

DIRECTOR'S LETTER

Thanks for checking in to see what we've been up to at the Purdue Center for Commercial Agriculture during 2023. One thing we've learned over the last decade is that U.S. farmers and agribusiness staff like to receive information and education in a wide variety of formats and we've responded by providing in-person programs, webinars and videos, podcasts, short web postings, occasional long-form articles, decision aids and tools! I'll provide some key highlights from this past year and in the remainder of the report you'll find details about the diverse programming we provided during the year.

It's become an annual tradition to kick the year off with the Purdue Top Farmer Conference. The 2023 conference was held on January 6th in West Lafayette. Given the success we had with offering the conference online in 2021 and 2022, we decided to provide the conference in a hybrid format with the program conducted in-person at Purdue's Beck Center and simultaneously offered via Zoom. Over 270 people registered for the conference with a near 50-50 split between in-person and online attendance. Providing the conference in-person and online made it possible to reach producers and agribusiness personnel in 25 states plus Canada and Argentina. Next up in late January and early February was the annual Association of Agricultural Production Executives (AAPEX) annual conference held in Savannah, Georgia. This was the seventh year that the Center collaborated with the AAPEX board of directors on the program attended by 165 AAPEX members from across the country. Just a few weeks later, the Center provided a Learning Center program focused on managing 2023's financial and risk management challenges at the Commodity Classic held in Orlando, Florida.

The 2023 Purdue Farm Management Tour was held in Washington and Jackson Counties, Indiana in mid-July with just over 200 producers and agribusiness personnel attending the Tour and early evening Master Farmer reception held in Salem, Indiana. Thanks to the Hackman and Rowland families for their willingness to open up their farming operations to visitors and to share how their farms have successfully integrated the next generation of family members into their farming operation. Tour attendees also gained insights into specialty crop production and marketing, intensive cover crop usage and launching a new egg laying operation.

The way the Center delivers information continues to evolve with more information being delivered online. Since its launch in 2020, the Center has delivered

149 Purdue Commercial AgCast podcast episodes. The podcasts have proven popular with nearly 16k downloads during 2023. The Center's monthly newsletter Commercial AGNews continues to be a great way to stay up-to-date regarding upcoming programming as well as what's new on the Center's website with nearly 11k subscribers. Social media is also an important way to get information out to users and the Center is active on both X/Twitter and Facebook with over 2.3k followers.

As the nation's only monthly survey of commercial ag producers, the Purdue University-CME Group Ag Economy Barometer provides insights into producer sentiment while also providing opportunities to learn more about producers' reactions to contemporaneous events affecting the agricultural sector. Each month during 2023 the Center published an Ag Economy Barometer report summarizing survey results, posted a short YouTube summary video and an in-depth podcast interpretation of the current month's barometer survey, all accessible via the Center's website and by free subscription. The barometer is widely reported in both the ag and business press and is the subject of a large number of media interviews each month.

Thank you for your interest in and support of the Purdue Center for Commercial Agriculture. As always, if you have suggestions for future programs or research, or you just want to chat, we'd love to hear from you.

Sincerely,

James Mintert

Director



PROGRAMS

ASSOCIATION OF AGRICULTURAL PRODUCTION EXECUTIVES

SAVANNAH, GEORGIA

Association of Agricultural Production Executives (AAPEX) is devoted to providing ongoing executive education for its members. The Center for Commercial Agriculture delivered the 2023 AAPEX Annual Meeting in Savannah, Georgia, February 1 - 3, 2023. Over 165 AAPEX members attended the 2023 meeting representing 27 states and two countries. There were several great speakers including sessions with economists Dr. Ed Seifried and Dr. David Kohl in addition to commodity analyst Emily French. In 2023 the program continued the pre-meeting field tour series which was an educational tour of the Port of Savannah. Working with this group of producers provides the Purdue faculty and staff with insights into the research and educational needs of America's leading farmers and provides opportunities for further collaboration. The 2023 conference marked the Center's seventh year of collaboration with the association in organizing and hosting the annual conference.





PURDUE TOP FARMER CONFERENCE

HYBRID CONFERENCE

The Purdue Top Farmer Conference is one of the most successful and longest running management programs geared specifically for farmers. The Center held the 2023 conference in West Lafayette and simultaneously online with a combined total of just over 270 participants. The ability to choose from in-person or remote attendance was popular with an almost even split between online and in-person attendees. The 2023 conference allowed the Center to reach producers and agribusiness personnel in 25 states plus Canada and Argentina.

The 2023 conference featured agricultural economist, Mike Rahm, sharing his perspective on what led to the big shifts in fertilizer values and what farmers should expect in 2023 and 2024. Tyler Mark, associate professor of agricultural economics at the University of Kentucky, discussed factors affecting used farm machinery values and Chad Hart, Iowa State University professor of economics and crop marketing specialist, provided a longer-term outlook for corn and soybeans along with management implications. Jason Henderson, Brady Brewer and Michael Langemeier from the Purdue faculty discussed where interest rates were headed and implications for the farm economy. Purdue's Todd Kuethe, Schrader Real Estate & Auction Co.'s RD Schrader, and Halderman Real Estate & Farm Management's Howard Halderman discussed the drivers behind the sharp increase in farmland values and prospects for the upcoming year. Special thanks to conference sponsor Farm Credit Mid-America. See more insights and photos from the conference on Twitter #PTFC23.

PURDUE FARM MANAGEMENT TOUR & INDIANA MASTER FARMER RECEPTION

TIPTON & CLINTON COUNTIES

The Center partnered with Purdue Extension to hold the 90th annual Purdue Farm Management Tour in July, at the Hackman Family Farm Market and Rowland Farm in southern Indiana. The Department of Agricultural Economics at Purdue University has organized an annual Indiana farm management tour continuously since the 1930s. One of the tour's primary goals is to encourage Hoosier farmers to develop high-level management knowledge and skills. Over 200 tour participants learned about the innovative



Victor Hackman, Megan Vanliew & Richard Beckort (above) discuss the Hackman's produce operation. Danielle Walker with Jenny & Greg Rowland (below) discuss soil health with the crowd during the Purdue Farm Management Tour in July 2023.

paths the Hackman and Rowland farm operations took to incorporate the next generation into their family's business. In-depth sessions at the two farms focused on food safety for produce production, building and operating a commercial scale layer operation and advanced cover crop usage in a corn/soybean rotation.

The tour wrapped up with the introduction of this year's Indiana Master Farmers. The Master Farmer program is a long-standing tradition in Indiana and honors









Tom & Ruth Hackman and family (above top). Greg, Jenny & Jacob Rowland and family (above center). Marshall Martin, Jay Akridge, Scott Trennepohl, Tom Chalfant, Marty & Becky Evans, and Tom Schwenk (above bottom).

individuals who have made outstanding contributions to Indiana agriculture and demonstrated success in farming efficiency, stewardship of natural resources and community service. A reception along with a panel discussion was held in conjunction with this year's tour to honor the 2023 Indiana Master Farmers on July 11, 2023. Congratulations to Tom Chalfant, Marty & Becky Evans, Tom Schwenk, Scott Trennepohl, and honorary Master Farmers Jay Akridge and Marshall Martin.

A special thanks to the Hackman and Rowland families for sharing details about their farm operations, and to the Tour's local coordinators, Danielle Walker and Richard Beckort, Purdue Extension's Washington and Jackson County Educators, respectively, as well as this year's Tour sponsors, Indiana Farm Bureau Insurance and Farm Credit Mid-America. A photo recap from the day can be viewed on the Center's website (https://purdue.ag/pfmt23)

COMMODITY CLASSIC

ORLANDO, FLORIDA

The Commodity Classic in Orlando, Florida set a new attendance record in 2023 and the Center's Learning Center Session entitled "Farm Management Strategies for 2023" on Thursday, March 9, 2023, was very well



Michael Langemeier & James Mintert on stage in Orlando, FL during the Commodity Classic Learning Center Session, March

attended! In the session, Associate Center Director, Michael Langemeier and Center Director James Mintert shared key management lessons from 2022 and helped producers plan for the financial and risk management realities of 2023. The discussion featured the latest data from the Purdue/CME Group Ag Economy Barometer. The results specifically focused on what farmers see happening with regard to their current financial situation, expected profitability in 2023, the desirability of making large investments in their farms, plans for expansion and their approach to risk management in these challenging times. Emphasis was placed on the role of technology adoption in improving farm profitability. The session concluded with the Purdue agricultural economists responding to questions posed by producers attending the session. The Center's faculty and staff also welcomed show visitors to the Commodity Classic trade show at the Purdue Center for Commercial Agriculture's booth.





PURDUE COMMERCIAL AGCAST

OVERVIEW

The Center launched the Purdue Commercial AgCast podcast in April 2020 as the COVID-19 pandemic created a need for improved remote access to information and a broader reach in a more convenient way. Geared towards highlighting farm management news and advice for top agricultural producers and agribusinesses, AgCast covers a variety of topics ranging from ag outlook, agricultural finance and farm management in addition to insights gleaned from the Purdue University-CME Group Ag Economy Barometer. Purdue ag economists Brady Brewer and James Mintert serve as the podcast hosts as they welcome new and returning guests from within the agricultural economics department at Purdue University and elsewhere. The podcast can be accessed directly from the Center's website or via all major podcast providers including Apple Podcasts, Spotify, and Google Podcasts.



MOST DOWNLOADED

The most downloaded episode of 2023, with a total of 426 since it's posting, was **episode 115**: 2023 Top Farmer Conference Recap: Corn & Soybean Outlook with Iowa State's Chad Hart. The short 9-minute episode, a recap of highlights from Dr. Hart's presentation at the Purdue Top Farmer Conference, was hosted by Brady Brewer. The episode's average consumption was 103%, proving Chad and Brady gave listeners food for thought as they obviously rewound the espisode or listened multiple times.



3 YEARS LATER









Nathan Thompson & James Mintert recording a podcast in Krannert (above top). Audio player that is embedded in the Center's website once the episode is published (above bottom). Chad Hart during the Purdue Top Farmer Conference discussing the crop outlook (above left).

FAN FAVORITE

Another listener favorite, AgCast episode 137, featured Megan Vanliew and Jacquelyn Jansinski, daughters of Tom & Ruth Hackman, who discussed their roles on the Hackman family's farm near Vallonia, Indiana with James Mintert. The two young entrepreneurs made listeners laugh while providing details on how they augmented their family's row-crop operation with a variety of produce crops and, recently, developed a subscription based produce delivery service. Jim, Megan, and Jacquelyn recorded the 11-minute episode during a farm visit in preparation for the Hackman family serving as one of two host families for the Purdue Farm Management Tour in July 2023. The episode was also published to YouTube with video footage from the Hackman Family Farm Market generating nearly 250 additional views.

QUICK POPULARITY

Episode 119, 2023 Top Farmer Conference Recap: Interest Rates, Brady Brewer was joined by Michael Langemeier, Purdue's associate director of the Center for Commercial Agriculture and Jason Henderson, senior associate dean of Purdue's College of Agriculture. This 23-minute episode was popular with listeners reaching over 300 downloads in the first month it was available. The podcast episode was a follow-up to the panel discussion the group had at the 2023 Purdue Top Farmer Conference focused on the U.S. economy, the Federal Reserve's likely policy choices in 2023 and the potential impact on interest rates and the farm economy.

2023 HIGHLIGHTS

Since launching the podcast, the Center has delivered 149 episodes with nearly 48k downloads by listeners. The Center delivered 36 new AgCast episodes in 2023, averaging nearly 250 downloads within the first 30 days of an episode's posting for a total of 15,750 during the year. Show notes with the full audio transcription, slide decks, and related links and/or resources that were discussed during an episode are posted alongside the audio player on the Center's website. Apple's Podcast is the favorite platform for listening providing 67% of the downloads followed by about 11% of listeners choosing to access the podcast directly from the Center's website.



YouTube thumbnail from the Center's Crop Insurance podcast, Episode 127 - February 2023.

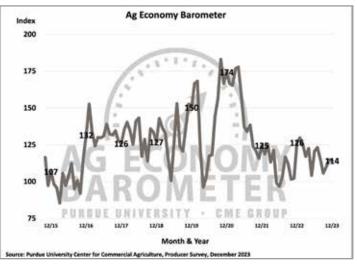
NEW IDEA

NEW in 2023, the Center also recorded video with several of the podcast episodes and released the video podcast to the Center's YouTube channel. The goal of providing video in addition to the audio was to meet more of the Center's audience on a platform where the Center already has a strong following with over 900 YouTube subscribers.

HOSTS: BRADY BREWER, JAMES MINTERT PRODUCTION & MARKETING: SARAH ZAHN

AG ECONOMY KAKIIMFTFR

MONTHLY FARMER SENTIMENT SURVEY ON THE AG ECONOMY



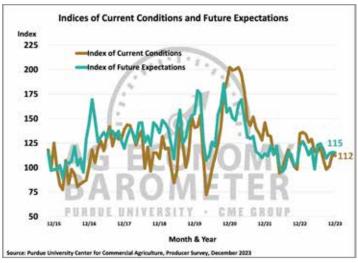
Purdue/CME Group Ag Economy Barometer, Oct 2015-Dec 2023.

The Purdue University/CME Group Ag Economy Barometer is a nationwide measure of U.S. agricultural producers' sentiment regarding both their farms and the U.S. agricultural economy's health. Each month the Center surveys 400 commercial scale agricultural producers from across the U.S. Respondents each month are drawn from a large database of commercial agricultural producers and each month's survey pool is stratified to mirror the percentage contribution to the value of U.S. farm production for principal crop (corn, soybeans, wheat and cotton) and livestock (beef, pork, and dairy) enterprises as estimated by the U.S. Census of Agriculture. Results are reported on the first Tuesday of each month and include not only the barometer but also the Index of Current Conditions, the Index of Future Expectations, the Farm Capital Investment Index, the Farm Financial Performance Index, and both the Short and Long-Term Farmland Value Expectations Indices.

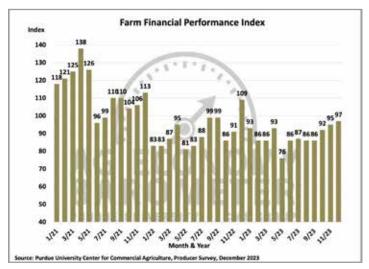
The Center has a dedicated website where online viewers can read the latest Ag Economy Barometer full report, media release, detailed charts, historical tables, and learn more about the methodology and team. A barometer breakdown video with Purdue ag economist James Mintert, which includes a short summary of that month's survey results, is published and available on the website also each month. Jim and Michael also share insights into the Ag Economy Barometer

	DATE	PODCAST DOWNLOADS*	YOUTUBE VIEWS*	WEB PAGEVIEWS*
Farmer Sentiment Rebounds At Year End On Stronger 2022 Income	1/3/23	309	200	1267
Improvement In Farmer Sentiment Carries Over Into 2023	2/7/23	289	163	1282
Farmer Sentiment Dips In February	3/7/23	383	190	1006
Commodity Price Outlook And Interest Rate Concerns Cloud Farmer Sentiment	4/4/23	343	219	1113
Farmer Sentiment Improves; Less Pessimism Over Interest Rates	5/2/23	359	244	960
Farmer Sentiment Sours As Crop Prices Decline	6/6/23	331	219	1046
Farmer Sentiment Rebounds On More Optimistic View Of Future	7/5/23	340	154	1159
Farmers Remain Cautiously Optimistic About Agricultural Economy	8/1/23	332	74	938
Farmer Sentiment Dips Amid Weaker View Of Current Conditions	9/5/23	280	208	998
Weakening Crop Prices And High Production Costs Weigh On Farmer Sentiment	10/3/23	345	302	1170
Farmer Sentiment Rises As Producers Report Improved Financial Conditions On Their Farms	11/7/23	288	298	855
Farmer Sentiment Improves, Producers Credit Stronger Financial Conditions	12/5/23	257	134	697

^{*}all time views since publication, data pulled January 12, 2024



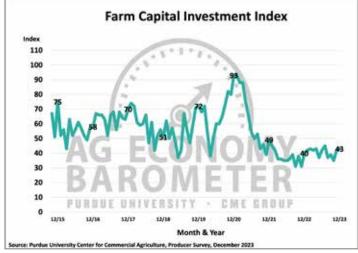
Indices of Current Conditions & Future Expectations, Oct 2015-Dec 2023.



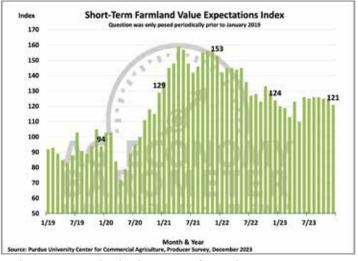
Farm Financial Performance Index, Apr 2018-Dec 2023.

survey results each month in an episode of the *Purdue* Commercial AgCast podcast. The Center works with the Purdue Video & Multimedia Production studio to record short videos breaking down that month's key take-aways while highlighting seasonal insights. The videos are then shared on the Center's YouTube channel and social media, as well as being shared with AgDay TV.

The Center for Commercial Agriculture, in partnership with the CME Group, reaches an estimated 299 million online audience, 13.2 million print and broadcast audience, and over 16,200 subscribers each month with a monthly email update highlighting the results from that month's Ag Economy Barometer survey. The Ag Economy Barometer in 2023 had a total of over 1300 media placements and is regularly highlighted in PR Newswire, Market Insider, Morningstar, Successful Farming, RFD-TV, AGDAILY, as well as many others. Purdue ag economists James Mintert and Michael Langemeier are regular monthly guest on AgriTalk, RFD-TV, Red River Farm Network, and Brownfield Ag News.



Farm Capital Investment Index, Oct 2015-Dec 2023.



Short-Term Farmland Value Expectations Index, Jan 2018-Dec 2023.

MANAGEMENT TOOLS

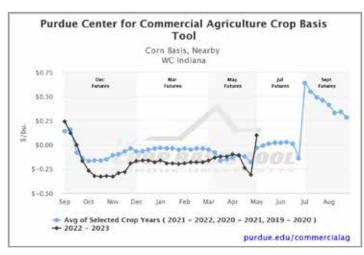
CROP BASIS TOOL

Developed by Nathanael Thompson, the Center's Crop Basis Tool allows users to examine weekly nearby and deferred basis for corn and soybeans in Illinois, Indiana, Michigan, and Ohio. Daily cash price data from individual grain elevators and processors are averaged within each crop reporting district to create a regional average cash price series. The regional average cash price data is used to compute weekly basis (cash price minus futures price) for corn and soybeans, using Wednesday cash and futures prices to generate weekly basis data for each crop and crop reporting region. The number of buyers vary by crop reporting district and by week, depending on how many buyers choose to report their cash prices. Cash price data are provided by DTN and represent approximately 2,000 buyers across the four states.

NEW & IMPROVED CROP BASIS TOOL

It is hard to believe, but the Purdue Center for Commercial Agriculture Crop Basis Tool has been around for more than five years. The tool first went live at the Top Farmer Conference in January 2018. Since then, the Tool has served as a valuable source of current and historical corn and soybean basis information for producers and grain industry participants throughout the Eastern Corn Belt, not to mention the fact that the Tool has served as the foundation for numerous in-person workshops on commodity marketing, has become a mainstay on the Center for Commercial Agriculture's monthly outlook webinars, and is used in the Department of Agricultural Economics undergraduate commodity marketing courses.

Over the years, the Center has received numerous requests/suggestions on things that users would like to see from the Crop Basis Tool. At the beginning of 2023, Nathan got serious about exploring what it would take to incorporate some of those changes! In May 2023, the



Purdue Crop Basis Tool, Corn - WC Indiana, May 2023.

Center released a fresh and revamped Crop Basis Tool embedded on the Center's website. The dashboard tool is build from Shiny App on top of a dataset within the R software. Below are the improvements made along side the new design and user interface:

Iowa Data First, in addition to data for Illinois, Indiana, Michigan, and Ohio, the new Tool included corn and soybean basis data for crop reporting districts, ethanol plants, and soybean processors in Iowa. Iowa data has been a top requested state and with the ease of data availability Iowa was prioritized and incorporated.

Second, the updated Tool included the ability to view historical and contemporaneous state-level *Ethanol* Plant Basis, state-level Soybean Processor Basis, and average Ohio River Basis for terminals along the Ohio River, in addition to Regional Basis for each crop reporting district in Illinois, Indiana, Iowa, Michigan, and Ohio. Ethanol plant and soybean processor data are available at the state level for each of the five states covered: Illinois, Indiana, Iowa, Michigan, and Ohio. Additionally, basis patterns for terminals along the Ohio River are also commonly of interest with regards to export markets and river dynamics. This is a single value averaged across all the available river terminals in southern Ohio, southern Indiana, and southern Illinois.

Third, the updated Tool allows users to view data for individual crop years simultaneously, in addition to viewing an average of selected historical years and current year information. Viewing the basis patterns for multiple historical years simultaneously can be very useful when considering basis patterns over time. While users could view data for individual years in the previous version of the Crop Basis Tool, they could only do so by looking at one year at a time. In the new Tool, users have the option to view individual years simultaneously to compare basis patterns across time.

2024 Purdue Crop Cost & Return Guide

INDIANA FARM CUSTOM RATES

The Center conducts a farm custom rate survey every other year to farmers, farm owners, farm custom operators and professional farm managers in Indiana who provide an estimate of the market value for custom work for hire. Michael Langemeier, with the help of Purdue Extension educators and specialists, published the 2023 Indiana Farm Custom Rates for land preparation, fertilizer and chemical application, grain planting, grain harvesting, machinery rental, grain hauling, and/or mowing/baing work.

INDIANA FARMLAND VALUES & CASH RENTAL RATES

The Purdue Farmland Value and Cash Rent Survey is conducted annually in June. The survey respondents are knowledgeable of Indiana's farmland market and include farm managers, rural appraisers, farmland brokers, agricultural loan officers, farmers, and Farm Service Agency (FSA) county office directors. These professionals provide an estimate of the market value for bare poor, average, and top quality farmland in the prior December, June of the current year, and a forecast for the upcoming December. To assess productivity of the farmland, respondents provide an estimate of longterm corn yield for top, average, and poor productivity farmland. Respondents also provide a market value estimate for land transitioning out of agriculture and for recreational land.

MORE TOOLS

FROM THE CENTER

CROP COST & RETURN GUIDE

The Purdue Crop Cost and Return Guide offers farmers a resource to project financials for the coming cropping year. Prepared by Purdue faculty members Michael Langemeier, professor of ag economics, Shaun Casteel, associate professor of agronomy, Dan Quinn, assistant professor of agronomy, Tony Vyn, professor of agronomy, and Bill Johnson, professor of weed science. A spreadsheet tool helps users to evaluate up to three full-season crops, and the wheat double-crop soybean system. Gross revenue, cost, and net returns are evaluated on a per acre and per unit basis. Breakeven prices to cover variable and total cost are computed for each crop.





PUBLICATIONS

The Center's vision is to be the leading source of management education and knowledge generation for the farmers in the business of producing the world's agricultural products. Our research, education, and delivery will be world class. Our perspective will be global and science-based, but with impact for stakeholders in their local setting.

Focus from the Center's expertise can be placed in six categories. The Center's faculty have extensive knowledge and research in agricultural outlook, farm business management & strategy, farm financial

management, crop marketing, farmland economics, and farm policy topics. In 2023, the Center produced at total of 85 new online resources, including 41 web postings, 36 podcasts and 29 videos.

AG POLICY

FARM BILL & CROP INSURANCE

In the publication series, Policy Briefs, aimed at providing short insights into agricultural policy issues that are national in scope but with an Indiana flare, Roman Keeney, associate professor of agricultural economics, broke down the multiple aspects that go into passing a farm bill. In his 9-part series, released in February 2023, Dr. Keeney discussed the process involved in passing a farm bill, some of the biggest titles included in a farm bill, the basic policy debate and how budget considerations come into play.

Purdue ag economists Michael Langemeier and James Mintert conducted their annual crop insurance decisions program in time for corn and soybean producers to make their 2023 crop insurance decision. The two Purdue ag economists recorded their discussion as a Purdue Commercial AgCast



Figure caption...

podcast. The program helped producers review their crop insurance choices for the upcoming season highlighting key considerations for 2023. in particular, their recording provided a handy thumb rule to use when comparing two RP insurance coverage levels.

	DATE	PODCAST DOWNLOADS*	YOUTUBE VIEWS*	WEB PAGEVIEWS*
Farm Bill 2023 (Policy Brief)	1/18/23			650
Making Your 2023 Crop Insurance Decision	2/24/23	413	578	1308

^{*}all time views since publication, data pulled January 12, 2024

AGRICULTURAL OUTLOOK

UPDATES FOLLOWING USDA REPORTS

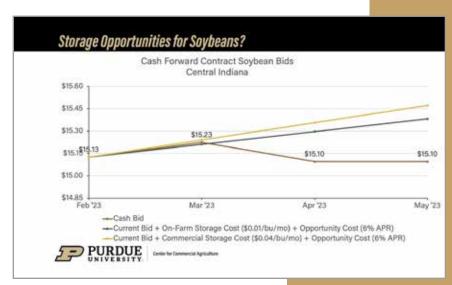
The Center hosted a series of free webinars and/or released podcast episodes providing an in-depth update on the corn and soybean outlook following release of USDA's monthly Crop Production and World Agricultural Supply and Demand Estimates (WASDE) reports. Purdue ag economists Michael Langemeier, Nathanael Thompson and James Mintert reviewed information from the updated supply/demand estimates

along with other key information on exports, industrial and feed usage. A farm risk management discussion is included each month featuring a review of estimated corn and soybean production costs, crop basis and marketing opportunities along with net farm income projections.

	DATE	PODCAST DOWNLOADS*	YOUTUBE VIEWS*	WEB PAGEVIEWS*
Corn & Soybean Outlook with Chad Hart: Looking Beyond 2023	1/12/23	426		401
January Corn & Soybean Outlook Update	1/13/23	316		188
February Corn & Soybean Outlook Update	2/10/23	346	471	277
Prospective Plantings Report Update	3/31/23	324		42
Corn Outlook Update Following USDA's June WASDE Report	6/13/23	300	324	1030
Soybean Outlook Update Following USDA's June WASDE Report	6/16/23	304	314	350
Cattle Outlook	10/25/23			25

^{*}all time views since publication, data pulled January 12, 2024





MANAGEMENT & STRATEGY

FOR A FARM BUSINESS



The Center, in partnership with the Purdue Institute for Family Business and Purdue Extension, covered 3 additional contingency planning topics on the Purdue Commercial AgCast in 2023. Brady Brewer hosted Ed Farris, Jenna Nees, Renee Wiatt and Ariana Torres as guests on the podcast to discuss marketing, financial, and social media contingency plans.

The Purdue University-CME Group Ag Economy Barometer surveys conducted by the Center provide insights into producer sentiment along with U.S. farmers perspective on a wide variety of business management, strategy and policy issues. And throughout the year, the Center provides a variety of information on different business management and farm strategy topics. During 2023 the Center initiated work on strategic planning which involves development of long-term strategies to increase the profitability and competitiveness

of farm businesses. Assessing management skills, benchmarking farm performance, and figuring out improvements are essential to the success of a farm business. In 2023, agricultural economics graduate student, Margaret Lippsmeyer, and Michael Langemeier released several resources on topics ranging from strategic risk to contingency planning driven in part by surveys conducted by the Center. Brady Brewer and James Mintert also interviewed speakers from the Purdue Top Farmer Conference and Purdue Farm Management

> Tour as guests on the Purdue Commercial AqCast podcast to discuss commodity and farm financial outlook as well as key production and management factors that made farms on the tour successful.

	DATE	PODCAST DOWNLOADS*	YOUTUBE VIEWS*	WEB PAGEVIEWS*
Farm Machinery Pricing with Tyler Mark: Is There an End Insight?	1/18/23	268		47
How Much Have Eggs & Other Food Prices Risen?	1/26/23	248		77
Social Media Risk Management & Contingency Planning	2/16/23	298		139
Marketing Risk Management & Contingency Planning	2/23/23	276		56
Experience, Knowledge, & Collaboration: Why Good Managers Make An Effort To Improve	3/1/23			80
What Farmers Are Telling Us About Their Farms & The Ag Economy	3/1/23			15
Financial Risk Management & Contingency Planning	3/2/23	360		122
Financial & Risk Management Strategies For 2023 At Commodity Classic	3/10/23		469	286
Ag Economy Outlook & Financial And Risk Management Strategies For 2023	3/21/23			23
2023 Indiana Farm Custom Rates	3/24/23			13024
10 Questions That Need To Be Addressed When Considering Farm Growth	4/13/23			29
Agility And Absorption Capacity	4/20/23			52
Producer Sentiment And Farm Growth	5/4/23			86
Why Is Managing Strategic Risk So Important In Production Agriculture?	5/11/23			125
Contingency Planning With Cash Flow Shortages	6/1/23			91
Resilience To Strategic Risk	6/20/23			90
2023 Purdue Farm Management Tour Prelude: Hackman Family Farm Market	6/22/23	358	250	103
2023 Purdue Farm Management Tour Prelude: Rowland Farms	6/25/23	247	220	84
Purdue Farm Management Tour 2023 (Photo Recap)	7/14/23			245
Farm Lease Types, Side X Side Digital Webinar	8/8/23			64
Factors Impacting Succession Planning	9/7/23			206
Absorption Capacity And Producer Sentiment	9/26/23			51
Agility And Producer Sentiment	10/3/23			76

^{*}all time views since publication, data pulled January 12, 2024

FINANCIAL MANAGEMENT

STATEMENTS, ANALYSIS & STRATEGY

		PODCAST	YOUTUBE	WEB
	DATE	DOWNLOADS*	VIEWS*	PAGEVIEWS*
Cattle Finishing Net Returns Prospects For 2023	1/5/23			493
Interest Rate Outlook with Jason Henderson: How High Will Rates Go?	1/19/23	417		218
Thinking Like ACFO For Your Farm Operation	2/10/23	357	351	404
2023 Crop Cost And Return Guide	3/24/23			6769
Comparison Of Conventional & Organic Crop Rotations (Spreadsheet Tool)	4/4/23			143
Trends In General Inflation & Farm Input Prices	4/13/23			465
What Does The Federal Fund Rate Increases At May FOMC Meeting Mean?	5/15/23			204
Impact Of Lower Com Prices On Swine Feed Costs	5/22/23			134
Benchmarking Crop Machinery Cost And Investment	7/10/23			290
Comparing Corn Marketing Strategies	7/20/23			203
Comparing Soybean Marketing Strategies	7/31/23			23
Comparing Corn And Soybean Marketing Strategies	8/3/23			142
Comparing Net Returns For Alternative Leasing Arrangements	8/10/23			415
Financing Amid Rate Ripples, An Ag Credit Update	8/15/23	314	208	89
Conventional And Organic Enterprise Net Returns	8/29/23			388
Crop Budget Spreadsheet	9/13/23			6099
Long-Run Cash Rent	9/13/23			525
USDA Farm Income Forecast, August Update	9/13/23	330		127
Trends In General Inflation And Farm Input Prices	10/11/23			784
Impact Of Lower Corn Prices On Feeding Cost Of Gain For Cattle Finishing	10/12/23			281
Trend In Breakeven Prices For Cattle Finishing	11/14/23			109
2024 Crop Cost And Return Guide	11/22/23			1524
Prospects For Swine Feed Costs In 2024	11/30/23			46
USDA Farm Income Forecast, December Update	12/20/23	155		17

^{*}all time views since publication, data pulled January 12, 2024

The Center provides resources on basic financial statements and analysis, as well as more advanced competitive strategy concepts. A case farm is often used to provide as an example on topics and Purdue ag economists Michael Langemeier offers many spreadsheet tools on crop budgets, cash rents, and crop rotations. Dr. Langemeier often writes on cropping system financials, benchmarking, strategic management, cost of production, and technical and economic efficiency.

Purdue ag economists Brady Brewer specializes in agricultural finance and production topics that include farm profitability, credit availability, production efficiencies, credit choice of farmers, and farmland values. In 2023, Dr. Brewer and Dr. Langemeier released several Purdue Commercial AgCast episodes reviewing the USDA Farm Income Forecast updates in addition to discussing the Federal Fund interest rate and implications for the farm economy.

PROGRAMS & PUBLICATIONS

CROP MARKETING

FEATURING THE PURDUE CROP BASIS TOOL

Basis is an important component for crop producers to consider when marketing grain because it is used to convert the futures price to a local cash price. Futures prices and basis follow different seasonal patterns so the ability to manage futures price risk and basis risk independently creates an opportunity to improve returns. Purdue ag economists and co-creators of the Purdue Crop Basis Tool, Nathanael Thompson and James Mintert, regularly discuss the corn and soybean basis, while demonstrating use of the Center's Crop Basis Tool.

Since its inception the Center's Crop Basis Tool has allowed users to examine weekly nearby and deferred basis for corn and soybeans in Illinois, Indiana, Michigan and Ohio. In spring 2023, the Tool was updated and revised and users can now review ethanol plant, soybean processing plant and Ohio river basis data. The revised tool also provides access to Iowa basis data, a significant addition which was requested by tool users.

		PODCAST	YOUTUBE	WEB
	DATE	DOWNLOADS*	VIEWS*	PAGEVIEWS*
Importance Of Crop Basis When Marketing Grain	2/2/23	275	512	596
April 2023 Crop Basis Update	4/13/23			284
U.S. Corn Exports To Key Customers Have Been Weak	4/14/23			619
Critical Juncture For Crop Basis & Your Marketing Strategy For The Remainder Of '22 Crop	4/24/23	351	155	79
U.S. Corn Exports Struggle To Meet USDA's Weak Export Forecast	5/8/23			153
(New And Improved) Crop Basis Tool	5/17/23			3,073
Corn Basis Implications From July-September Futures And Weather Conditions	6/1/23			118
Forecasting New Crop Basis Bids For Fall 2023	8/7/23			173
Déjà Vu: Low Mississippi River Levels And Rising Barge Rates May Affect Grain Markets Again Th	9/8/23			276
Corn And Soybean Basis Weaken As Harvest Heats Up	10/5/23			151
November 2023 Corn & Soybean Basis Update	11/9/23			333
Corn And Soybean Basis Levels Remain Weaker Than Normal But Are Strengthening	12/5/23	257	146	72

^{*}all time views since publication, data pulled January 12, 2024





FARMLAND PRICES

LAND VALUES & CASH RENT

The Purdue Farmland Value and Cash Rent Survey is conducted each June. Surveys received from farmers, professional farm managers, rural appraisers, farmland brokers, agricultural loan officers, and USDA Farm Service Agency (FSA) county office directors are summarized and compiled by Todd Kuethe, who holds the Schrader Endowed Chair in Farmland Economics at Purdue. Survey respondents provide an estimate of the market value for bare poor, average, and topquality farmland in December of the prior year, June of the current year, and a forecast for the upcoming December. To assess productivity of the farmland, respondents provide an estimate of long-term corn yield for top, average, and poor productivity farmland. Respondents also provide a market value estimate for land transitioning out of agriculture and for recreational land.

Indiana farmland prices once again hit record highs in 2023. Statewide, the price of top-quality farmland averaged \$13,739 per acre, up 7.3% from June 2022. Average and poor-quality farmland increased 5.8% and 0.7% to \$11,210 and \$8,689 per acre, respectively. Purdue ag economics Todd Kuethe, James Mintert, and Michael Langemeier reviewed 2023 survey results and discussed Indiana farmland values and cash rental rates on two episodes of the Purdue Commercial AgCast. The complete survey report along with the Indiana Farm Real Estate Index was released in the August 2023 issue of the Purdue Ag Econ Report.

	DATE	PODCAST DOWNLOADS*	YOUTUBE VIEWS*	WEB PAGEVIEWS*
Farmland Values with Todd Kuethe: How High is Too High?	1/17/23	328		173
(Part 1) Indiana Farmland Values 2023 Update	8/6/23	228	559	657
Indiana Farmland Prices Continue To Rise In 2023 (Purdue Ag Econ Report, August 2023)	8/6/23			3022
(Part 2) Indiana Farmland Cash Rental Rates 2023 Update	8/7/23	318	594	2534
The Index Of Indiana Farm Real Estate	8/11/23			283

^{*}all time views since publication, data pulled January 12, 2024





WAYS WE SHARE

EMAIL

Making producers and agribusiness personnel aware of the information available from the Center is a challenge. The Center's monthly newsletter, Commercial AgNews, has proven to be an effective way to provide updates regarding upcoming programming as well as what's new on the Center's website to over 10.5k subscribers.

New in the spring of 2023, the Center also started sending email notices on newly released articles, podcasts, and videos posted to the website. With an average open rate of 37%, it's proven to be an effective way to reach a larger audience. The Commercial AgNews e-newsletter often highlights web postings an additional time in case readers missed it in the first email.



DOWNLOADS IN 2022



PODCAST

In 2023, the Center delivered 954 minutes in 36 new AgCast episodes. With over 750 hours total of listeners and 15,750 total downloads, the Purdue Commercial AgCast averages nearly 250 downloads within the first 30 days of an episode. Show notes with the full audio transcription, slidedecks, and related links and/or resources that were discussed on the episode are posted alongside the audio player on the Center's website. The podcast hosting platform, Podbean, seamless allows episodes to be shared via social media, embedded within the Center's website and emails, and provides easy release to all major podcast directory platforms.

WEBSITE

The department's Purdue Agricultural Economics Report (PAER) is hosted on the Center's website along with other articles, publications, upcoming events and programs, recorded videos and podcasts, presentations and tools. In 2023, the Center's home website averaged over 11k visitors per month with over 280k pageviews.

The Center also hosts an additional website for the Purdue University/CME Group Ag Economy Barometer. The site is updated monthly with survey results including a comprehensive report, press release, updated charts, tables and media files. With an average of 1.3k visitors per month, the Center's Ag Economy Barometer website averaged 50k pageviews in 2023.

SOCIAL MEDIA

Ranging from sharing barometer reports and monthly outlook highlights to promoting upcoming programs and recently released resources, social media is an important way to reach a wider audience and get information into new hands. The Center is active on both X/Twitter and Facebook with over 2.3k followers.







MOST VIEWED

Farmland values and cash rental rates is always a topic of great interest to producers and the annual update is one of the Center's YouTube channel's top videos. The annual update video is posted in late summer after the Purdue Land Values Survey results have been released. The 2022 video received 802 views in 2023 and the 2023 videos (released as a two-part video) combined received 1085 views in 2023.





YOUTUBE SUBSCRIBERS

During 2023, 24 new videos were added to the Center's YouTube channel with over 11.1k views, 1.2k watch time hours, and the channel gained 135 new subscribers.



YOUTUBE

Webinars and informational videos from the Center are shared with a broad audience from the Center's YouTube channel. Participants can view programs when it's convenient. New in 2023, the Center started recording some of the Purdue Commercial AgCast episodes and releasing them on YouTube - to reach a larger audience via their preferred online platform. Since the channel's launch in May 2016, the Center has delivered 221 recorded videos on farm and financial management, ag outlook and breakdowns on the Purdue/CME Group Ag Economy Barometer survey results. The Center's channel has over 67.3k lifetime views, 11.8k watch time hours and over 900 subscribers.

PRODUCER SENTIMENT & FARM GROWTH

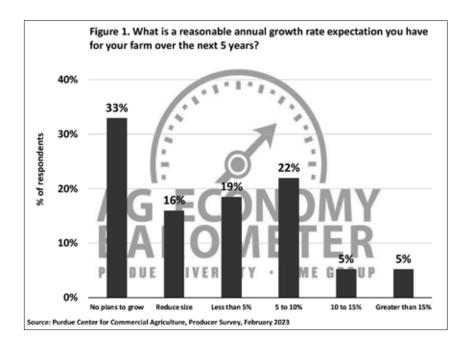
Michael Langemeier & James Mintert

There are numerous reasons why a farm may want to expand including the following: reduce costs, improve profit margins, improve asset utilization, bring in new family members, invest retained earnings, and more fully utilize the skills of key managers (Boehlje and Langemeier, 2016). The first three reasons are related to economies of size. In general, larger businesses have lower per-unit costs, higher profit margins, and are able to more fully utilize assets such as machinery and buildings, which improves the asset turnover ratio. Larger businesses also tend to retain more of their retained earnings (net farm income minus owner withdrawals), investing these retained earnings back into the business is a common strategy in family-owned businesses such as farms.

In addition to the factors noted above, it seems logical that producers that are more optimistic about the future are more likely to expand their businesses. This article explores the relationship between producer sentiment and farm growth.

AG ECONOMY BAROMETER

The Purdue University-CME Group *Ag Economy Barometer* index is computed each month to gauge producer sentiment for a group of U.S. agricultural producers (Mintert and Langemeier, 2023). The barometer's index for February 2023 was 125 indicating that average sentiment was more positive than during the index's base period (i.e., fourth quarter of 2015 and first quarter of 2016). The *Ag Economy Barometer* index is sub-divided into two sub-indices: the *Index of Current Conditions* and *Index of Future Expectations*. Index values for February 2023 for the two sub-indices were 134 for the *Index of Current Conditions* and 121 for



the Index of Future Expectations.

In February 2023, the producer sentiment survey also posed a question pertaining to farm growth. Specifically, survey respondents were asked what annual growth rate they expected for their farm over the next five years. The results for this question can be found in figure 1. Approximately 50% of the survey respondents said their farm either had "no plans to grow" (33%) or "plan to exit or retire" (16%). Respondents who expect their farm to grow "less than 5% annually" or "from 5 to 10% annually" represented 19% and 22% of the total respondents, respectively. The percentage of respondents who expect their farm to grow 10% or more represented approximately 10% of the total respondents. To provide some context to these percentages a 5% (10%) annual growth rate would result in a doubling of farm size in 14 (7) years.

Given that most of the survey respondents are full-

Table 1. Differences in Sentiment by Farm Growth (G) Categories Index G<0 G = 0G > 0 Number of Farms 132 64 204 Index of Current Conditions 116 115 150 Index of Future Expectations 107 126 130 Ag Economy Barometer Index 110 122 136

Source: Purdue Center for Commercial Agriculture, Producer Survey, February 2023

time farmers, it may be surprising that approximately 50% of the respondents have no plans to expand their operations. It is important to remember, however, that at any given time, there are farms that do not have a successor identified. These farms are often starting to wind down their operations and have little or no interest in expansion. Barometer surveys have included the farm growth question annually starting in February 2016. Interestingly, the percentage of farms with no plans to expand has stayed relatively constant over the years. For example, in 2019, the year before COVID-19, 50% of the survey respondents expressed no plans to expand their farms (38% had no plans to grow and 12% planned to reduce their farm size).

DIFFERENCES IN PRODUCER **SENTIMENT AMONG FARM GROWTH CATEGORIES**

What explains the wide differences in farm growth prospects among respondents to the Ag Economy Barometer survey? We don't have information pertaining to each survey respondent's farm size or financial metrics. However, we can create a producer sentiment score for each individual farm. Table 1 contains the Ag Economy Barometer index calculations, as well as the two sub-indices, for respondents falling into three farm growth categories. The first category is composed of respondents who expect to reduce their farm's size, the second category is composed of respondents who expect their farm's size to remain unchanged, and the third category by respondents who expect to expand their operations in the next five years.

Examining table 1, it is clear that the farm operations who expect to expand are much more optimistic than operators who expect their farm's size to hold steady or decline. The green numbers in table 1 indicate that the numbers in a specific row are statistically different that the red numbers in each line. Compared to an

average index of 125, the Ag Economy Barometer index calculation for the group expecting to expand their operations was 136. This index was not statistically higher than the index computed for the group planning to stay the same size. The Index of Future Expectations calculation was similar for farms that expect to remain the same size and farms that plan on expanding. However, the Index of Current Conditions computed for farms that plan on expanding was substantially higher than indices computed for the other two farm groups. Why was this the case? We don't have a clear-cut answer. One possibility is that, in addition to perhaps not having identified a successor, farm operations that plan on reducing or staying the same size may not be able to expand due to liquidity or solvency issues. Or perhaps they simply think that the next five years will not provide a good environment to expand their operations.

FINAL COMMENTS

Growth enables farm businesses to increase revenue and earnings, take advantage of economies of size, and to more fully utilize the skills of current and future employees. Reasons why some farms plan to grow while others plan to hold farm size constant or even plan to reduce their operation's size are varied. One possibility is that farm operators with plans to grow are more optimistic about the industry and their own farm's prospects. This article briefly explored the relationship between producer sentiment and farm growth based on results from the Purdue University - CME Group Ag Economy Barometer February 2023 survey. Farm operators who expect to grow in the next five years are relatively more optimistic about both current and future prospects for production agriculture than operators who expect their farm's size to remain unchanged or decline.

RESOURCE HIGHLIGHT

BENCHMARKING CROP MACHINERY COST & INVFSTMFNT

Michael Langemeier

The continued increase in size of tractors, combines, and other machinery has enabled farms to operate more acres and reduce labor use per acre. However, this increase in machinery size also makes it increasingly important to evaluate the efficient use of machinery. This article will discuss machinery cost and investment benchmarks, and illustrate the computation of crop machinery cost and investment for a case farm in west central Indiana.

KEY MACHINERY BENCHMARKS

Crop machinery cost per acre is computed by summing depreciation, interest, property taxes, insurance, leasing, repairs, fuel and lubricants, and custom hire and rental expense; and dividing the resulting figure by crop acres or harvested acres. Interest should include both cash interest paid and an opportunity charge on machinery and equipment that is owned. In regions where double-cropping predominates, using harvested acres is preferable.

Crop machinery investment per acre is computed by dividing total crop machinery investment (i.e., investment in tractors, combines, and other machinery) by crop acres or harvested acres. Again, in regions where double-cropping is prevalent, using harvested acres gives a more accurate depiction of machinery investment.

Machinery investment per acre typically declines with farm size. Thus, it is important for farms to compare machinery investment per acre with similarly sized farms and to examine the trend in this benchmark for a particular farm. A farm with relatively high

machinery investment per acre needs to determine whether this high value is a problem. If the farm faces serious labor or timeliness constraints, their machinery investment per acre may be relatively high. However, if their machinery investment per acre is high due to the purchase of assets used to mitigate income tax obligations or for some other reason, the farm needs to think about their long-term strategy with respect to purchasing machinery and equipment.

CASE FARM ILLUSTRATION

Crop machinery cost and investment per acre for a case farm in west central Indiana is presented in table 1. This case farm has 1500 acres of full-season corn and 1500 acres of full-season soybeans. If this farm had livestock, the relevant machinery cost and investment figures for the livestock operation would need to be excluded from total machinery cost and investment to compute the values in table 1. Machinery costs include depreciation, interest, insurance, repairs, and fuel and lubricant. This farm does not custom hire or lease machinery so the values for these items are zero in table 1. Interest was computed using information pertaining to the farm's term loan for machinery. Though it is often preferably to include opportunity interest cost in the computation of crop machinery cost, using the actual interest expense is more comparable to the benchmarks discussed below. In summary, the crop machinery cost per acre for the case farm was \$130.

Using the Center for Farm Financial Management's FINBIN database, figure 1 illustrates the trend in

machinery cost per acre from 2013 to 2022 for farms with corn or soybeans. Specifically, the chart illustrates crop machinery cost for corn, soybeans, and the average for the two crops. Discussion will focus on the average for the two crops. Average crop machinery cost per acre increased approximately 21 percent from 2021 to 2022. In 2022, the average machinery cost per acre for the two crops was \$148. In comparison, the machinery cost for the case farm is relatively low.

To obtain some feel for how machinery cost varies among farms, we compared the average machinery cost per acre for corn farms in 2022 with the averages for corn farms in the low 20 percent group with respect to net return per acre and for corn farms in the high 20 percent group with respect to net return per acre. The average crop machinery cost per acre for corn was \$182. The low profit group had an average machinery cost per acre of \$209 or 15.2 percent higher than the average machinery cost. In contrast, the high profit group had an average crop machinery cost of \$156 per acre or 14.4 percent lower than the average machinery cost.

Crop machinery investment per acre for the case farm was \$483. Figure 2 presents crop machinery investment per acre for farms with data included in

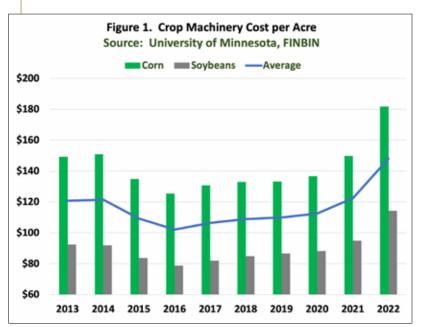


Table 1. Crop Machinery Cost and Investment Estimates for White County Farms. Item 2022 Machinery Cost per Acre Depreciation 68.27 Interest 13.00 Property Taxes 0.00 2.42 Insurance Leasing Expense 0.00 Repairs 20.00 Fuel and Lubricant 26.50 Custom Hire and Rental Expense 0.00 Total \$130.18 Machinery Investment per Acre Self-Propelled Equipment 265.10 Machinery 218.37

Total

the FINBIN database. Unlike the crop machinery cost computations which focused on corn and soybean production, the crop machinery investment computations incorporated into figure 2 were for all farms categorized as crop farms. Average crop machinery investment per acre increased from \$573

in 2021 to \$695 in 2022, or 21.3 percent. The crop machinery investment per acre for the case farm is relatively low compared to the FINBIN average for 2022 of \$695 per acre.

\$483.47

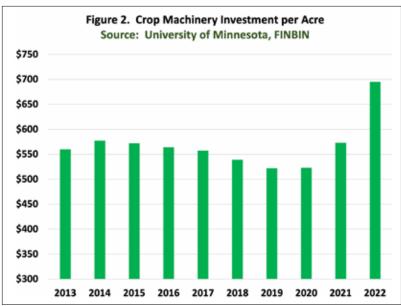
Potential variability in crop machinery investment per acre was examined by comparing average machinery investment per acre to averages for farms in the low and high 20 percent groups in terms of net farm income. Again, data from 2022 were utilized. The average crop machinery investment per acre was \$695. Farms in the low 20 percent group had an average machinery investment per acre of \$863 or 24.2 percent higher than the average machinery investment. In contrast, farms in the high 20 percent profit group had an average machinery investment per acre of \$650 or 6.5 percent lower than the average machinery investment. In addition to examining machinery investment per acre for the two profit groups, we

examined machinery investment benchmarks for crop farms using 2022 data. Farms in the 30th percentile, meaning that 30 percent of the farms had values higher than this group, had an average machinery investment per acre of \$1,011, while farms in the 70th percentile had an average machinery investment per acre of \$457. When interpreting the average for the 70th percentile, a word of caution is in order. Farms with very low crop machinery investment values tend to have older machinery that is largely depreciated out. Whether these farms can continue operating with this machinery for several more years is an open question.

Finally, it is important to note that the case farm has strong labor benchmarks. Gross revenue per worker is approximately \$1,500,000 for the case farm. In addition, the ratio of total labor expense (hired labor plus family and operator labor) as a percentage of value of farm production is only 4.9 percent. Given the potential tradeoff between labor cost and machinery cost, it is often important to compute both labor and machinery benchmarks.

CONCLUSIONS

This article defined, described, and illustrated crop machinery cost and investment benchmarks using a case farm in west central Indiana. The case farm had values that were below the specified benchmarks or targets. In order to more fully gauge farm efficiency, it would be helpful to also compare the farm's profitability and financial efficiency ratios to farms of the same type and similar in size.



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