Women in Ag Leadership Conference to Be Held in Ames

By: Madeline Schultz, ISU Program Manager Women in Ag & Lisa Scarbrough, ISU Women in Agriculture

AMES, Iowa – “Lead Like Someone Left the Gate Open” is the theme of the fifth Annual Iowa State University Extension and Outreach Women in Ag Leadership Conference. The event will be held Nov. 29-30 at the Gateway Hotel and Conference Center in Ames.

The conference begins on Monday afternoon at 12:30 p.m. with campus tours. A three-hour, intensive workshop starts at 3 p.m. followed by dinner and networking. The full-day conference on Tuesday begins at 8:30 a.m. and concludes at 4 p.m. Meals and refreshments are included in the registration cost.

Attendees will have the opportunity to get up close and personal with Iowa’s own world-class agricultural speaker, Jolene Brown. She’ll take conference participants through a special leadership journey with three presentations to help build a solid business foundation, while using personal passion and purpose to motivate and celebrate agrarian roots.

The campus tours offer the chance to experience the turfgrass at Jack Trice Stadium, explore a rooftop greenhouse conservatory, discover the world of plant pathology and entomology, or time-travel with a visit to the 1860 Farm House and 2020 Iowa State Creamery.

A panel session will feature three successful entrepreneurs. From northeast Iowa, Lynn Bolin and her family offer farm stay guests a chance to “sleep with the cows.” Kim Andersen and her husband transitioned to organic production and opened Blueberry Bottom to the community in Washington County. Katie Holtz stepped up to the role of vice president in her family’s innovative PigEasy agribusiness, in western Iowa.
Get the most bang for your buck: time your manure and anhydrous applications well

By: Kristina TeBockhorst, ISU Extension Ag Engineer Field Specialist, Joel DeJong ISU Extension Field Agronomist

With rising fertilizer prices, and concerns about possible shortages, it pays to time our applications of anhydrous ammonia and manure well. When the value is high, the focus on management is even more important.

Anhydrous costs are reported to have risen to $850 or more per ton.

Using typical swine finishing manure nutrient concentrations (50-15-30 pounds N, P₂O₅, and K₂O per one thousand gallons) and fertilizer prices last year, the fertilizer value of manure was around $35 per one thousand gallons. Today, with MAP, Potash, and Ammonia prices that are rising to nearly twice as much as last year, the value of this manure is as high as $65 per one thousand gallons.

As an example, at a common finishing swine manure application rate of 4,500 gallons per acre, that value sums up to $292 per acre. The cost to haul and apply manure will vary but can be around two cents per gallon. In this example, that application will cost you in the ballpark of $90 per acre, still leaving a net value of $202 per acre. That is a lot of potential value that farmers are especially happy to have this year.

But are you getting the most bang for your buck with your manure or anhydrous applications?

Application of liquid manure and anhydrous ammonia should wait until soil temperatures are 50°F and cooling. That usually occurs in early November. Although we recently experienced a cool-down from unseasonably warm temperatures, forecasts aren't indicating that this 50°F goal will occur any earlier than normal. Warmer soils will drive nitrogen conversion and increase the risk of nitrogen loss. The warm weather has kept soil temperatures high across the state, ranging from 60°F in NW
Iowa to over 70°F in SE Iowa on October 10th. Anhydrous and manure applications made in 60-70°F soils are undoubtedly risky and could easily lead to significant losses of nitrogen. For manure, the nitrogen value accounts for upwards of half of that $292 per acre manure fertilizer value.

Keep an eye on your area soil temperatures here.

Is applying anhydrous ammonia or manure when the soil temperature is well above 50°F really a problem? Yes, even with a nitrification inhibitor. Ammonium in the soil does not leach with excess water moving through the soil profile, but nitrate does. Although we seem dry now, that leaching risk, and loss of useable nitrogen, occurs in most springs. The rate that the ammonium from the anhydrous application, or the ammonium in swine manure (about 80% of that total N), moves to the nitrate form of nitrogen does not actually stop until we have soil temperatures at the freezing point. The rate of movement to nitrate at 50°F is about 20% of the maximum rate, still not fully stopped, but greatly reduced. The rate is about 50% of maximum at 60 degrees and jumps to 70% at 65 degrees.

Nitrification, the movement of ammonium to nitrate, is carried out by microbes. Banded anhydrous does kill those microbes and slows the process where it is at a high concentration. However, the recovery of that microbe population and resumption of nitrification occurs faster when the soils are warmer. That would be true for nitrification inhibitors, also. Manure applications do not have the concentrated band of ammonium temporarily slowing the microbial activity.

It makes clear economic sense to delay manure application until the soils are cool in the fall.

Recent ISU research trials (research has since been updated) found a 4-year average of 38 bushel per acre corn yield reduction when manure was applied after soybean harvest early in the fall when soils were still warm, compared to waiting for soils to be 50°F and cooling. With $5 per bushel corn prices and high fertilizer costs, it pays especially well this year to delay your fall application until the soils are cool: potentially in the neighborhood of $190 per acre more in yield and a nitrogen fertilizer cost savings of $142 per acre (again with a 4,500 gallons per acre application rate).

Applying manure in the fall, especially when applied before the soils are cool, creates risk of nitrogen loss. ISU research shows that planting a fall cover crop can reduce nitrogen loss from early fall applied manure, highlighting the importance of using cover crops when application timing is earlier than ideal.

It also makes economic sense to increase the number of gallons applied in the spring, up to a point that is feasible. The same study also found a 28 bushel per acre corn yield benefit to applying in the spring, compared to the late fall application into cool soils. Learn about some new technology for spring manure side-dressing and more on application timing here.

To get the most value out of the phosphorus in the manure, prioritize fields with lower soil test phosphorus for manure application. If you are adding manure to fields with high to excessively high soil test phosphorus, you are not utilizing that manure phosphorus value well (around $64 per acre, in our example).

Lastly, don’t forget about equipment maintenance.

Equipment calibration and maintenance are also critical for getting the most value from your manure nutrients. Research at ISU found that there can be a drastic amount of variation in manure application uniformity across the toolbar due to neglected maintenance issues. Air vents on the manifold can accumulate manure and plug as the manure dries out. Vents should be checked prior to application and cleaned as needed. Eliminating hose loops and fixing crimped hoses will also
help improve uniformity across the toolbar. You can check for issues by putting several hundred gallons of water in the tank and starting the pump with the injectors out of the ground. Flow should be relatively uniform across the injection toolbar. Read more about toolbar uniformity here.

Additional resources:

Fall Fertilizer Nitrogen Application: https://crops.extension.iastate.edu/cropnews/2019/10/fall-fertilizer-nitrogen-application

Application Checkpoint for Fall Anhydrous: https://crops.extension.iastate.edu/encyclopedia/application-checkpoints-fall-ammonia

DNR Manure Application Separation Distances: DNR 113 Separation Distances for Land Application of Manure and DNR 117 High Quality Water Resources.

Manure Timing Impact on Yield: https://crops.extension.iastate.edu/blog/brian-dougherty/early-fall-applied-manure-can-lead-corn-yield-loss

Improving crop yields and water quality with manure management: https://crops.extension.iastate.edu/blog/brian-dougherty/improving-crop-yields-and-water-quality-manure-management

How to Sample Manure for Nutrient Analysis: https://store.extension.iastate.edu/product/5059

Manure Monday: Manure Application and Timing: https://www.youtube.com/watch?v=rKOGYBOfU5I&t=1265s

Calibrating Liquid Tank Manure Applicators: https://store.extension.iastate.edu/product/6499

Distribution of Liquid Manure Application: https://store.extension.iastate.edu/product/14891
Cover Crop and Saturated Buffer Field Day to Be Held Near Walcott Nov. 17

By: Liz Ripley, Iowa Learning Farms and Water Rocks!

AMES, Iowa – Iowa Learning Farms, along with the Iowa Nutrient Research Center, IIHR-Hydroscience and Engineering, Iowa Geological Survey and Partners of Scott County Watersheds will host a cover crop field day on Wednesday, Nov. 17 from 12-2 p.m. at Mike Paustian’s farm near Walcott. The event is free, open to the whole family and includes a complimentary meal.

In 2008 Mike Paustian returned to the family’s heritage farm, which encompasses nearly 1,400 acres and a 1,200 sow farrow-to-finish hog operation. In addition to utilizing no-till and minimum till, the Paustians have added cover crops to hold soil in place while scavenging nutrients from the soil and fall applied manure. Their goal is to build long term soil health and organic matter in their fields and improve water quality. In the past two years, they have increased their use of cereal rye and oats to cover nearly all of their acres.

Taking the next step to reduce nitrate loss from their farm, the Paustians installed a saturated buffer just north of their home in the summer of 2018. Attendees will have the opportunity to hear from Mike and are encouraged to ask questions about their family’s experiences with the saturated buffer, cover crops and more.

The workshop agenda will also include Keith Schilling, state geologist and Iowa Geological Survey director, Matthew Streeter, Iowa Geological Survey assistant research scientist, and Kay Stefanik, Iowa Nutrient Research Center assistant director.

The field day will begin at Paustian Farms, 6520 215th St, Walcott. The workshop is free and open to the whole family, but reservations are suggested to ensure adequate space and food. For reasonable accommodations and to RSVP please contact Liz Ripley at 515-294-5429 or ilf@iastate.edu.

Iowa Learning Farms field days and workshops are supported by the USDA Natural Resources Conservation Service. For more information about Iowa Learning Farms, visit www.iowalearningfarms.org.

Established in 2004, Iowa Learning Farms is building a Culture of Conservation by encouraging adoption of conservation practices. Farmers, researchers and ILF team members are working together to identify and implement the best management practices that improve water quality and soil health while remaining profitable. Partners of Iowa Learning Farms include the Iowa Department of Agriculture and Land Stewardship, Iowa State University Extension and Outreach, Leopold Center for Sustainable Agriculture, USDA Natural Resources Conservation Service, and Iowa Department of Natural Resources (USEPA section 319) and GROWMARK Inc.
Beef Cow Clinic

Clinics include hands-on and classroom sessions to help cattlemen prepare for the upcoming calving season. Sessions will be led by Iowa State Extension and Outreach beef specialists and local veterinarians.

December 1st

Johnson County Fairgrounds, Iowa City 10am - 3pm
- RSVP to Johnson County Extension at 319-337-2145
- Shannon at bielicke@iastate.edu

Jones County Extension/Youth Development Center
Monticello 4:30pm - 9:30pm
- RSVP to Jones County Extension at 319-465-3224
- Shawnee at oswalda@iastate.edu

December 9th

St. Patrick’s Parish Center, Audubon 10am - 3pm
- RSVP to Audubon County Extension at 712-563-4239
- Ann at acarter@iastate.edu

Hansen Ag Student Learning Center, Ames 3pm - 8pm
- RSVP to Story County Extension at 515-337-1601
- Michaela at mvandb@iastate.edu

Topics Include

- Nutrition basics during gestation and early lactation
- Top 5 calving season wrecs and how to avoid them
- Troubleshooting dystocia
- Preparing for the 2022 breeding season
- Record keeping and benchmarking for the cow herd

Each session is limited to 50 attendees, and registration is required to attend. RSVP is requested at least 2 days in advance. Cost of the clinic is $25/person and includes meal.

This institution is an equal opportunity provider. For the full non-discrimination statement or accommodation inquiries, go to www.extension.iastate.edu/diversity/ixxt.
2021 Ag Chemical Dealer Meetings to Provide Timely Updates

By: Brent Pringnitz, ISU Agriculture and Natural Resources Extension

AMES, Iowa – Updates on the latest crop production products and recommendations are the featured topics at two meetings sponsored by Iowa State University Extension and Outreach in Nevada on Dec. 8 and in Coralville on Dec. 15.

These meetings are an opportunity for ag input providers to meet with extension specialists to review current research, discuss new products and learn of new recommendations.

Topics for 2021 include a review of the growing season, corn rootworm management updates and three hands-on sessions that participants will rotate through. The hands-on sessions will feature a discussion on sprayer calibration, pesticide mixing order and pesticide incompatibility, and dry fertilizer applications.

Meetings are approved for Certified Crop Adviser credits (0.5 crop management, 1.0 nutrient management, and 4.0 pest management, which include the optional applicator training session). In addition, the meetings offer Iowa Commercial Pesticide Applicator recertification in categories 1A, 1B, 1C for calendar year 2021. Recertification is included in meeting registration. Attendance at the entire meeting is required for recertification.

Early registration is $70 if received by midnight, Nov. 30 (Nevada) or Dec. 8 (Coralville). Late or on-site registration is $85. Visit www.aep.iastate.edu/acu for program details or to register online. For additional information contact an ISU Extension and Outreach field agronomist hosting the meeting.

Nevada – Dec. 8

Meaghan Anderson, mjanders@iastate.edu, 319-331-0058.
Angie Rieck-Hinz, amrieck@iastate.edu, 515-231-2830.

Mike Witt, witt@iastate.edu, 641-747-2276.

Coralville – Dec. 15

Rebecca Vittetoe, rka8@iastate.edu, 319-653-4811.
Virgil Schmitt, vschmitt@iastate.edu, 563-263-5701.

Clarabell Probasco, caknapp@iastate.edu, 641-664-2730.
Ag Chemical Dealer Update meetings review the lessons of the 2021 growing season and prepare seed, chemical and fertilizer retailers, crop consultants, farm managers and agronomists for the challenges of the 2022 cropping year. Meetings are approved Certified Crop Adviser continuing education credits and commercial pesticide applicator recertification (categories 1A, 1B, 1C and 10) for calendar year 2021. To register or learn more visit [www.eep.iastate.edu/acu](http://www.eep.iastate.edu/acu)

**Nevada**  Tuesday, December 7, 2021  
CNH Industrial Ag Information Center  
23942 590th Ave (Hwy 30 west of Nevada)  
Nevada, Iowa 50201  
Registration 9:00 AM, program 9:30 AM – 4:05 PM

**Extension field agronomists**

Meaghan Anderson  
mjanders@iastate.edu  
(319) 331-0058

Angie Rieck-Hinz  
amrieck@iastate.edu  
(515) 231-2830

Mike Witt  
witt@iastate.edu  
(641) 430-2680

**Program**

Welcome and cropping season review  
Extension field agronomists, Iowa State University Extension and Outreach

Corn rootworm management updates for 2022 and beyond  
Erin Hodgson, professor and extension entomologist, Entomology, Iowa State University

Fungicide label walk-through and sprayer calibration discussion for disease management with fungicide application  
Meaghan Anderson and Virgil Schmitt, extension field agronomists

Pesticide mixing order and incompatibility activity using herbicide application as example  
Mike Witt and Rebecca Vitteto, extension field agronomists

Improving the agronomics and practical application of dry fertilizer  
Ryan Bergman, technical project specialist, Agricultural and Biosystems Engineering. Clarabell Probasco, extension field agronomist; Angie Rieck-Hinz, extension field agronomist

Commercial ag pesticide applicator recertification for 2021 – Categories 1A, 1B, and 1C  
Meaghan Anderson, Virgil Schmitt and Clarabell Probasco, extension field agronomists

*Topics include: update on category 10, IDALS self-service portal, sprayer calibration, maintenance and drift reduction, label updates and recycling pesticide containers and disposal of excess pesticides.*

CCA credits: 0.5 crop management, 4.0 pest management, 1.0 nutrient management

**Coralville**  Wednesday, December 15, 2021  
Radisson Hotel and Conference Center  
1220 1st Ave (at I-80 Exit 242)  
Coralville, Iowa 52241  
Registration 9:00 AM, program 9:30 AM – 4:05 PM

**Extension field agronomists**

Rebecca Vitteto  
rvit@iastate.edu  
(712) 540-3319

Virgil Schmitt  
vschmitt@iastate.edu  
(563) 260-3721

Clarabell Probasco  
ccakapp@iastate.edu  
(641) 664-2780

**IOWA STATE UNIVERSITY**  
Extension and Outreach
<table>
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**TOTAL**

- **$185**

**FEES**

- **$40**
- **$30**

For questions about these meetings, please contact [Contact Information].

To register, please visit [Registration Website].

Registration fees must be received by midnight of the early registration deadline. Registration fees are non-refundable after the early registration deadline.

Please use a separate registration form for each individual.

[Registration Form Link]
2022 Confinement Site Manure Applicator Certification
By: Kristina TeBockhorst, ISU Extension Ag Engineer Field Specialist

Confinement site manure applicators are required to attend two hours of training each year for their three-year license. Applicators who miss training during this three-year cycle will be required to take the remedial exam prior to initiating the next cycle of certification.

Pre-registration is required. No walk-ins allowed.

Southeast Iowa Locations:
Benton 2/2/22 9:30 AM County Extension Office Vinton 319-472-4739
Cedar 2/3/22 9:30 AM County Extension Office, Tipton 563-886-6157
Clinton 1/20/22 1:30 PM County Extension Office, DeWitt 563-652-4923
Davis 1/31/22 1:30 PM County Extension Office, Bloomfield 641-664-2730
Henry 1/11/22 1:30 PM County Extension Office, Mt. Pleasant 319-385-8126
Jefferson 2/1/22 1:30 PM County Extension Office, Fairfield 641-472-4166
Johnson 1/20/22 9:30 AM County Extension Office, Iowa City 319-337-2145
Keokuk 2/1/22 9:30 AM County Extension Office, Sigourney 641-622-2680
Lee 2/8/22 1:30 PM County Extension Office, Donnellson 319-835-5116
Louisa 1/13/22 1:30 PM Louisa County Extension Office, Wapello 319-523-2371
Mahaska 2/2/22 1:30 PM County Extension Office, Oskaloosa 641-673-5841
Muscatine 2/3/22 1:30 PM County Extension Office, Muscatine 563-263-5701
Scott 1/20/22 6:30 PM County Extension Office, Bettendorf 563-359-7577
Tama 2/16/22 6:30 PM Traer Memorial Building, Traer 641-484-2703
Washington 2/15/22 6:30 PM County Extension Office, Washington 319-653-4811

*Dry Manure 2/15/22 1:00 PM County Extension Office, Washington
Wayne 1/24/22 1:30 PM County Extension Office, Corydon 641-872-1755

Confinement site applicator certification program can be found at: https://www.extension.iastate.edu/immag/confinement-site-applicators
Commercial manure service and representative certification program can be found at: https://www.extension.iastate.edu/immag/commercial-manure-applicators
"I always thought that record would stand until it was broken." "There's one word that describes baseball: you never know." "Take it with a grain of salt." "No matter where you go, there you are." "Baseball’s different today, but it isn’t." "I wish I had an answer to that because I’m tired of answering that question." These are all quotes attributed to Yogi Berra. Often called Yogi-isms.

Maybe Mr. Berra would have had a few malapropisms to help explain some recent changes in hog inventories.

Based on producer responses to surveys, USDA’s National Agricultural Statistics Service tallied the Sept. 1, 2021 US swine breeding herd down 2.3% from a year earlier (Table 1). The average of trade guesses before the report was down 1.1%, a 1.2 percentage point difference. Anything plus or minus more than one percentage point from the average of pre-report expectations is commonly considered a surprise.

The 69.162 million head market hog inventory was down 4.1% from last year, a sizeable 2.3 percentage point difference from the average trade guess of down 1.8%.

The June-August 2021 pig crop was down 6.0% from the same quarter in 2020. Analysts on average expected it down 3.4%. Sows farrowing during this period were down 6.6% from 2020, which was 2.9 percentage points below the average of expectations. June-August pigs saved per litter were 11.13, almost dead on with the average trade expectation of 11.10 pigs per litter.

The market hog inventory surprise was in the light weight categories. USDA tallied pigs under 50 pounds down 5.6%, with pigs weighing 50-119 pounds down 6.0%. Pre-report analysts expected both inventories down only 1.7% from Sept. 1, 2020. These pigs will go to slaughter in late 2021 and the first quarter of 2022. Markets reacted as expected. The December 2021 and February 2022 CME Lean Hog futures contracts were limit up the first business day (Monday) after the report. Deferred contracts showed smaller gains. One week after the report, winter contracts were up $8/cwt., spring contracts up $6/cwt., and summer contracts up $4/cwt. But two weeks following the report, prices had settled back to prices similar to one day after the report.

Revisions complicate advance guesses

Some market participants view hogs and pigs estimates as cast in concrete. But inventories are point in time snapshots of continuous production. As time passes, data on slaughter
and exports and imports become available. USDA works backward from actual production to revise what previous inventories would have been needed to generate the actual production. Estimates for the previous four quarters are subject to revision when current estimates are made.

For the September report, USDA reviewed all inventory and pig crop estimates for September 2020 through June 2021 – and made big revisions. That’s no surprise given the shocks and ripple effects of the past 18 months. Such revisions change the denominator for making year-ago and quarter-ago comparisons. Changing those denominators may well explain some of the sizable differences compared with pre-report guesses. Prices two weeks following the report settling back to prices similar to one day after the report suggests the market generally believes the September USDA report.

Separating signal from noise

Trade chatter and media can, at times, highlight extremes - the worst of disease impacts, or the best or worst of economic situations and anything in between. USDA’s independent, unbiased statistical analysis of data obtained from producers helps remove emotionalism and ground everyone. Without USDA estimates, market volatility would likely rise dramatically due to the wide range of opinions. Also without USDA estimates, big players would have a significant advantage over smaller groups, especially individual producers. That’s because big players have significant resources for market reconnaissance.

In the publications I follow, the number of analysts regularly submitting hogs and pigs pre-report expectations ranges between seven and 10. A few more may be doing it privately for their clientele. The public number dropped to between five and seven in 2020 but has bumped back up in 2021. We should all be very appreciative of these analysts. The law of large numbers, in probability and statistics, states that as a sample size grows, its mean gets closer to the average of the whole population. Despite few participants, pre-report estimates provide value. Still, USDA reports are the gold standard. Pre-report expectations have a value directly linked to that gold standard.

State-level numbers

USDA employs a "top-down" approach for hog inventory, pig crop, and sows farrowing estimates. They first determine national estimates based on survey responses, slaughter data, balance sheet numbers, state recommendations, and ratios of current year and quarter to previous year and quarter. USDA then reconciles state estimates to the national number. From a statistical perspective larger sample sizes yield more precise results. Lumping samples from all states generates fairly precise national estimates. From a practical perspective, getting the national number "right" is most important as that is what markets react to. Market analysts rarely forecast state-level inventories. Still, state numbers are very important to the people in each state.

Statisticians assess if the data make biological sense within each state and yet add up to the national level. Unique experiences in 2020 and 2021 made USDA’s already difficult job of reconciling all state data even harder. Patterns seen with national inventories do not necessarily hold for state inventories. Consider some of the extremes in the September report. The Iowa breeding herd inventory was down 8.2% from a year ago. At 900,000 head, this is the smallest Iowa breeding herd in the history of the data (Figure 1). The data series goes back to 1963, when there were over 2 million breeding hogs in Iowa. The Missouri breeding herd was down 10.6% and smallest since September 2016. The North Carolina breeding herd was down 6.9% and the smallest since March 1995. The Minnesota breeding herd remained steady with a year ago but sits at the lowest level...
since June 1987. Other states saw declines but remain somewhat near recent inventory levels.

On the flip side, a few states saw notable growth. The Illinois breeding herd was up 13.8% compared to Sept. 1, 2020. Illinois has its highest breeding herd since June 1995. The Nebraska breeding hog inventory was up 7.0% year over year.

Figure 1. Iowa hogs kept for breeding, quarterly March 1, 1963 - September 1, 2021

Data source: USDA-NASS

Identifying sources of change

Some large inventory changes may be health-related, but that is not the overwhelming source. As a proxy for health related issues, one can look at pigs saved per litter by state. Factors that impact sows, gilts and boars can show up as changes in pigs per litter. In Missouri, for example, the June-August 2021 pigs saved per litter was down 4.5% compared to a year ago. But, in Iowa the pigs saved per litter number was up 0.9%. It was up 1.9% in North Carolina. It was up in most states. Some "depops" and "repops" could be occurring. Capturing just the "depop" or just the "repop" part of it could skew year-to-year inventory change comparisons.

Inventory changes are not just firms getting "in" production or "out" of production either. Several factors likely drive the large year over year swings. Higher feed prices are an obvious influence. Maybe some new farrowing facilities that were in the planning process a year ago or have been under construction were first stocked now. Maybe some producers permanently closed some farrowing operations. Different rates of sow culling and backfilling with gilts can maintain, trim, or grow numbers. The labor market is another contributing factor.

Changes in hogs and pigs inventories are important indicators. Rapid changes make forecasts tenuous. Still, it’s good to get a feel for possible future trends. The next report will confirm some guesses, yet leave others dangling.

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.

<table>
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<tr>
<th>Year-over-Year Change In Commercial Hog Slaughter</th>
<th>ISU Model Price Forecast, IA-MN Base Price, All Purchase Types</th>
<th>CME Futures (9/27/21) Adjusted for IA-MN Producer Sold Weighted Average Carcass Base Price for All Purchase Types Historical Basis</th>
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Cool Stored Grain Now

By: Kristina TeBockhorst, ISU Extension Ag Engineer Field Specialist

Across Iowa, the forecasted average day/night temperatures are between 30 to 40 degrees F in the coming ten days, so the time is right to cool any grain that went into the bin at higher temperatures. Good harvest conditions and warm weather early this fall mean that there is on-farm grain that likely went into storage too warm. Warm grain in most large bins (over 3,000 bushels) will hold its temperature in the center well and will need to be cooled using aeration before winter.

Tips for cooling grain

A good rule of thumb is to cool grain any time the average air temperature is around 10-20 degrees F cooler than the grain temperature. This cooling cycle should be repeated through the fall until the grain temperature is between 30-40 degrees F for winter storage. This storage temperature minimizes insect activity and mold growth in the stored grain. Cooling grain below 30 degrees F has little added benefit and can cause ice to form in the grain. Air humidity makes little difference when cooling grain since the cooling front moves significantly faster than a wetting front but cooling dry grain can be delayed during periods of rain.

A cooling front makes its way up through the grain as aeration fans push air up through a bin, see Figure 1. This means that the grain temperature at the top where the air exits will stay fairly steady until the cooling front gets there. If the aeration fan is turned off too early, the grain at the top of the bin will still be warm. To confirm that the cooling cycle has finished, check for the temperature to drop with a thermometer 6 to 12 inches into the grain at multiple locations at the top of the grain. The hours required for cooling the whole bin can be estimated as 15 divided by the cubic feet per minute of airflow per bushel of grain in the bin (cfm/bu).

Figure 1. The cooling front moves up through the grain when positive pressure fans push air up through the grain, leaving the grain at the top of the bin to be the last to cool. Source: Kristina Tebockhorst.
If you don’t know how much airflow per bushel your fan provides, you can estimate it using the calculator at [https://bbefans.cfans.umn.edu/](https://bbefans.cfans.umn.edu/). Select the crop stored, chose fan(s), and enter bin parameters, then find cfm/bu for the grain depth that you have in the bin. Using the calculator and selecting a 21-ft diameter bin with a full floor filled with shelled corn, we can estimate that a 2-hp Brock 18" axial fan provides 0.55 cfm/bu when filled 20 feet deep and 1.07 cfm/bu when filled 12 feet deep.

For bins set up for drying with at least 1 cfm/bu, a cooling front may pass through the bin in less than one day. Bins with only small aeration fans may require a week or more. For example, if the aeration fan(s) provide 0.15 cfm/bu, then the time for cooling the bin would be 15/0.15 = 100 hours, or about 4 days.

“Core” the bin
It is always a good idea to “core” the grain bin just after filling the bin by removing about half the peak height. This is especially important for overly dry or drought stressed grain, which is more prone to damage and breaking during harvest and handling. Leveling the top of the grain and removing the fines accumulated in the center of the bin will improve aeration and storage quality. Read more on removing the center core of grain [here](https://www.ag.ndsu.edu/publications/crops/caught-in-the-grain). If the top of the grain does not show signs of an inverted cone after coring, beware of grain bridging and do not enter the bin until the bridging has been corrected. Find more information on grain bridging and other grain storage hazards [here](https://www.ag.ndsu.edu/publications/crops/caught-in-the-grain).

Monitor grain this winter
After the final cooling cycle in the fall, remember to cover the fans to prevent warm air, rain, or snow from entering the bottom of the bin. While properly dried and cooled grain should store well through the winter, be sure to check stored grain at least every two weeks through the winter and weekly in the spring. Check for rising carbon dioxide (CO2) levels with a handheld monitor to indicate the onset of spoilage and check for grain warming, especially in common trouble areas like the top of the grain and along the south wall of the bin. Run aeration fans as needed through the winter to keep grain temperatures cool and even. See more grain storage resources [here](https://www.ag.ndsu.edu/publications/crops/caught-in-the-grain) or contact your Extension Ag Engineer.

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**Yard & Garden: Planting and Growing Garlic**

*By: Kristina TeBockhorst, ISU Extension Ag Engineer Field Specialist*

AMES, Iowa -- Garlic (*Allium sativum*) is an important addition to many recipes and one of only a very few vegetables grown in Iowa that are started in the fall and harvested the following year. Iowa State University Extension and Outreach horticulturists offer tips for planting and caring for these popular edible bulbs.

**What types of garlic should I grow?**

Garlic is distinguished from its other close family members like onions, chives, shallots and leeks, by its flat leaves and clove-like bulbs, which contain several small scales or cloves enclosed in a white or purplish parchment-like sheath.

Garlic cultivars are classified as either hardneck or softneck. Hardneck cultivars (*Allium sativum* var. *ophioscorodon*) produce cloves that surround the base of a hard flower stalk. They grow well in Iowa, but do not store as well as softneck cultivars. Hardneck cultivars are divided into three common types, Rocambole (6-11 cloves; twisted scapes), Purple Stripe (8-12 cloves), and Porcelain (4 large symmetric cloves). Suitable cultivars for Iowa gardens include ‘Asian Tempest’, ‘German Red’, ‘Merrifield Rocambole’, ‘Music’, and ‘Spanish Roja Rocambole’.

Softneck cultivars (*Allium sativum* var. *sativum*) look more like the garlic bulbs we see in the gro-
cere stores. While many perform better in warmer climates, there are some softneck cultivars that are suitable for Iowa’s colder temperatures. They usually do not grow a flower stalk. Softneck cultivars are generally more productive and easier to store than hardneck cultivars. Softneck cultivars suitable for Iowa gardens include ‘Inchellium Red’, ‘New York White’, and ‘Susanville’.

When and where should I plant garlic?
Grow garlic in well-drained, fertile soils that are high in organic matter. Amend heavy clay soils with compost or well-rotted manure before planting to prevent misshapen bulbs. Garlic does not grow well or reliably from seed. Plant cloves obtained from garden centers or mail-order companies in fall (October to early November). Do not plant garlic cloves purchased from grocery stores as these are usually softneck cultivars from warmer regions that are not well adapted to Iowa’s climate.

Plant large cloves 1 to 1.5 inches deep with the pointed side up, 3 to 5 inches apart within rows that are spaced 18 to 24 inches apart. Start with large cloves, as they produce larger bulbs. Fall-planted garlic should be mulched in November with a 4- to 6-inch-layer of weed-seed-free straw to help prevent winter injury. In early spring, move the straw to between the rows to allow the garlic foliage to emerge.

How do I grow and care for garlic?
Garlic requires more fertilizer than many vegetables. Apply and incorporate 1 to 2 pounds of an all-purpose garden fertilizer, such as 10-10-10, per 100 square feet of garden area prior to planting. Lightly incorporate one additional pound per 100-foot row of the all-purpose garden fertilizer in a band 4 inches to the side of the developing plants 3 to 4 weeks after plants emerge in the spring.

Garlic requires 1 inch of water each week. Irrigate garlic once a week during dry weather. Stop irrigating in late July to allow the foliage to die down prior to harvest. This also helps reduce disease spread and staining of the paper covering on the bulb.

Garlic has a shallow root system. Control weeds with shallow cultivation or by applying a mulch, such as straw or grass clippings, between rows. Mulch will also help to conserve soil moisture.

When and how do I harvest, dry, and store garlic?
Harvest garlic when the foliage begins to dry. In Iowa, garlic is usually harvested in July or August. Carefully dig the bulbs with a garden fork or shovel.

Dry garlic in a warm, dry, well-ventilated location. Place the garlic on an elevated wire screen or slotted tray to promote drying. When the tops have dried, cut off the dry foliage 1 inch above the bulbs. Also, trim off the roots and brush off any loose soil. Place the bulbs in a mesh bag or open crate and store in a cool (32 to 40 F), dry (65-70% relative humidity) area. Garlic can be stored for three to six months if properly dried and stored. An alternate way to store garlic is to braid the foliage together immediately after harvest, dry, and then hang the braided garlic in a cool, dry location.

What are garlic scapes and what should I do with them?
Hardneck cultivars of garlic will produce a scape or flower stalk from the center of the leaves in mid- to late-May. Removing the scape is advised, as it will help the bulb grow larger because the plant will put energy into bulb production rather than flower and seed production.

Harvest garlic scapes when they are immature, are fully extended above the leaves, and have begun to curl but before the stalk straightens and the bulbous end opens to reveal flower buds. Cut the stalk off as low as you can without cutting off any leaves. Young scapes can be used in cooking to provide mild garlic flavor when chopped and added to eggs, salads, stir-fries, or pickles or to make pesto. They are also attractive additions to floral arrangements.
Iowa Organic Conference is Nov. 28-29 in Iowa City

IOWA CITY, Iowa – The 21st annual Iowa Organic Conference will be held Nov. 28-29, at the University of Iowa, in Iowa City. Producers and experts from across the country will share tips for transitioning into organic production and methods to enhance organic operations.

The conference is a joint effort between Iowa State University and the University of Iowa.

Jessica Shade, chief scientist at The Organic Center, will deliver the keynote called “Resisting Climate Change with Organic Agriculture.”

The conference begins at 2 p.m. Sunday, Nov. 28, with vendor set-up in the Main Lounge of the Iowa Memorial Union and on-site registration followed by a reception at 6 p.m. featuring local and organic food and drinks in the IMU Second Floor Ballroom.

The reception and conference lunch on Nov. 29 will highlight local and organic produce, meats and dairy products assembled into a gourmet meal by Barry Greenberg, executive chef at the University of Iowa, with help from his team.

Following Shade’s keynote at 8 a.m. Monday, the breakout sessions start at 10:30 a.m and include information on crop production and marketing, food safety, transitioning into organic farming, weed management, organic crop and livestock production, and carbon markets for farmers.

Keeping with the theme of “Save the Planet Through Organics: Managing Climate Change with Organic Practices,” the conference will have sessions on environmental and social impacts of organic food production and farming.

“The Iowa Organic Conference is the largest university-sponsored organic conference in the country,” said Kathleen Delate, professor and extension organic specialist in horticulture and agronomy at Iowa State. “Despite the challenges of wet weather early in the season and drought in many locations in July and August, organic farmers are anticipating successful organic yields with organic soybean prices currently averaging $32 per bushel and organic corn at $9.22 per bushel.”

Conference registration is available online and is $100 until Nov. 16, and $120 thereafter.

Hotel rooms are available at the Iowa House Hotel for Nov. 28. Guests can access room reservations online by entering group #112821, or call the hotel at 319-335-3513 and mention the Iowa Organic Conference.

For additional conference information and directions, visit the 2021 Iowa Organic Conference webpage or contact Delate at kdelate@iastate.edu or 515-294-5116.
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