producers deviated from the usual pattern. Rather than shifting a greater percentage of eggs to hatching this spring, the industry maintained a stable percentage of egg to consumers. This provided a relative boost to egg supplies this spring.

Figure 3 displays the monthly swings within table egg supply. And again, the general pattern is very consistent across the years. But the 2022 HPAI event reduced egg supplies by roughly 300 million by April 2022 and the industry was slowly closing the gap until the reoccurrence in November. The stabilization of the ratio throughout 2023 has allowed table egg supplies to return to normal levels.

Thus, supplies have recovered and prices have dropped significantly. The historical data suggests that egg prices are still volatile and will be until the egg ratio reaches back consistently above 86%. While egg pricing is back to normal levels, the egg supply chain is still healing from the impact of the 2022 HPAI outbreaks. The experience of the past five years shows that the egg industry is fairly resilient when it comes to dealing with demand shocks. The strong shift to at-home egg consumption due to COVID led to a very short temporary spike in prices. However, shocks to the supply chain, such as HPAI, can have a much stronger and longer effect on the egg market.

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