

COSHOCTON COUNTY AGRICULTURE & NATURAL RESOURCES

Hello Coshocton County! It is great to see our temperatures warming up especially for the chilly start to this week on Sunday morning. Besides the time change, there are more and more signs that spring is right around the corner.

Today, youth in the 2022 class of Coshocton County Youth Leadership got to explore the sights, sounds and smells of agriculture. Thanks to Fender's Fish Hatchery, Daugherty Farms, and Lapp Farms for hosting stops during the day. It was a beautiful day for the youth to learn about agriculture and to try their hand at driving a tractor.

There has been discussion about spring wheat – so I included an article from Dr. Laura Lindsey and found an article from Michigan State from a year ago.

I hope each of you have a great and safe week! See you next Tuesday at the National Ag Day Lunch!

Sincerely,

David L. Marrison

Coshocton County OSU Extension ANR Educator

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March 16 (Edition #138)

Weather Update: March is a Time for Transition

Ohio Case Illustrates the Risk of Leaving Farmland to Co-Owners

LLCs for Farm Machinery

Is Spring Wheat an Option for Ohio Farmers?

MSU Spring Wheat Variety and Agronomy Trials

Applying MAP and DAP at Corn Sidedress
Reading Your Feed and Forage Analysis Reports

Collect Soil Samples for SCN in Spring
Ukraine-Russia Conflict and the Implications for Cattle Markets

Virtual Pastures for Profit Program

April 2022 Beef Quality Assurance Re-Certification Training

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THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL,
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Weather Update: March is a Time for Transition

By: Aaron Wilson

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2022-06/weather-update-march-time-transition>

Meteorological winter (Dec-Feb) has ended. Looking back, it was the 26th warmest and 16th wettest winter on record for Ohio since 1895. After a very warm December, January and February were a bit on the cool side. A very active late winter pattern brought frequent, moisture-rich storm systems across Ohio, with upwards of 6-8 inches of liquid-equivalent precipitation (snow and rain) falling during February along the Cincinnati to Columbus corridor (Figure 1). This secured February 2022 as the 6th wettest February on record, with differences compared to the long-term average (1991-2020) running at least 2-4 inches above normal for much of the state.

March 2022 has maintained an active weather pattern with large swings in temperatures and plenty of moisture. After highs reached well into the 70s during the weekend of March 5th, this past weekend featured a snowstorm that dropped up to 9 inches of snow across Vinton County, with a large swath of 3-6 inches of snow along and southeast of about I-71. Precipitation is running well above average across the northern Miami Valley, Akron-Canton region, and the far southeast, while drier areas are present across the northwest. Overall, daily average 2- and 4-inch soil temperatures are running in the low to mid 30s with saturated conditions across the state, and rivers and streams are running above normal for this time of year.

Forecast

Except for a light shower possible in the western counties on Tuesday, much of this week will be dominated by high pressure and a return flow out of the south. This will bring a strong push of warmer air, as temperatures slowly climb above normal. Highs in the 50s and 60s are expected statewide on Tuesday and Wednesday, with 60s and 70s on Thursday ahead of our next cold front. This front will push through with rain showers on Friday and early Saturday, before improving conditions take over for the rest of the weekend. The [Weather Prediction Center](#) is currently predicting 0.25-0.75" inches of liquid-equivalent precipitation over the next 7 days (Figure 2).

The [Climate Prediction Center's](#) 6–10-day outlook for the period of March 20 - 24, 2022 and the [16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center](#) indicate that temperatures are likely to be above average for the period with wetter than average conditions (Figure 3). Climate averages for this period include a high temperature range of 47-53°F, a low temperature range of 29-34°F, and average liquid-

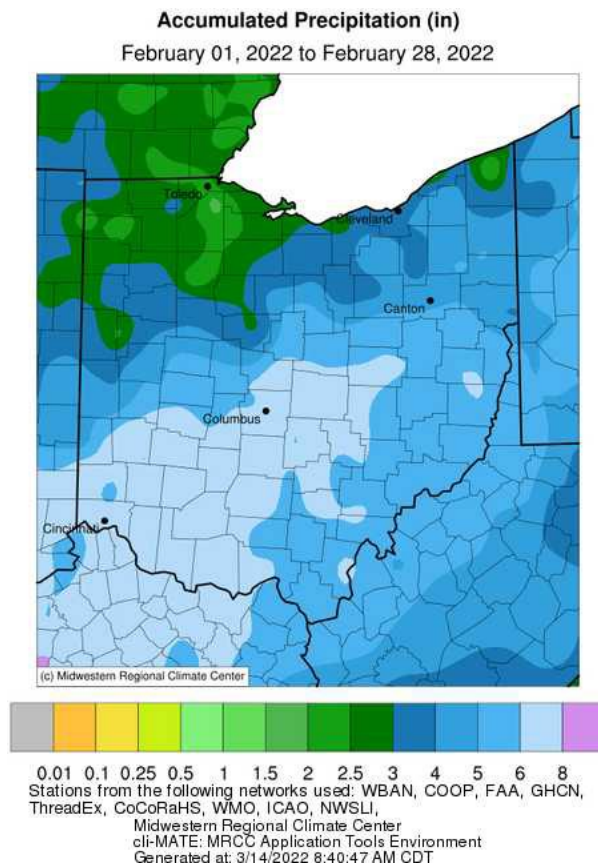
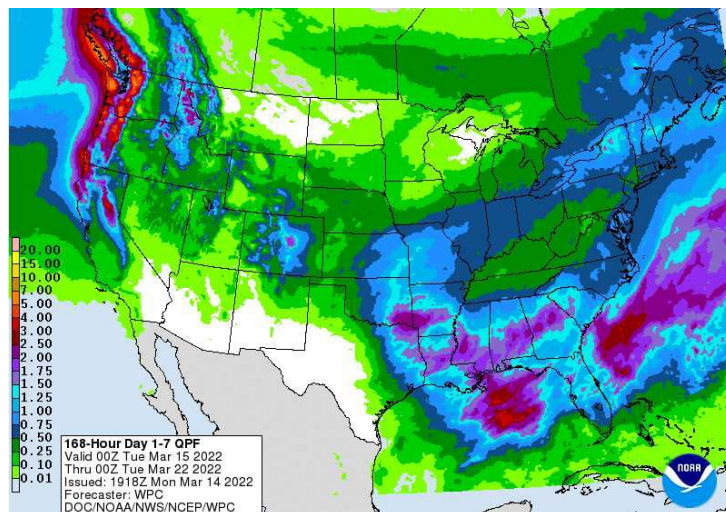


Figure 1). Accumulated precipitation for February 2022. Figure courtesy of the Midwestern Regional Climate Center (<https://mrcc.purdue.edu/>).

Figure 2). Precipitation forecast from the Weather Prediction Center for 8pm Monday Mar 14 – 8pm Monday Mar 21.



equivalent precipitation of 0.50-1.0 inch.

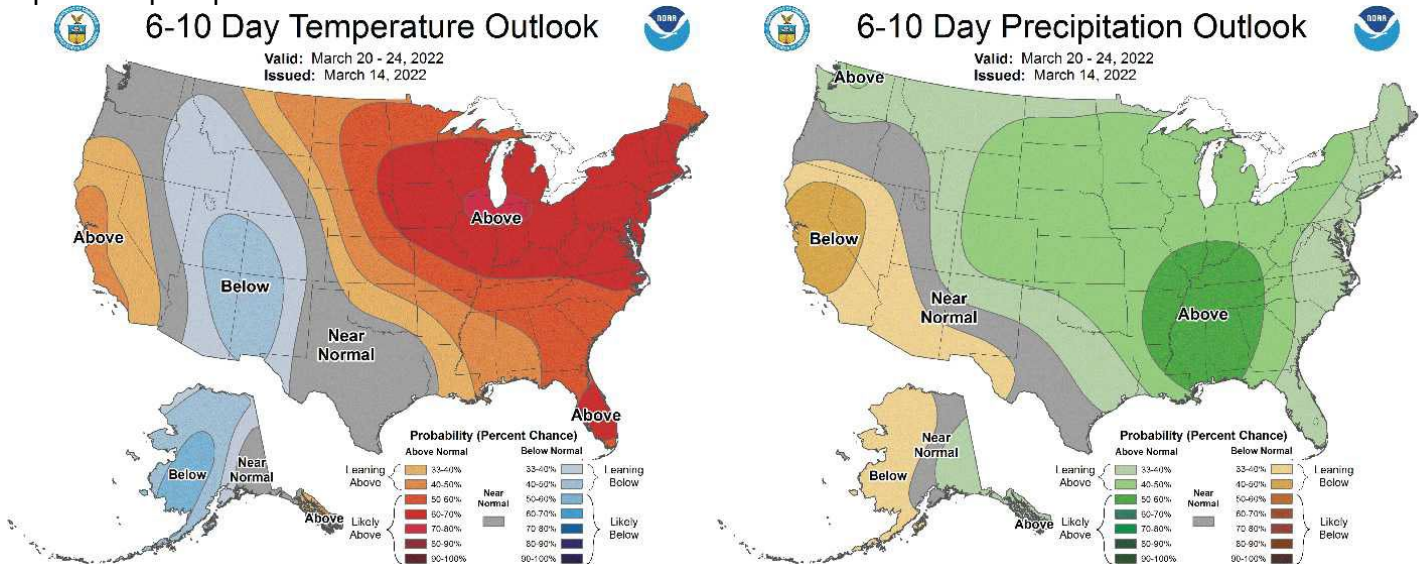


Figure 3) Climate Prediction Center 6-10 Day Outlook valid for March 20 -24, 2022, for left) temperatures and right) precipitation. Colors represent the probability of below, normal, or above normal conditions.

For an extended look at the upcoming spring season, check out the latest Agronomy and Farm Management Podcast on Wednesday March 16, 2022 by going to go.osu.edu/AFM or podcast.osu.edu/agronomy.

Ohio Case Illustrates the Risk of Leaving Farmland to Co-Owners

By: Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law Thursday, March 10th, 2022

Source: <https://farmoffice.osu.edu/blog/thu-03102022-1221pm/ohio-case-illustrates-risk-leaving-farmland-co-owners>

In farm estate and transition planning, we caution against leaving farmland to multiple heirs as co-owners on the deed to the property. That's because Ohio law allows any co-owner of property to seek "partition," a legal action asking the court to either sell the property and divide sale proceeds among the co-owners or, in some cases, to physically divide the property between co-owners. If the goal of a farm family is to keep property in the family, co-ownership and partition rights put that goal at risk. A recent case from the Ohio Court of Appeals illustrates how partition can force the unwilling sale of property from a co-owner of the property.

The recent court case didn't involve farmland, but concerned a home and four acres of land owned jointly by an unmarried couple, each on the deed to the property as co-owners with rights of survivorship. The couple separated and one remained in the home, but the two could not agree upon how to resolve their interests in the property. That led to a court case in which one co-owner asked the court to declare that the other had no remaining interest in the property. The other co-owner disagreed and filed a partition claim asking the court to sell the property and divide sale proceeds according to each person's property interest. The trial court determined that each co-owner did have ownership interests in the property and ordered the property to be sold according to the partition law.

The trial court granted each party the right to purchase the property within 14 days before it would be sold, but neither exercised that right. After an appraisal, the court ordered the property sold and also ordered payment of the outstanding mortgage. That left the court with the challenge of determining how to divide the remaining sale proceeds according to each party's interests in the property. A complicated analysis of payments, credit card debts, a home equity loan, rental value, and improvements to the property resulted in a final determination that granted one co-owner more of the proceeds than the other.

Both parties appealed the division of proceeds to the Twelfth District Court of Appeals, unfortunately adding more cost and consternation to resolving the co-ownership problem. The court of appeals noted that Ohio law grants a court the duty and discretion to apply broad "equitable" principles of fairness when determining how to

divide property interests among co-owners in a partition proceeding. A review of the trial court's division of the proceeds led the appeals court to affirm the lower court's holding as "equitable," ending the three-and-a-half-year legal battle.

Ohio's partition statute itself provides a warning of the risk of property co-ownership. It states in R.C. 5307.01 that co-owners of land "may be compelled to make or suffer partition..." While the purpose of partition is to allow a co-owner to obtain the value of their property interests, it can certainly force others to "suffer." If a co-owner can't buy out another co-owner, the power of partition can force the loss of farm property. As a result, family land can leave the family and a farming heir can lose land that was part of the farming operation. That's most likely not the outcome parents or grandparents expected when they left their farmland to heirs as co-owners.

Fortunately, legal strategies can avoid the risk of partition. For example, placing the land in an LLC removes partition rights completely, as the land is no longer in a co-ownership situation—the LLC is the single owner of the land. The heirs could have ownership interests in the LLC instead of in the land, so heirs could still receive benefits from the land. The LLC Operating Agreement could contain rules about if and how land could be sold out of the LLC, and could ensure terms that would allow other LLC members to buy out another member's ownership interests. An agricultural attorney can devise this and other legal strategies to ensure that partition isn't a risk to farmland or farm heirs.

[Read the case of Redding v. Cantrell, 2022-Ohio-567.](#)

LLCs for Farm Machinery

By: Robert Moore, Attorney, OSU Agricultural & Resource Law Program

Source: <https://farmoffice.osu.edu/blog/wed-03162022-1201pm/llcs-farm-machinery-not-liability-barrier-you-might-think>

A common business strategy for farming operations is to place their machinery in a separate, stand-alone LLC. The idea behind this strategy is that by putting the high-liability machinery in its own LLC the other farm assets are protected. Unfortunately, the liability protection of a machinery LLC is sometimes overstated and may not provide as much protection as intended.

The compromised liability protection of a machinery LLC is not due to a defect in LLCs, but rather it is a result of who is operating the machinery. Typically, the persons operating the machinery are the owners or employees of the farming operation. Many liability incidents involving farm machinery are the result of operator error which pulls the liability back to the farming operation.



Consider the following example. XYZ Farms is a grain operation. To mitigate the liability of having large machinery traveling on roadways, XYZ Farms establishes Machinery LLC and transfers all machinery to the LLC. An employee of XYZ Farms causes an accident while driving machinery on a roadway. Because employers are liable for the actions of employees, XYZ Farms is liable for the accident even though the machinery was held in Machinery LLC.

A machinery LLC does provide some liability protection. If the liability incident is caused solely by an issue with the machine and not the operator, the LLC may prevent liability from transferring to other assets. Again, most accidents are caused by operator error so relying on this liability protection is planning against the odds. As seen in the example, machinery LLCs do not completely insulate owners and other assets from liability. In fact, no entity used in a farming operation is guaranteed to prevent liability exposure for the owner. Therefore, liability insurance should always be the primary liability management plan for farm operations. Business entities should be used as the backup plan if liability insurance fails to cover liability exposure.

Machinery LLCs do have other beneficial uses. One of the more common uses is to consolidate various machinery ownership among family members. Having one entity own, buy, and sell all machinery is often a simpler plan than multi-ownership. For example:

Mom and Dad, Son, and Daughter each own some machinery. Each time they need to buy a new piece of equipment, it is a challenge to determine how the trade-in is handled and who should be the new owner. Instead, they establish a machinery LLC and put all their machinery in the LLC. They each receive ownership in the LLC in proportion to the ownership in the machinery. For all future purchases, the LLC provides the trade-in and buys the new machine.

The liability protection provided by machinery LLCs may not be as thorough as sometimes expected but they can still be a valuable component of a business structure plan. They do provide some liability protection and are useful in other ways such as consolidating ownership. Before establishing a machinery LLC, be sure to have a thorough discussion with legal counsel to fully understand it's benefits and limitations.

Is Spring Wheat an Option for Ohio Farmers?

By: Dr. Laura Lindsey

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2022-06/spring-wheat-option-ohio-farmers>

Is spring wheat an option for Ohio farmers? Yes, we can grow spring wheat in Ohio, but spring wheat yield will be significantly lower than winter wheat yield.

Last year, in collaboration with University of Wisconsin-Madison, we participated in a small grain resiliency field trial located at the Northwest Agricultural Research Station in Wood County. The goal was to compare several types of small grains to our local standard of soft red winter wheat. Results are shown in Figure 1. On average, soft red winter wheat yielded 97 bu/acre across eight different varieties. As a comparison, durum (planted in the spring) yielded an average of 44 bu/acre and hard red spring wheat yielded an average of 52 bu/acre. The data below represents one year of data; however, similar observations have been made in previous trials conducted in Ohio.

In small grains, the grain fill period begins at Feekes 10.5.4 (kernels watery ripe) and ends at Feekes 11.3 (kernels hard, but dividable with thumbnail). Longer grain fill periods are associated with higher yields. For all four winter wheats (soft red, soft white, hard red, and hard white), the grain fill period was between June 3 and June 30, for a total of 27 days long (Figure

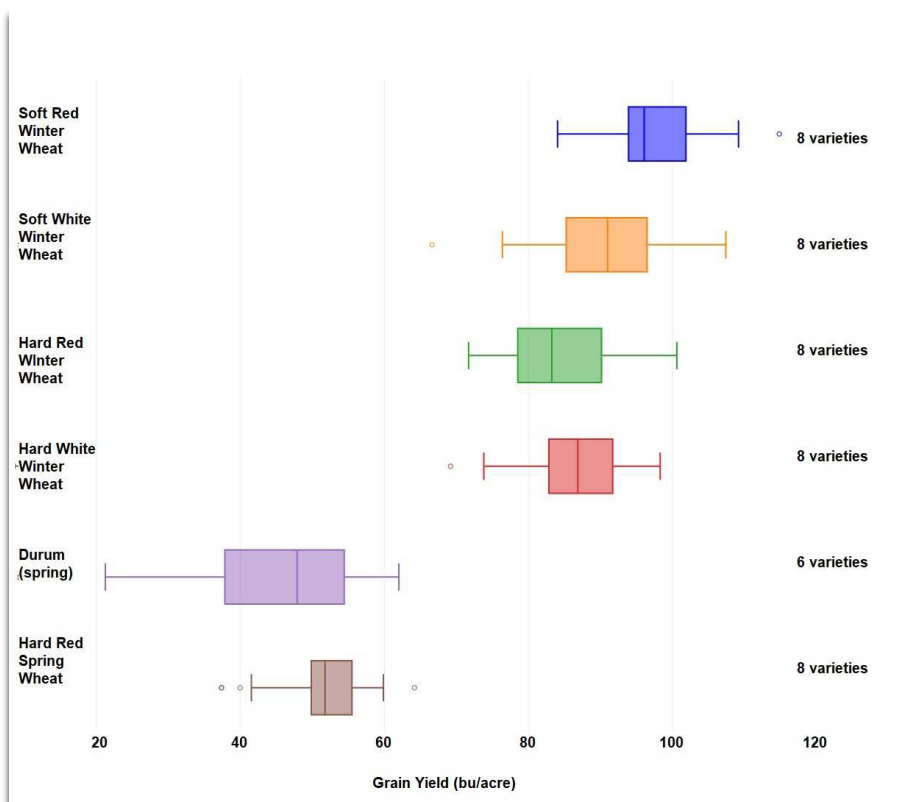


Figure 1. Box-and-whiskers plot showing minimum, 25th percentile, 50th percentile, 75th percentile, and maximum wheat grain yield. (Outliers are shown as a dot.)

2). However, the grain fill period was only 13 days for the hard red spring wheat (between June 17-June 30) and only 8 days (between June 22 and June 30) for the durum wheat. Although, our winter wheat was planted on September 25, 2021 and the spring wheat was planted on April 5, 2021, all wheat reached maturity at the same time and were harvested on the same date. Thus, the higher yield of winter wheat is likely due in part to the longer grain fill period.

In addition to yield, there are other factors to consider:

1. Do you have a place to sell spring wheat? Is there a market for spring wheat?
2. Can you meet grain quality requirements? Soft red winter wheat and white wheat tend to have low protein (8.5 to 10.5%). Hard red winter wheat has medium to high protein

(10.0 to 13.0%) while durum and hard red spring wheat have high protein (10 to 15.0%). For more information on the various wheat classes and requirements, see: <https://www.uswheat.org/working-with-buyers/wheat-classes/>

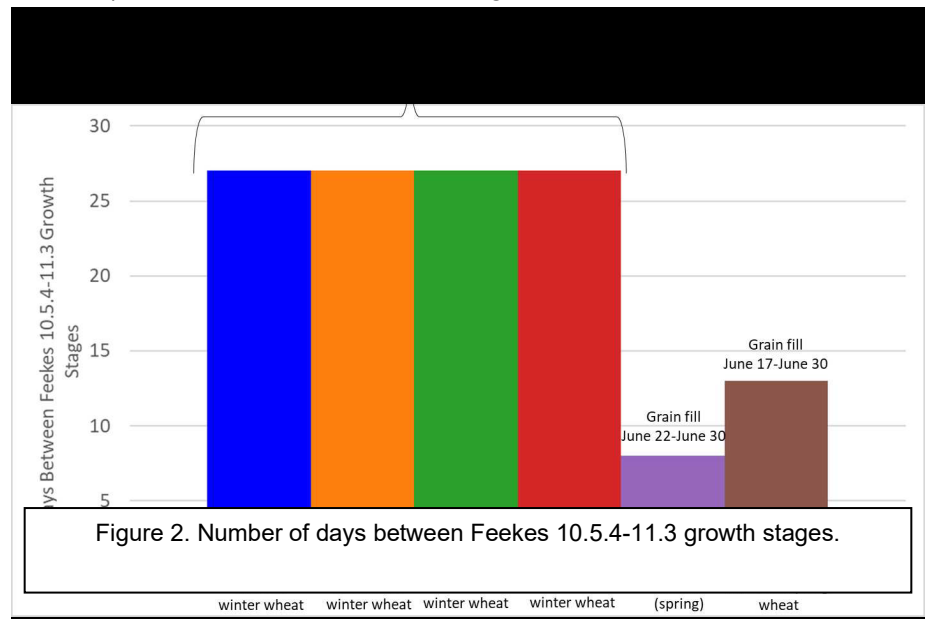


Figure 2. Number of days between Feekes 10.5-11.3 growth stages.

Although wheat prices are high, spring wheat is probably not the best option in 2022 due to low yields and uncertainty surrounding selling the grain and quality. However, we will continue to look at these various wheat classes this year as opportunities may arise in the state. If interested in wheat, the best option would be to plant soybean this year followed by winter wheat planting in the fall.

MSU Spring Wheat Variety & Agronomy Trials

by: [Eric Olson](#) and [Dennis Pennington](#), Michigan State University, Department of Plant, Soil and Microbial Sciences

Originally Published on January 22, 2020

Source: <https://www.canr.msu.edu/news/spring-wheat-variety-and-agronomy-trials>

Michigan farmers have traditionally planted little to no spring wheat. However, with recurring weather patterns, including this winter, hampering planting and survival of winter wheat acreage, there is renewed interest in evaluating the potential of spring wheat lines here. If you are considering growing spring wheat, there are several things to consider including market access, seed sourcing and yield potential.



Photo by Ashley McFarland

First step: Evaluate access to a market

Before you even consider planting spring wheat, contact your local elevator or delivery location to verify if they will take spring wheat and, if so, what kind. There are several classes of spring wheat: durum, hard red and soft white. We have not tested hard red spring wheats in Michigan, and we know durum wheats are not well suited for Michigan. So, thinking about Michigan's milling industry, it makes sense to focus on soft white spring varieties. Milling and baking quality of spring wheat will be important factors in determining market access and salability of the crop at local elevators. Again, before you order spring wheat seed, make sure you have a market commitment for the grain.

Next: Consider yield upside

Another key consideration when thinking about planting spring wheat is its yield potential, which can be significantly different than winter wheat yields. The Michigan State University Wheat Program has grown soft white spring wheat for four of the past five years; yields were good only one of those years. Spring wheat yields in our trials have ranged from 55-80% of state average winter wheat yields in the same year.

Still, there may be other reasons for growing spring wheat besides yield potential.

- Maintaining crop rotation. Farms that were not able to get all of their intended winter wheat acreage planted may want to plant spring wheat to keep the crop rotation in place.
- Manure spreading site. Spring wheat may also provide a place to spread manure in the summer.
- Wheat byproducts. Some farms need the wheat straw for bedding and feed, which could be obtained by planting spring wheat. Regardless of your reason for planting spring wheat, make sure you have a market for the grain and be prepared for much lower grain yields.

Table 1. Soft white spring wheat varieties tested at Michigan State University from 2015-2019. (FHB = Fusarium head blight; SVREC = Saginaw Valley Research and Extension Center.)

Variety	FHB rating ¹	Plant height (inches)	Lodging rating ²	2015 -SVREC Yield (bushel per acre)	2016 - SVREC Yield (bushel per acre)	2017 - SVREC Yield (bushel per acre)	2019 - Mason Yield (bushel per acre)
Alpowa	6	32	55	85.3	---	---	---
Alturas	3*	27	65	83.1	---	---	---
Babe	7	29	50	91.7	62.9	46.6***	57.9
Diva	6	32.5	95	36.1	---	---	53.9
Eden	7	31.5	---	85.5	---	---	---
IDO1401	7.5	26	65	84.1	58.8	41.8	59.3
IDO1402	8	30.5	20**	92.4	64.7	46.4***	59.8
IDO1403	6	27.5	35	83.0	---	---	---
IDO1404	5.5	27.5	0**	84.4	---	---	---
IDO1405	2.5*	29	20**	107.6***	66.6	42.6	60.8***
IDO644	5	27	10**	87.2	65.2	45.4	64.1***
IDO669	6	31	70	73.5	---	---	---
IDO686sh	6	26.25	70	78.8	---	---	---
IDO851	5	27	35	87.5	68.4***	44.4	59.5
IDO852	7.5	28.5	60	93.3***	---	---	---
IDO854	6.5	30.5	10**	92.1	68.1	40.3	57.7
JD	---	---	---	---	---	---	55.6
Louise	8	33.5	95	78.7	---	---	53.3
Melba	1.5*	32	20**	93.8***	69.4***	45.2	56.8
Ryan	---	---	---	---	---	---	51.4
Seahawk	5.5	30	70	86.0	66.4	44.7	56.2
Tekoa	---	---	---	---	---	---	61.9***
UI Cataldo	6	26.5	35	81.0	---	---	---
UI Pettit	7	25.5	25	82.1	60.2	40.9	58.2
UI Stone	6	29.5	70	89.9	61.2	42.0	56.7
WA8189	4.5	30.5	15**	81.6	64.1	45.8	60.9***
WA8214	8	27	85	39.6	66.3	44.2	55.1
WA8224	8	31.5	35	93.8***	---	---	---
WA8277	---	---	---	---	---	---	53.5
Whit	5	29.5	90	92.7***	66.2	42.0	58.1

Zak	6.5	31.5	15**	83.3	---	---	---
Min	1.5	25.5	0.0	36.1	58.8	40.3	51.4
Max	8.0	33.5	95.0	107.6	69.4	46.6	64.1
Mean	5.9	29.3	46.7	83.2	64.9	43.7	57.5

¹ FHB rating from spring 2015 in Tuscola (1 = low FHB infection, 9 = high FHB infection).

² Lodging rating from spring 2015 at MSU (0 = no lodging, 100 = completely lodged).

* in FHB rating column indicate moderate resistance to FHB (score < 4).

** in Lodging rating column indicate moderate lodging resistance (score < 25%).

*** in Yield columns indicate top 20%.

Winter wheat seed sources

Soft white spring wheat seedlines come from the Pacific Northwest, including Washington, Idaho and Oregon. While you can use the internet to research their breeding programs and look at yield data from their trials, exercise caution when setting expectations for the performance of Pacific Northwest varieties on your farm in Michigan.

Consult Michigan spring wheat data first

When looking at spring wheat, review the Michigan spring wheat data published here in Table 1 and Figure 1. The MSU Wheat Breeding and Agronomy Program has planted a small set of soft white spring wheat varieties since 2015. In 2019 we conducted an agronomy trial where starter fertilizer, seeding rate and nitrogen fertilizer rate were evaluated.

Note: Several of the lines listed in Table 1 are experimental lines and seed may not be commercially available at this time.

The data in Table 1 are the results from soft white spring wheat varieties planted between 2015 and 2019. Management of the variety trials followed a conventional management regime of 1.6 million seeds per acre and 90 pounds of nitrogen per acre.

The spring wheat varieties tested and reported have not been subject to the high-management practices that would help us know how they respond to split nitrogen or fungicide application. Additional research is needed in the future to identify the impacts of higher management, yet the data is an excellent place to begin understanding spring wheat performance in Michigan. Agronomic practices to maximize yield potential are also needed in Michigan.

In 2019, Seahawk soft white spring wheat was planted in a trial (results in Figure 1) with the following treatments:

- Starter fertilizer (with and without).
- Nitrogen rates (0, 45, 90, 135, 180 pounds per acre).
- Seeding rates (1, 1.5, 2, 2.5 million seeds per acre). This trial was planted at the MSU Mason Research Farm April 26, 2019 and harvested Aug. 5, 2019.

Figure 1 describes results of using starter fertilizer (312 pounds per acre of 6-24-24), which was applied May 6, 2019. Nitrogen (155 pounds per acre of 46-0-0) was applied the same day. Starter fertilizer improved yield, as did higher nitrogen rates. Higher seeding rates also produced higher yields.

Please be aware that this data for soft white spring wheat is from one year and one location in Michigan. We recommend making management decisions based on several years of data, so exercise caution before using this information to determine fertilizer rates and seeding rates. Additional trials on spring wheat are planned again for the 2020 growing season.

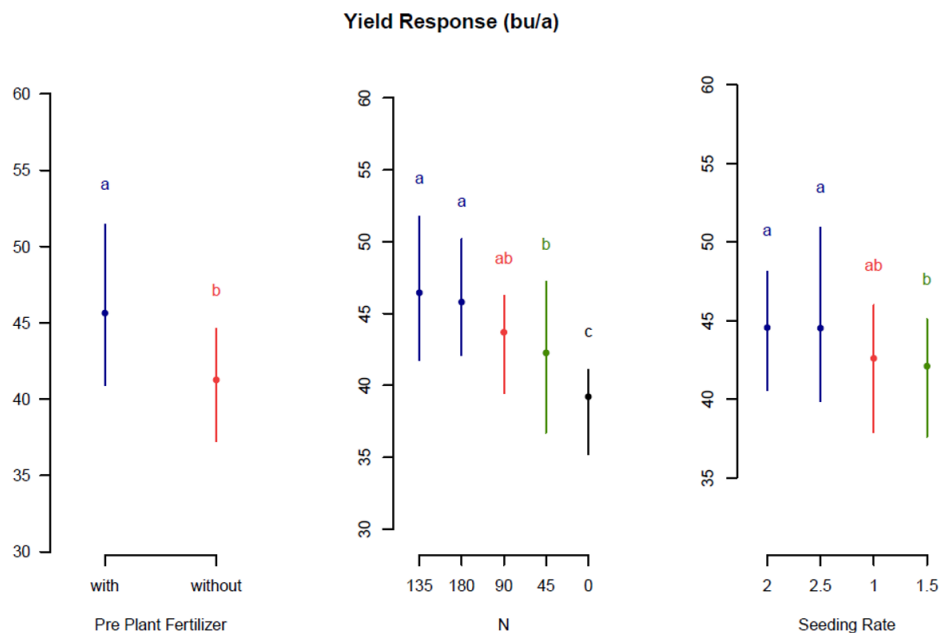


Figure 1. Yield response for Seahawk soft white spring wheat (a = preplant fertilizer, b = nitrogen rate and c = seeding rate).

Recommendations for white spring wheat

With the very limited data we have available—and recognizing why farmers may wish to experiment with soft white spring wheat—[MSU Extension](#) has put together these recommendations that represent what we know about these seedlines in Michigan.

- Seeding rate: One to two million seeds per acre.
- Seeding date: April 1 – 15 (late planted spring wheat will have lower yield potential).
- Starter fertilizer: Apply phosphorus and potassium based on soil test level.
- Nitrogen: Apply 60-90 pounds of nitrogen per acre when the plants are 2-4 inches tall.
- Fungicide: No testing has been done; likely not economically feasible.
- Seed sources: There are not many sources for soft white spring wheat. [Soft White Spring Wheat](#) from Washington Crop Improvement Association details most of the commercially available soft white spring wheat varieties. Shipping may be costly and take time, so order accordingly.

This article was published by [Michigan State University Extension](#). For more information, visit <https://extension.msu.edu>. To have a digest of information delivered straight to your email inbox, visit <https://extension.msu.edu/newsletters>. To contact an expert in your area, visit <https://extension.msu.edu/experts>, or call 888-MSUE4MI (888-678-3464).

Applying MAP and DAP at Corn Sidedress

By Greg Labarge

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2022-06/applying-map-and-dap-corn-sidedress>

One fertilization strategy is to apply a two-year rotation phosphorus need ahead of the corn crop. The primary source of phosphorous fertilizer is the nitrogen-phosphorous (N-P) containing products of 11-52-0, Monoammonium Phosphate (MAP) and 18-46-0, Diammonium Phosphate (DAP). For example, the maintenance P need for corn yielding 180-bushel per acre and soybean at 60 bushels is 111 pounds of P₂O₅ per acre.

When applied in fall, the phosphorus from these products is solubilized and retained in the soil labile phosphorus pool. To supply this P need with MAP or DAP, we also apply 23 or 43 pounds of N with the application. This nitrogen is subject to environmental loss when fall-applied by leaching or denitrification. The

net nitrogen result from fall MAP or DAP application is that little of the applied N is available to meet crop needs. By changing MAP and DAP application timing from fall to at sidedress, can we reduce the sidedress need from other N sources? Does this improve the economics of meeting nutrient needs in the rotation?

For this project, the total N rate was set at 180 pounds per acre, the Economically Optimal Nitrogen Rate (EONR) using a nitrogen to corn price ratio of 0.10. At planting, 40 pounds of N was applied in a 2 by 2 placement. The additional 140 pounds of nitrogen was applied to V4-V6 corn. The combination of nitrogen sources to meet the desired N rate was from MAP or DAP plus Urea, or 28% UAN depending on plot treatment to reach the total N need. The Urea product used was Environmentally Smart Nitrogen (ESN), a polymer-coated product to prevent against losses with surface applications. UAN 28% treatment was applied using a coulter injector. The dry fertilizer products were applied with a drop spreader.

Corn grain yields for 2020 and 2021 are shown in Table 1. No statistical differences were shown between the UAN 28% and DAP+Urea or MAP+Urea treatments in either year. The partial budget for the two-year fertilizer program may be advantageous for sidedress P even though nutrient sources have a higher per-unit N price. The calculation presented used fall 2021 fertilizer prices. The UAN 28% has an extra application trip with the fall P, plus the N from that fall application is lost.

Table 1. Corn yields and two-year fertilizer program cost using surface applied MAP and DAP at sidedress compared to coulter injected UAN 28%.

Sidedress Source	2020 Yield (bu/A)	2021 Yield (bu/A)	Two Year Fertilizer Program Cost @ Fall '21 prices
UAN 28%	148a	206a	\$ 285
DAP+Urea(ESN)	151a	202a	\$ 248
MAP+Urea(ESN)	146a	200a	\$ 268
LSD (0.1)	6	8	
CV%	3	3	

The point of this project was to start a conversation about different fertilizer application timing to increase fertilizer program efficiency. More equipment options are becoming available, making a dry fertilizer program possible. If you are in a liquid program, using 10-34-0 may be an option to consider.

Reading Your Feed and Forage Analysis Reports

By: Anita Heeg, Feed Ingredients and Byproducts Specialist, Ontario Ministry of Agriculture, Food, and Rural Affairs

(Previously published online in [Progressive Forage: February, 28, 2022](#))

Source: <https://u.osu.edu/sheep/2022/03/15/reading-your-feed-and-forage-analysis-reports/>

Over the last 25 years, animal production has improved significantly to have more milk and meat production per animal. To support our ability to feed and manage modern animals, technology to better analyze feed ingredients has also changed to keep up with production.

Feeds are more thoroughly analyzed today than they were before, allowing feeds to be utilized to their full potential. Although the layout of reports may be different between laboratories, the various parameters required for nutritionists are included in most

Description (%DM unless specified)	Dry Matter Basis	Moist forages 60 dy Avg	4 yr Avg
Crude Protein	13.62	19.30	18.06
ADF	32.83	35.06	35.70
aNDF	67.10	44.79	47.63
Calcium	0.51	1.08	1.04
Phosphorus	0.38	0.30	
Magnesium	0.30	0.32	
Potassium	2.64	2.46	2.62
Sulfur	0.24	0.22	0.23
Starch	2.46		6.90
NDF Digest: Traditional=Goering & Van Soest Method, Standardized=Combs-Goesser Method			
NDFD 48, %NDF	51.44	50.13	53.59
Calculations			

feed analysis reports. In the subsequent paragraphs, I will describe the type of information found in a feed analysis and what it means.

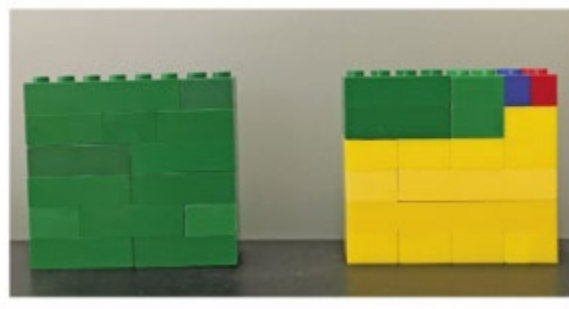
Every report will include the dry matter of the feedstuff. The reason for obtaining the dry matter is because moisture dilutes the concentrations of the nutrients present, and it is standard practice to evaluate the feed and balance rations using a dry matter basis.

Crude protein (CP) is a term well-known among producers and is calculated based on the nitrogen content of the feedstuff. Without looking at the type of protein it is made up of, it doesn't tell us more than that it contains nitrogen, including both true protein which contains amino acids (the building blocks of protein) and non-protein nitrogen. The report generally splits this CP parameter down further into soluble protein, acid detergent fiber-CP (ADF-CP), neutral detergent fiber-CP (NDF-CP) and undegradable intake protein (UIP), also known as bypass protein. To appreciate the values of each on the analysis report, a basic understanding of these terms is needed.

Looking at Figure 1, the green wall on the left represents the total CP portion of a forage analysis.

By looking at that image, it doesn't appear to be any more than just one of the same proteins. However, when we look at the image on the right, we can see the same amount of CP can be broken up into more parameters. Because of laboratory analysis, we know how much on average each of the other parameters represent of the total CP. The yellow bricks now show the portion of soluble protein, the green bricks represent the undegradable intake protein (bypass protein), and the blue and red bricks show the NDF-CP and ADF-CP, respectively.

FIGURE 1 Representation of crude protein versus detailed protein parameters included in crude protein

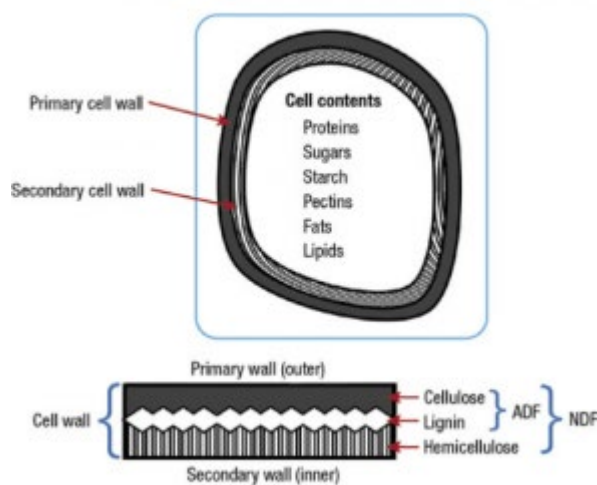


Soluble protein is most readily available to animals. This consists of small amino acid chains that will solubilize in rumen fluid and be absorbed across the rumen wall. Soluble protein is the same whether you look at the "as-fed" or "dry matter" columns on the analysis results because it is a percentage of the total CP. The bypass protein is the fraction of protein resistant to degradation by rumen microbes. This fraction goes by a couple of other names, like undegradable intake protein (UIP) and rumen-undegradable protein (RUP). It is valued because it bypasses the rumen and can then be absorbed in the small intestine.

Acid detergent fiber (ADF) refers to the cell wall portion of the forage and is made up of lignin and cellulose (the outer layer of the cell wall). The value is important as it relates to the ability of an animal to digest the forage; a higher ADF suggests a decrease in digestibility. Neutral detergent fiber (NDF) refers to the cell wall fraction that includes ADF and hemicellulose (which is the inner cell wall). The NDF value is related to the amount of forage the animal can consume, and as NDF increases, the dry matter intake generally decreases. Lignin, as shown in Figure 2, located between the outer and inner cell wall, is the indigestible portion of the plant cell.

Think of it as a glue stick sitting as a pillar between the inner and outer wall, holding both together. This number will increase with the maturity of the forage, and therefore negatively affects the digestion of the cell wall by acting as a physical barrier to the microbial enzymes.

FIGURE 2 Plant cell



The ADF-CP is associated with the portion of the CP unavailable to the animal as a result of heat damage. In forages, this can be natural heating of fermentation, whereas for some feed ingredients, such as distillers grain, it is the actual heating process. Elevated values of ADF-CP indicate overheating has occurred and could mean potential reduction to the feed quality, making less feedstuff usable to the microbes and thus to the animal.

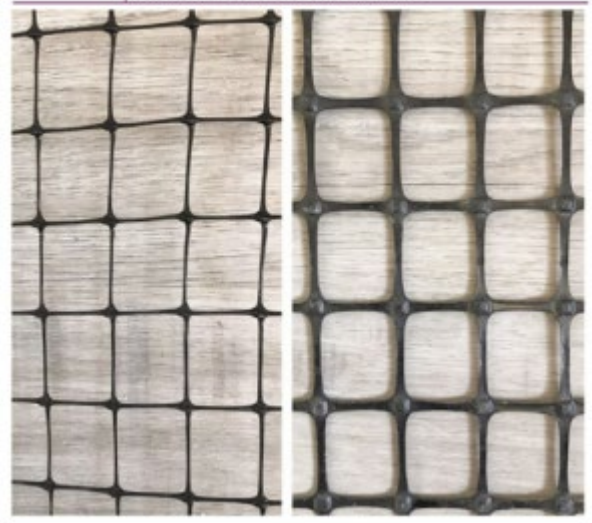
NDF-CP is similar to ADF-CP, wherein it has some digestibility associated with it. Usually, the NDF-CP is linked to bypass protein, meaning that as NDF-CP increases, the more bypass protein you will have. Along with NDF, some reports present an aNDF value, where the “a” indicates amylase, an enzyme, used for the NDF procedure to remove any starches. The next extension to that is the aNDFom, where the NDF is “ash-corrected.” It differs from NDF and aNDF in that it is free of ash. The ash content is related to the amount of soil picked up during harvest. The sample is heated, leaving a residue of ash. The ash is then weighed and subtracted from the NDF portion, giving the “ash-free” NDF, or aNDFom.

Neutral detergent fiber digestibility (NDFD), as the term indicates, allows us to know how digestible the forage is for the rumen bugs. A NDFD24 and NDFD48 indicate the number of hours the in vitro digestibility test lasted to determine how digestible the feed source is. In other words, how much NDF was digested in 24 and 48 hours by rumen bugs in the rumen fluid. It gives an indication whether the feed is being used efficiently by the rumen microbes. This digestibility is affected by the lignin content of the feedstuff.

To illustrate this point, see Figure 3, two sizes of bird screen. Imagine both represent the cell walls that hold the forages together. As the forage matures, the cell wall thickens, as seen in comparing Figure 3 of the immature plant versus the mature plant. When the cell wall thickens, the lignin, ADF and NDF has increased, therefore making the stem of the plant harder to digest by the rumen bugs.

Depending on what company creates your analysis report layouts, results will be slightly different. Growing seasons, timing of manure or fertilizer application, harvesting methods, and timing and harvesting technique will all affect the nutrient availability of forages. Laboratories do update technology and continue to do their best to calibrate equipment; however, small variations may occur. Nevertheless, plenty of reliable information is available for a given sample to aid in precise feeding, allowing nutritionists and producers to meet the nutritional demands of the animal.

FIGURE 3 Using bird screens to illustrate an immature forage on the left and a mature forage on the right



Collect Soil Samples for SCN in Spring

By: [Horacio Lopez-Nicora](#)

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2022-06/collect-soil-samples-scn-spring>

Soybean cyst nematode (SCN) is a major soybean pathogen that continues to spread throughout Ohio. Commonly, yield reduction will take place with no visible symptoms. To know if the nematode is present in a field, soil sample for SCN testing must be properly collected. The presence of SCN in a field, but most importantly, the SCN numbers will determine the best management strategy. It is important, therefore, to [Test your Fields to Know your SCN Numbers](#).

When should you sample for SCN? Spring before planting is a good time to sample for SCN. A soil test in spring will reveal if SCN is present and at what levels. Knowing your SCN numbers in spring will tell you what to expect for the season, identify the best management practices [more on SCN management [here](#)], and plan for next year. Furthermore, if you are planning to collect sample for soil fertility, a subsample can be used for SCN testing!

How should you collect soil sample for SCN? Different sampling strategies can be used to collect soil sample for SCN testing, including those used for soil fertility sampling. We strongly recommend using a 1-inch-diameter cylindrical probe to collect between 15 to 20 (more is better!) soil cores, 8 inches deep, for every 20 acres. Collect these soil cores in a zig-zag pattern across an area similar in soil texture and cropping history. Thoroughly mix the composite sample by gently breaking the soil cores. At this point we advise splitting the composite sample in two: one for soil fertility and one for SCN testing. Place 1 pint (approx. 2 cups) of soil in a labeled plastic bag and ship it to the lab as soon as possible. For more information on how to collect soil sample for SCN testing visit [here](#).



How should you handle your SCN soil sample? Soil sample collected for SCN testing is alive! We must handle it carefully. To keep the nematodes alive, store sample in a cool, dark place out of direct exposure to sunlight and ship SCN samples to the lab as quickly as possible.

Where should you send your soil sample for analysis? There are several [SCN testing labs](#) in the North Central Region, however, with funding from the [Ohio Soybean Council](#) and [The SCN Coalition](#) we will process up to TWO soil samples, per grower, to be tested for SCN, free of charge. Growers will decide how they want to collect these samples, but we suggest collecting one sample from a low and one from a high yielding area. Download and complete this Soil Sample Submission [Form](#) and mail your samples to:

OSU Soybean Pathology and Nematology Lab
Attn: Horacio Lopez-Nicora, Ph.D.
110 Kottman Hall
2021 Coffey Rd.
Columbus, Ohio 43210
lopez-nicora.1@osu.edu

For more information on SCN sampling and management visit our factsheet [here](#).

Ukraine-Russia Conflict and the Implications for Cattle Markets

By: James Mitchell, Livestock Marketing Specialist, University of Arkansas

Source: <https://u.osu.edu/beef/2022/03/16/ukraine-russia-conflict-and-the-implications-for-cattle-markets/>

I want to start this article by recognizing that what is happening in Ukraine is a humanitarian crisis. I do not want to overlook those important aspects of the war in Ukraine. That said, I am not a geopolitical expert or war strategist. Many well-informed individuals can offer you a better perspective on those issues.

In this article, I want to discuss the far-reaching implications of the Ukraine war for cattle markets. Inflation, grain markets, and energy markets are the main focus. Fertilizer is another big one. There are also domestic beef demand concerns that we need to discuss. Cattle markets are reacting to all of these.

Perhaps the most noticeable impact of the conflict in Ukraine, at least initially, is market volatility. Uncertainty equals price volatility. The war in Ukraine presents markets with a significant degree of uncertainty. As new information arrives, markets incorporate it into prices. What we know today is different from what we will know tomorrow, next week, next month, etc. Markets are trying to work through that information. Evidence that markets are working.

Volatility makes it harder to manage price risk. I have been asked several times about what producers should do to manage the price swings that we are currently observing. Scenarios like this one are why we use price risk management tools. This is similar to considering price risk management during March 2020. To be blunt, it is hard to manage price risk when you are in the middle of a high price risk situation. There are still things we can do to manage elevated price risk. The best advice is to be as flexible as your operation will allow. Put pen to paper and work through several scenarios.

The immediate impact for grain markets is on old crop cash and futures prices. Looking at CME corn futures prices from March 9, the March 2022 corn contract is trading at close to \$1/bu over the December 2022 contract. Today's corn market is an inverted market. An inverted market refers to a scenario where nearby futures contracts are trading at a premium to deferred futures. As my colleague Andy McKenzie likes to say, "an inverted market tells market participants that we want corn now!"

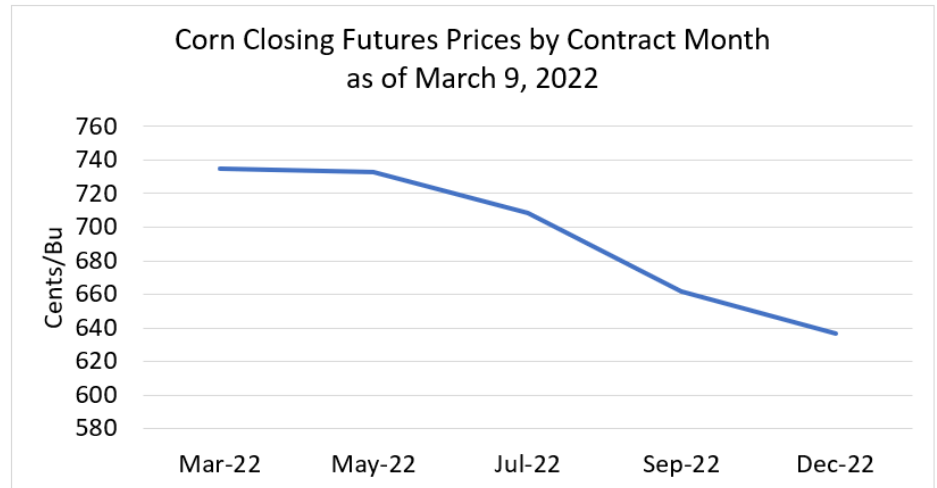
There are also long-term concerns for grain markets. Specifically, will farmers in Ukraine be able to plant? Even if Ukraine can plant a new corn and wheat crop, will they be able to export? There is potential that the current conflict will damage Ukraine's infrastructure, creating further logistical challenges for grain exporters.

In 2021, Russia was the largest net exporter of oil and natural gas. Approximately 4% of Russia's crude oil exports were to the

United States. Sanctions on Russian oil and gas and the prospect of a complete ban on Russian oil have sent oil prices surging. Prices from Bloomberg show Brent Crude and WTI Crude trading at \$105/barrel and \$103/barrel, a modest decline from the prior week. Higher oil and natural gas prices mean higher energy costs. These higher energy costs will span the entire beef supply chain. It takes energy to run a meat processing plant. Transportation costs for wholesale and retail will increase. On-farm fuel costs will also increase.

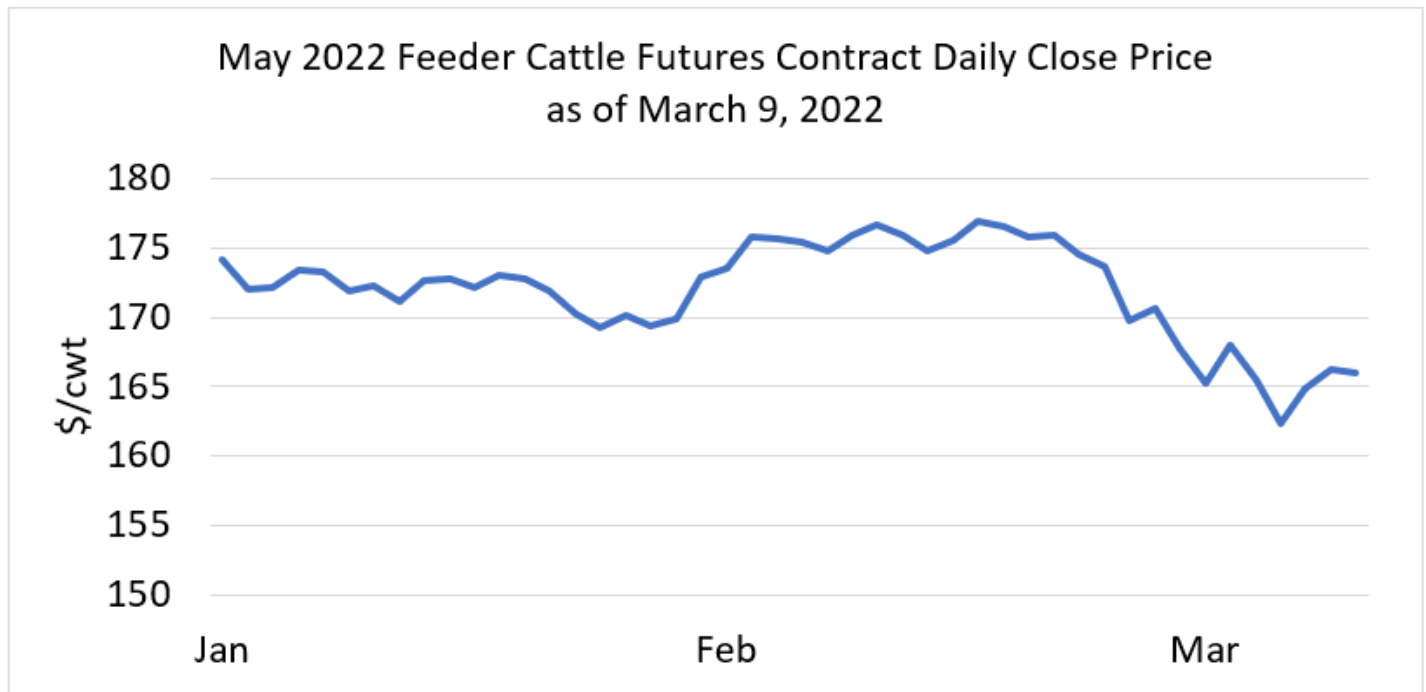
Higher grain, fuel, energy, and fertilizer prices will impact inflation. Food and energy are the most volatile prices included in the Consumer Price Index (CPI) which is one measure of inflation. Food and energy prices are also the most heavily impacted by the war. So, it should be no surprise that we will continue to observe historically higher inflation. The most recent data shows inflation reaching 7.9% in February. Because food and energy prices are so volatile, a better measure to track the price level in the economy is the CPI less food and energy, which is referred to as core inflation. Core inflation reached 6.4% in February. The degree to which inflation impacts consumer spending will depend on, among other factors, whether the wage growth rate tracks inflation. We know that inflation has outpaced growth in wage rates over the past few months. We expect changes in consumer spending.

There are no immediate beef export demand concerns. Russia is largely self-sufficient in meat production. The only concern for U.S. beef exports would be if other countries became directly involved in the conflict. There are domestic meat demand concerns. As has already been mentioned, inflation will impact consumer spending, provided wage growth does not track inflation. Consumers will also experience higher prices at the gas pump. Consumers might be more hesitant to make that last-minute trip to the grocery store. As I've said in early articles, beef demand will depend on what retail beef prices do relative to chicken prices, pork prices, and consumer income.



Source: Yahoo Finance

Cattle markets have certainly reacted to the events of the past few weeks. Last Friday, May feeder cattle futures were down 7.5% compared to mid-February. We can all think through the implications for cattle feeding dynamics, hay production, and production costs for cattle producers. Fortunately, the same supportive supply dynamics that analysts have discussed the past few months remain in play. Tight cattle supplies that we expect to get tighter. Yes, this means we have fewer cattle to sell, but it also means higher cattle prices and the potential for improved profitability.



Source: Yahoo Finance

Virtual Pastures for Profit Program

Building off a successful online launch in 2021, the Pastures for Profit program will be offered as a virtual course again this year during March and April 2022. Anyone interested in pasture management and forage production is welcome to join the course. One live webinar will be offered each week for three consecutive weeks along with “work at your own pace” videos and exercises that accompany each webinar. The Pastures for Profit program is a long-standing collaboration between Ohio State University Extension, Central State University, USDA-Natural Resources Conservation Service, Ohio Federation of Soil and Water Conservation Districts, Ohio Department of Agriculture, and the Ohio Forage and Grasslands Council.

Each webinar will be offered live on Zoom at 7 P.M. and feature three presentations in a 90-minute span. Attendees will be able to interact with the speakers and ask questions in real time. Once registered, attendees will be granted access to the online course including the webinars, social events, and complementary resources. Participants that attend all three webinars will have the opportunity to earn a certificate of completion. Registered participants will also receive a USB drive of the traditional course material by mail. Printed copies will be available for purchase separately by request.

The webinar schedule and topics are as follows.

Webinar One- Core Grazing Education: Thurs., March 31st at 7 p.m.

- Evaluating Resources and Goal Setting
- Getting Started Grazing
- Soil Fertility

Webinar Two- The Science of Grazing: Thurs., April 7th at 7 p.m.

- Understanding Plant Growth
- Fencing and Water Systems
- Meeting Animal Requirements on Pasture

Webinar Three- Meeting Grazing Goals: Thurs., April 14th at 7 p.m.

- Pasture Weed Control
- Economics of Grazing
- Creating and Implementing Grazing Plans

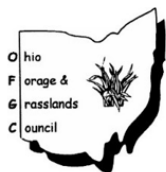
A series of additional videos that complement each webinar will be accessible to registered participants that include topics such as:

- | | | |
|--------------------------------|-----------------------------|-------------------------------|
| • Soil Health & Fertility | • Winter Feeding Strategies | • Pasture Layouts |
| • Species Specific Tips | • Conservation Practices | • Farm Economics |
| • Stocking Densities | • Genetic Traits of Forages | • Pasture Walks/Virtual Tours |
| • Forage Sampling and Analysis | | |

These videos will focus on more specific pasture management topics at the beginner and experienced manager levels. The Pastures for Profit course utilizes Scarlet Canvas. For best performance, Canvas should be used on the current or first previous major release of Chrome, Firefox, Edge, or Safari. Canvas runs on Windows, Mac, Linux, iOS, Android, or any other device with a modern web browser.

Cost of the course is \$50, which includes a digital copy of the Pastures for Profit manual, and social events. Current and new members of the Ohio Forage and Grasslands Council are eligible for a \$15 discount on registration. Register for the course by visiting <https://go.osu.edu/pasturesforprofit2022>.

General questions about the course, registration, ordering a printed copy of course materials, or the online platform can be directed to Christine Gelley (gelley.2@osu.edu) or Erika Lyon (lyon.194@osu.edu) of OSU Extension.



April Beef Quality Assurance Re-Certification Training

The Coshocton County Extension office will be offering a **Beef Quality Assurance (BQA)** re-certification meeting on April 13 from 7:00 to 8:30 p.m. in Room 145 at the Coshocton County Services Building located at 724 South 7th Street in Coshocton County. Pre-registration is required as space is limited. There is no fee to attend. Call 740-622-2265 to pre-register. These sessions also qualify for anyone who is seeking a first time certification.

Online certification and recertification is also available and can be completed anytime at <https://www.bqa.org/beef-quality-assurance-certification/online-certifications>.

Never cut a tree down in the wintertime. Never make a negative decision in the low time. Never make your most important decisions when you are in your worst moods. Wait. Be patient. The storm will pass. The spring will come."

Robert Schuller