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Extension and Outreach

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INSIDE . . .

UPDATES

The following Information Files have been updated on extension.iastate.edu/agdm:

A1-39 Financial Support for Conservation Practices: EQIP and CSP

A1-40 Carbon Farming: Stacking Payments from Private Initiatives and Federal Programs

C1-10 2022 Iowa Farm Costs and Returns

C2-15 Survey of Iowa Leasing Practices, 2022

C2-30 Crop Share Leasing Provisions, 2022

The following Video has been updated on extension.iastate.edu/agdm:

A1-10 Chad Hart's Latest Ag Outlook

The following Profitability Tools have been updated on extension.iastate.edu/agdm/outlook.html:

A1-85 Corn Profitability

A1-86 Soybean Profitability

A2-11 Iowa Cash Corn and Soybean Prices

A2-15 Season Average Price Calculator

D1-10 Ethanol Profitability

D1-15 Biodiesel Profitability

Hogs and Pigs Report advanced statistics

By Lee Schulz, extension livestock economist,
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When baseball began, the game had a few self-explanatory statistics. Players struck out, walked, or got hits.

Back when many pork producers pasture farrowed one litter per year, merely counting pigs weaned may have provided enough production data. Pigs per litter aided management decisions such as choosing which sows to cull.

As baseball evolved and got more competitive, managers developed more comprehensive statistics to measure a hitter's success at the plate. Batting average is one. But it isn't all-encompassing. For instance, batting average doesn't consider the number of times a batter reaches base via walks or hit-by-pitches. And it doesn't consider the type of hit–doubles, triples and home runs are more valuable than singles.

Similarly, with increasing size and specialization of hog operations, managers developed more comprehensive statistics to measure performance. Pigs per sow per year is one. But it doesn't consistently take into account when the female enters the breeding herd. Is it when a gilt does not go on the truck as a market hog, or when she gets bred, or when she first farrows?

Comparing pigs per sow on your farm this year to pigs per sow on your farm last year can help identify a trend. Rising is good. Falling is not so good.

Comparing pigs per sow per year on your farm to other farms may or may not tell you how your performance compares to performance on those other farms. For a valid comparison, the farms need to use the same criteria for when a female enters the breeding herd.

More sophisticated statistics provide management information

Although standard statistics remain quite valuable, advanced formulas and figures now play a pivotal role in decision-making in baseball. Batting Average on Balls in Play (BABIP) measures a player's batting average exclusively on balls hit into the field of play. It removes outcomes not affected by the opposing defense, namely, home runs and strikeouts. BABIP is a statistic that helps determine which players are "lucky" or "unlucky." The formula is: (Hits - Homeruns)/(At bats - Strikeouts - Homeruns + Sacrifice Flies).

Many advanced baseball statistics have long been tied to sabermetrics or the search for objective knowledge about baseball. Sabermetrics is the analysis of baseball statistics and other evaluations that have already been recorded. These types of advanced metrics are also valuable for interpreting USDA Hogs and Pigs reports where implied productivity figures, or biological realities, such as litters per breeding animal per year and breeding herd utilization can transcend prescribed changes in inventories.

More pigs from fewer sows

Pigs per sow per year is one of the most common measures of overall sow farm efficiency. Pigs per sow per year is litters per sow per year multiplied by pigs weaned per litter.

The average number of annual pigs per breeding herd animal (including sows, gilts and boars as is reported in USDA's Hogs and Pigs report) was 21.8 in 2022, up from 18.2 in 2007 (Figure 1). This metric has doubled since 1980. Producers have upped the pig crop while cutting the breeding herd as a percent of the total hog and pig inventory.

The majority of the improvement in pigs per breeding herd animal per year has come from larger litters. On average, litter rates grew 1.3% annually from 2007 to 2022. Litters per breeding animal per year plateaued since 2007 and show no signs of rising. This measure has actually trended lower recently.

Figure 1. Annual average pigs per breeding animal. Source: USDA-NASS.

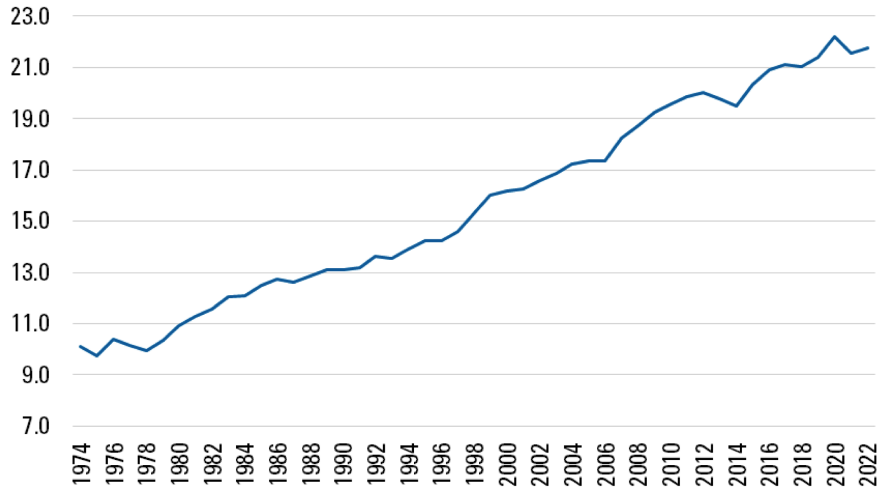
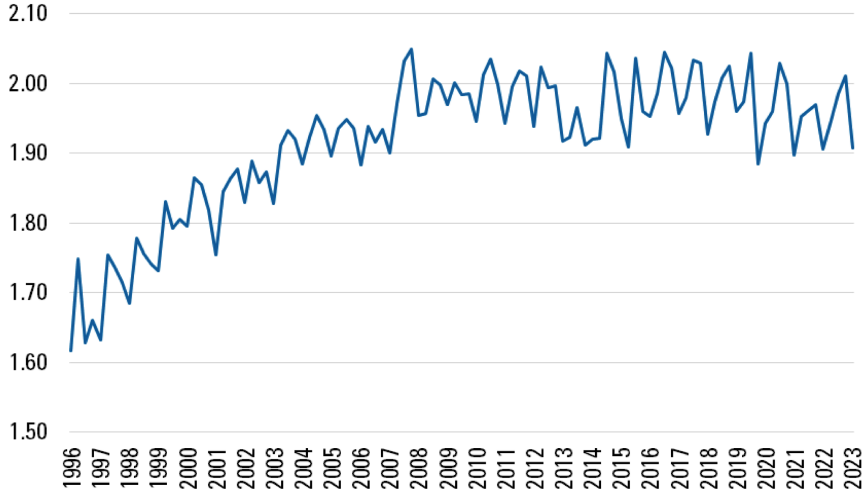


Figure 2. Litters per breeding animal, annualized, quarterly. Source: USDA-NASS.



Recent breeding herd performance has been mixed

The March-May 2023 pig crop, at 32.891 million head, was up 0.8% from 2022 (Table 1). Sows farrowing during this period totaled 2.896 million head, down 2.4% from 2022. The average number of pigs saved per litter was 11.36 for the March-May period, compared to 11.00 last year. This is the largest litter rate ever, for any quarter, and the 3.3% annual rise is the largest since 2019. The March-May 2023 litters per breeding animal annualized = (Sows Farrowing March-May 2023/Breeding herd on March 1, 2023) × 4 = 1.90 (Figure 2). This is down 2.4% from a year ago and the lowest annualized litters per breeding animal for the March-May quarter since 2002.

Litters per sow per year has a mathematical limit. A gestation period of 114 days, 21 days of lactation and a seven day wean-to-rebreed interval puts each reproductive cycle at 142 days. That means if everything goes on schedule, a sow can produce 2.57 litters per year. Multiplying by a realistic pigs weaned per litter target will give a lofty, but possibly achievable, pigs per sow per year goal.

Table 1. USDA quarterly hogs and pigs report summary. Source: USDA NASS

	United States			Iowa		
	2022	2023	2023 as % of '22	2022	2023	2023 as % of '22
Jun 1 inventory *						
All hogs and pigs	72,314	72,394	100.1	23,000	23,800	103.5
Kept for breeding	6,168	6,146	99.6	940	900	95.7
Market	66,146	66,249	100.2	22,060	22,900	103.8
Under 50 pounds	20,903	20,939	100.2	5,700	6,040	106.0
50-119 pounds	18,691	18,748	100.3	7,130	7,240	101.5
120-179 pounds	13,827	13,863	100.3	5,050	5,210	103.2
180 pounds and over	12,725	12,699	99.8	4,180	4,410	105.5
Sows farrowing **						
Dec–Feb [1]	2,919	2,910	99.7	475	470	98.9
Mar–May	2,967	2,896	97.6	500	460	92.0
Jun–Aug [2]	3,062	2,942	96.1	505	510	101.0
Sep–Nov [2]	3,092	2,953	95.5	525	535	101.9
Mar–May pigs per litter	11.00	11.36	103.3	11.45	11.75	102.6
Mar–May pig crop *	32,635	32,891	100.8	5,725	5,405	94.4

Full USDA report: https://downloads.usda.library.cornell.edu/usda-esmis/files/rj430453j/5999pk51d/73667k688/hgpg0623.pdf

* 1,000 head; **1,000 litters; [1] December preceding year. [2] Intentions for 2023.

The mathematically possible 2.57 litters per sow per year is well above the 1.90 annualized litters per breeding animal in March-May 2023. As the terminology suggests, a big part of the explanation is that USDA does not collect a sows only number. Using USDA's breeding herd inventory of sows, gilts and boars caps this measure at a lower level. But, the number plateauing, at best, over the last 15 years suggests room to improve breeding herd performance still exists.

Understand how data are gathered and tabulated

A challenging part of using litters per sow per year is that not all record keeping systems calculate the measure the same way. Furthermore, records can be creatively managed in order to inflate litters per sow per year. One way is to wait until after a replacement gilt is mated, or even farrowed, to enter the animal into the record system, which inflates calculated litters per sow per year.

Litters per mated female per year is a preferred measure.

According to the 2019 "MetaFarms Production Index Analysis" report, litters/mated female/year averaged 2.34 in 2017, 2.30 in 2018, and 2.31 in 2019. In 2019, the bottom 10% for this metric was 2.09 while the top 10% was 2.45. Herds with less than 1,000 sows averaged 2.22 litters/mated female/year in 2019 while herds with 3,000-4,000 sows, 4,000-5,000 sows, and more than 5,000 sows all averaged 2.35 litters/mated female/year.

Proposition 12 potential complications

While many factors impact breeding herd performance, information collected from multiple sources indicates lower productivity in Proposition 12 compliant housing compared to conventional group housing and stall housing. For example, farrowing rate has been cited as likely to decrease.

Some producers are adjusting housing. It is too early to determine how much the change in litters per breeding animal per year in USDA's Hogs and Pigs report data is due to changes in sow housing and/or due to something else. Still, litters per mated female per year may

be at or near its upper bound, given recent performance and ongoing adjustments in the industry.

Litters per mated female per year is affected by farrowing rate, wean-to-first service interval, multiple matings, repeat services, gestation length, farrow-to-farrow interval, weaning age, and mated female non-productive days. Tracking those measures can identify areas for improvement. Doing so may position managers to make improvements that can get litters per mated female per year back on an upward track.

Breeding herd too large, or sows farrowing too low

The ratio of sows farrowing during March-May 2023 to the March 1, 2023 breeding herd was 47.51% (Figure 3). This compares to 48.66% a year ago and is the smallest for the quarter since 2002. Farrowing intentions in USDA's June Hogs and Pigs report point to a June-August 2023 breeding herd utilization of 47.87% which would be nearly two percentage points lower than in 2022 and the smallest for the quarter since, again, 2002.

The declines in the breeding herd utilization rate could be aberrations–or more sows could, in fact, be farrowed than previously estimated. Of course, this assumes no revisions to the breeding herd inventory.

USDA rarely revises breeding herd estimates. However, in June, USDA revised the March 2023 breeding herd inventory 31,000 head lower. But March-May breeding herd utilization was still the lowest in over two decades. Of what value is knowing the size of breeding herd if it does not align with the number of sows farrowed? It is not a coincidence that breeding herd utilization is abnormally high in quarters for which USDA revised the sows farrowing number upward significantly from its originally estimated level while the breeding herd stayed the same.

Commercial slaughter and price forecasts

Table 2 contains the Iowa State University price forecasts for the next four quarters. Prices are for the Iowa-Minnesota producer sold weighted average carcass base price for all purchase types. Basis forecasts along with lean hog futures prices are used to make cash price projections. The table also contains the projected year over year changes in commercial hog slaughter.

Figure 3. US Breeding herd utilization. Source: USDA-NASS.

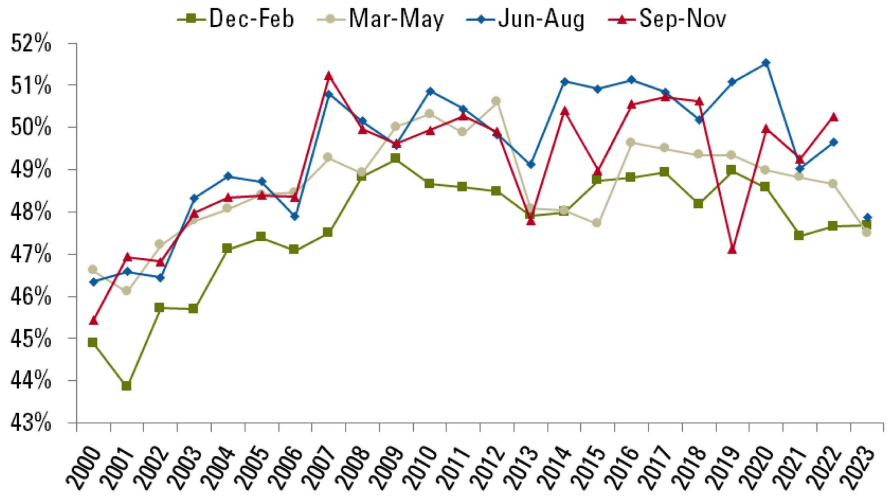


Table 2. Commercial hog slaughter projections and price forecasts, 2023-2024

	Year-over-Year Change In Commercial Hog Slaughter (%)	ISU Model Price Forecast, IA-MN Base Price, All Purchase Types ($/cwt)	CME Futures (6/30/23) Adjusted for IA-MN Producer Sold Weighted Average Carcass Base Price for All Purchase Types Historical Basis ($/cwt)
Jul-Sep 2023	0.35	84-88	86.55
Oct-Dec 2023	0.78	74-78	76.06
Jan-Mar 2024	-2.52	78-82	80.20
Apr-Jun 2024	-3.00	87-91	88.29

Communication strategies and resources: Tools to improve relationships between farmland owners and producers

By Melissa O'Rourke, former farm and agribusiness management specialist

Trends in farmland leasing impact the need for improved communication. Iowa has about 30 million acres of farmland. Fifty-five percent of Iowa farmland is owned by someone who does not currently farm, including 20% which is owned by someone who is not an Iowa resident. Fifty-three percent of the non-farming owners do not have farming experience. A substantial number of Iowa farmland acres are farmed by producers who do not own the land – as much as 70% in some counties. This muddles interactions between owners and farm producers who rent the land.

Effective communication between farmland owners and producer-tenants is vital to reduce frustrations and build healthy relationships. Fortunately, strategies and resources can enhance interaction between the parties.

Written lease agreements heighten communication between the parties. While about one-third of leased acres have no written lease agreement, even those who utilize some sort of written agreement could use more discussion.

Farm Newsletters: Farm tenants in past years typically had just one or two landowners. As farmland is increasingly passed through generations and farm size increases, producers have multiple landowners and could benefit from developing a farm newsletter. A quarterly newsletter informs landowners of farm developments. The newsletter could provide a synopsis or suggestions of a tenant's future plans. The newsletter need not be overly-technical, and can be a tool to keep the communication doors open.

Annual Report: Many farmland leases require that the tenant provide an annual report to the landowner. A framework can be found on ISU's Ag Decision Maker website. Parties can adjust the framework based on their needs and use the tool for better communication.

Regular Conversation: Some landowners and tenants meet just once a year to discuss plans for the following crop year leasing agreement. Trying to fit all discussion into one meeting can be frustrating. Instead, have conversations on a regular basis, at least semi-annually, if not quarterly. These meetings can take place in-person, by phone, or via video calling or other on-line platform.

Webinar on communication

An August webinar provides further insight on communication strategies and resources. Register for this or future sessions in the **Women Managing Farmland series**, https://go.iastate.edu/IAK3NV, or **view past installments**, https://go.iastate.edu/AGDMEVENTS:

- **Importance of Using a Written Lease**, https://vimeo.com/797781943
- **Building Your Professional Team**, https://vimeo.com/817040276
- **Keeping the Ground Covered**, https://vimeo.com/836596708
- August 9: **Landowner-Tenant Communications**
- October 11: **End-of-Life Taxes and Expenses**
- December 13: **Slowing Water Down**

Additional details can be found on the **ISU Women in Ag website**, www.extension.iastate.edu/womeninag/.

Resources

Importance of Using A Written Lease–Trends and Resources, https://go.iastate.edu/AGDMJAN23

Survey of Iowa Leasing Practices, 2022, https://go.iastate.edu/AGDMC215

Developing a Farm Newsletter for Landlords, https://go.iastate.edu/AGDMC214

Farm Lease Annual Report – A Tool for Communications, https://go.iastate.edu/AGDMC206

Iowa Farmland Ownership and Tenure Survey 1982-2022: A Forty-Year Perspective, https://go.iastate.edu/IAFARMLANDOWNERSHIP2022

After years of service to ISU Extension and Outreach, this is Melissa O'Rourke's final article for our Ag Decision Maker newsletter. We are grateful for her dedication to education and intend to carry on the great work she has done.

Farmland leasing meetings to address key topics impacting owners and tenants of Iowa farmland

By Ann Johanns, extension program specialist, 515-337-2766 | aholste@iastate.edu

Meetings to focus on improved understanding and increased communication with farm leases

Iowa State University Extension and Outreach is hosting multiple farmland leasing meetings during July and August at various times and locations throughout the state. The annual meetings are offered to address questions that Iowa landowners, tenants or other interested individuals have about leasing farmland.

Core components of the 2023 program will be land values and cash rent trends, land ownership and tenure, methods for determining a fair rental rate, the latest legal updates that impact farm leases and land ownership, and communication between tenants and landowners.

The recently released Iowa Farmland Ownership and Tenure Survey indicates 58% of Iowa farmland is leased, with the majority of farmland leases being cash rental arrangements.

The goal of these programs is to share resources and information with Iowa farmland owners and tenants and strengthen leasing relationships. Improved communication and better understanding of the other party in lease negotiations creates stronger relationships that benefit Iowa agriculture across the state.

A 100-page workbook to compliment the program topics includes resources regarding land leasing agreements such as surveys, sample written lease agreement and termination forms, along with many other publications.

Find local options for meetings and webinars

The leasing meetings being held across Iowa are facilitated by farm management specialists with ISU Extension and Outreach. A listing of the ISU Extension and Outreach **county offices hosting meetings is available online**, https://go.iastate.edu/AGDMEVENTS.

Participants are encouraged to pre-register for the location they plan to attend, walk-in attendants may have higher registration costs. To pre-register, call or e-mail the local county extension office host site.

Virtual options

Two virtual options are also offered this year, a northeast Iowa focused webinar, along with a statewide webinar. The webinar options in past years have been a welcome addition for out-of-state landowners, or those who are not able to attend a program in-person. Topics from the in-person leasing program will be presented by farm management specialists, with the opportunity to ask questions.

Paid registrations have access to the live event, webinar recording and electronic version of the 100-page workbook. The **northeast Iowa webinar**, https://go.iastate.edu/PK3ZSS, will be held Aug. 25, from 9 a.m. to noon. The **statewide webinar**, https://go.iastate.edu/BCAS9K, is Aug. 29, also from 9 a.m. to noon.

The **Ag Decision Maker leasing section**, https://www.extension.iastate.edu/agdm/wdleasing.html, provides useful materials for negotiating leases, information on various types of leases, lease forms and newly updated **Decision Tools**, https://www.extension.iastate.edu/agdm/decisiontools.html.

Summer 2023: the roller coaster

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

The agricultural markets and amusement parks have a lot in common. The action starts up in the late spring, there are a lot of wild rides throughout the summer, and once autumn arrives, we begin planning for next year. This summer (and especially the past couple of weeks), the amusement park is very fitting. Market bulls and bears have both found information to support their positions, and prices have fluctuated wildly. The pricing roller coaster is fully loaded and the line to get on is a mile long. The combination of the Acreage, Grain Stocks, and latest WASDE reports provided the fuel for significant market swings.

For corn, the end of June reports revealed more corn plantings and increased corn disappearance than traders expected. Compared to the March Planting Intentions report, the June Acreage report showed 2.1 million more acres for corn in 2023. Given USDA's trendline yield, that potentially added roughly 350 million bushels to 2023 corn production, making a projected record crop even bigger. However, the June Grain Stocks report showed less 2022 corn in storage than expected, implying more corn usage, but the question was how that corn was used. The answer wasn't provided until the July WASDE report.

The July WASDE report contained big adjustments for the balance sheet. The tighter 2022 stocks were explained by higher feed and residual use, up 150 million bushels from the June estimate. However, corn usage for ethanol and exports both were lowered, as ethanol dropped 25 million bushels and exports lost 75 million bushels. Net, 2022-23 ending stocks dropped 50 million bushels. No changes were made to the 2023 corn usage projections, but the shifts for 2022 could signal issues ahead for 2023. For the 2023 crop, USDA did move forward on adjusting yield, based on the weather and crop conditions seen thus far through the growing season.

Table 1. United States corn supply and usage. Source: USDA-WAOB.

Marketing Year (2022 = 9/1/22 to 8/31/23)		2019	2020	2021	2022	2023
Area Planted	(million acres)	89.7	90.7	93.3	88.6	94.1
Yield	(bushels/acre)	167.5	171.4	176.7	173.3	177.5
Production	(million bushels)	13,620	14,111	15,074	13,730	15,320
Beginning Stocks	(million bushels)	2,221	1,919	1,235	1,377	1,402
Imports	(million bushels)	42	24	24	25	25
Total Supply	(million bushels)	15,883	16,055	16,333	15,132	16,747
Feed and Residual	(million bushels)	5,900	5,607	5,721	5,425	5,650
Ethanol	(million bushels)	4,857	5,028	5,326	5,225	5,300
Food, Seed, and Other	(million bushels)	1,429	1,439	1,438	1,430	1,435
Exports	(million bushels)	1,777	2,747	2,471	1,650	2,100
Total Use	(million bushels)	13,963	14,821	14,956	13,730	14,485
Ending Stocks	(million bushels)	1,919	1,235	1,377	1,402	2,262
Season-Average Price	($/bushels)	3.56	4.53	6.00	6.60	4.80

The projected national average yield was lowered 4 bushels to 177.5 bushels per acre. Given the new June acreage number, this pulled nearly 300 million bushels out of the corn production estimate. Combining the acreage and yield shifts, the corn production estimate increased 55 million bushels. With beginning stocks down 50 million bushels, that means 2023-24 ending stocks basically stayed the same (up 5 million). So there were a lot of shifting numbers, but in the end, USDA was able to maintain their 2023-24 season-average price estimate at $4.80 per bushel.

The land that corn gained likely came from soybeans. The June Acreage report found 4 million fewer soybean acres than the March report. At USDA's trendline yield, that lowered projected soybean production by 210 million bushels. The adjustments to the 2022 soybean crop were all focused on trade, with imports increased by 5 million bushels and exports lowered by 20 million. That increased 2022-23 ending stocks by 25 million bushels, so higher stocks, but still a very tight market.

The July WASDE provided no other adjustments to 2023 supplies, as USDA maintained their trendline yield for soybeans. But the outlook for soybean demand was another story. Domestic crush usage was decreased by 10 million bushels, based on expectations of slightly lower soybean meal use. The larger cut though is in exports, dropping 125 million bushels. If realized, that would be the third straight year of export declines. The projections for both soybean supplies and usage are shrinking, but thus far, the supplies are shrinking slightly faster and USDA lowered its 2023-24 ending stock estimate to 300 million bushels. Soybean stocks look to remain tight for a while, leading USDA to raise its 2023-24 season-average price estimate by 30 cents to $12.40 per bushel.

The two sets of numbers I have been and continue to focus on are USDA's yield and export estimates. As we discussed last month, advance export sales for both corn and soybeans have been weaker than average. But the main focus of traders for the next few weeks will be in formulating their yield projections. As USDA's corn yield move highlighted, crop conditions have not been ideal for much of the country. But recently, there has been some improvement. Figures 1 and 2 show the percentages of the national crops rated "Good to Excellent" in USDA's weekly Crop Progress reports. The dark blue region in each graph shows the range in that percentage since 1986. The light blue line is the weekly rating for the 2022 crop and the black line is the five-year average rating. The red line displays the ratings for the 2023 crop. Week 27 is the week of July 2-9. As Figure 1 shows, the 2023 corn crop has been

Table 2. United States soybean supply and usage (Source: USDA-WAOB).

Marketing Year (2022 = 9/1/22 to 8/31/23)		2019	2020	2021	2022	2023
Area Planted	(million acres)	76.1	83.4	87.2	87.5	83.5
Yield	(bushels/acre)	47.4	51.0	51.7	49.5	52.0
Production	(million bushels)	3,552	4,216	4,465	4,276	4,300
Beginning Stocks	(million bushels)	909	525	257	274	255
Imports	(million bushels)	15	20	16	25	20
Total Supply	(million bushels)	4,476	4,761	4,738	4,576	4,575
Crush	(million bushels)	2,165	2,141	2,204	2,220	2,300
Seed and Residual	(million bushels)	108	97	102	120	126
Exports	(million bushels)	1,679	2,266	2,158	1,980	1,850
Total Use	(million bushels)	3,952	4,504	4,464	4,320	4,276
Ending Stocks	(million bushels)	525	257	274	255	300
Season-Average Price	($/bushels)	8.57	10.80	13.30	14.20	12.40

rated below both last year's crop and the five-year average. But over the past couple of weeks, the 2023 ratings have been increasing and the gaps are getting smaller.

When the current year's rating is below (above) the five-year average, the national yield tends to be below (above) trendline. In the past, I have used these ratings to create a rough estimate of the final national yield, based on a regression using this percentage and a simple time trend. That simple model lines up fairly well with USDA's current yield estimate. The model indicates 178 bushels per acre and USDA moved to 177.5 bushels per acre. Based on historical performance, the model makes its best projection given the "Good to Excellent" rating in week 29, roughly lining up with the week after most of the nation's corn has pollinated. So it will be interesting to see if corn conditions continue to improve and what that might mean for yields this fall.

Figure 2 displays the same data for soybeans. The recent improvement in the crop rating is not as strong for soybeans, but the general relationship is the same. Above (below) average ratings tend to lead to above (below) average yields. Unlike in corn, USDA did not update their yield estimate, based on the crop's condition. While the rating signals the potential for below-trend soybean yields, the relationship is not as well defined as it is for corn. The predictive power of the soybean

Figure 1. United States corn crop ratings (Source: USDA-NASS).

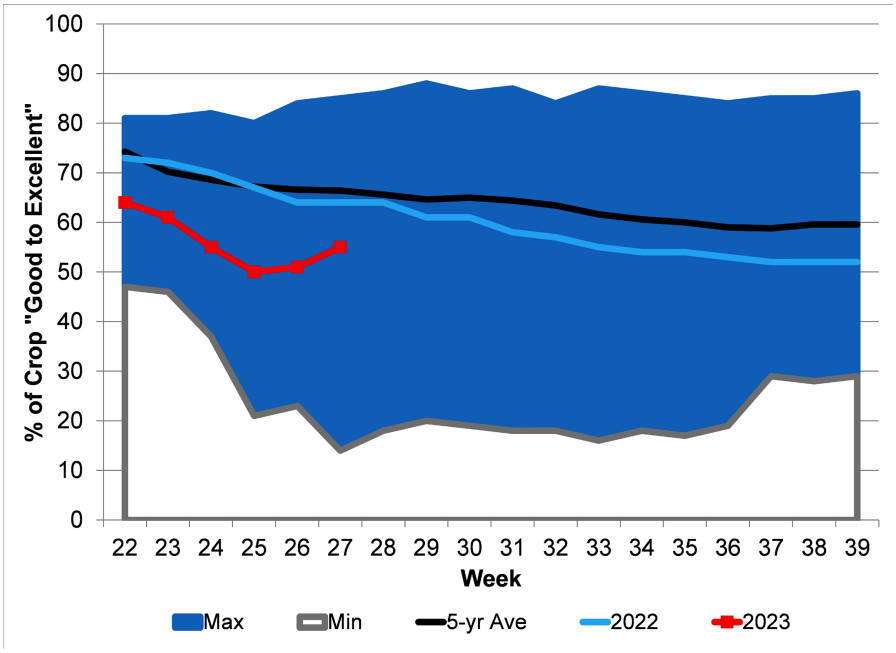
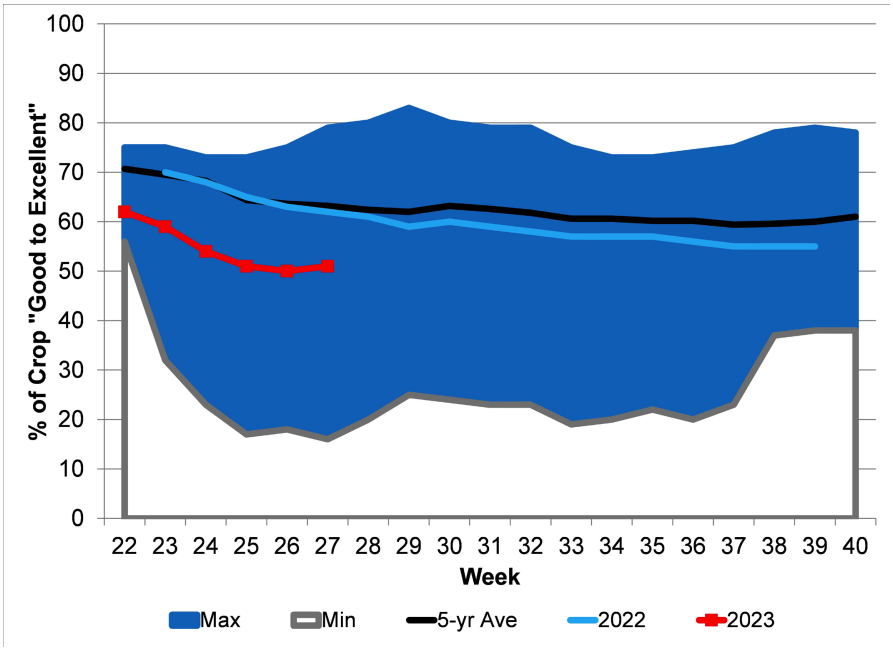


Figure 2. United States soybean crop ratings (Source: USDA-NASS).



ratings is not as strong and it slowly builds throughout the growing season. Weather conditions later in the growing season seem to have a stronger impact on soybean yields, relative to corn.

Market bulls have latched on to drought/yield concerns for both crops and the tight soybean stocks. Market bears concentrated on the improving crop ratings and the disappointing advance export sales. Over the past month, Dec. 2023 corn futures have swung from $6.30 per bushel to $4.80. Nov. 2023 soybeans have jumped from $12.25 per bushel to $13.92. That price volatility will remain in the markets until the yield and export uncertainty clears, likely all

the way to harvest. While this volatility can be maddening, it's not necessarily bad. Like a roller coaster, we can enjoy the thrill at the top and feel our stomach in our throat on the downswings. But at least with the markets thus far, those downswings have brought prices just down to production cost levels and not far below them. So while 2023 is a turbulent year, it still has the potential to be a profitable one as well.

Listen to the latest **Market Outlook video**, https://youtu.be/U7pHvsjikc4, for further insight on outlook for this month.

The Beginning Farmer Center is excited to announce that AgLink is now accepting applications! **AgLink provides new farmers a chance to connect with transitioning farmers and farmland owners, start conversations, and locate farming opportunities.**

The web-based platform can be accessed through our **website**, https://beginningfarmer.iastate.edu/, or by visiting: **https://aglinkservices.com/**. The Beginning Farmer Center created the AgLink platform to facilitate the transition of farming operations from established farmers to beginning farmers. AgLink is a user-led experience. As such, the Beginning Farmer Center does not assist in making connections or matches between beginning farmers and listed farm opportunities.

Ag Decision Maker is written by extension ag economists and compiled by Ann Johanns, extension program specialist, **aholste@iastate.edu**.