

COSHOCTON COUNTY AGRICULTURE & NATURAL RESOURCES**December 1 (Edition #123)**

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Hello, Coshocton County! I hope that each of you had a great Thanksgiving. It is hard to believe that we are already to December and it won't be long before we are making our new year's resolutions.

There has been a lot of discussion around input costs and supply chain shortages as we head into 2022. Today, I have included a few articles to help you as you think about higher nitrogen prices and how it may impact your crop fertility plan for next year.

Mark Loux has also written a great article about fall weed control (still can be done)—some of the practices you do even during the month of December can pay dividends next spring.

I would like to encourage beef producers to complete the Ohio Cow-Calf assessment—you can help shape OSU Extension program for the future.

Best wishes as we put a bow on this harvest season!

Sincerely,

David L. Marrison

Coshocton County OSU Extension ANR Educator

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THE OHIO STATE UNIVERSITY
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Implications of High N Fertilizer Prices on Corn N Fertilizer Recommendations

By: Author(s): [Steve Culman](#), [Greg LaBarge, CPAg/CCA](#), [Harold Watters, CPAg/CCA](#)

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-39/implications-high-n-fertilizer-prices-corn-n-fertilizer>

Nitrogen fertilizer is a major cost in corn production and is a big lever that drives yield. However, not every pound of N fertilizer yields the same return on investment. The first several dozen pounds applied to a corn crop yields large returns in grain, with subsequent pounds still offering returns, but not as effective as before. As N fertilizer rates approach what would be typically applied to corn (150 – 200 lbs N/acre), each additional pound returns less and less and eventually reaches a point where the small increases in grain yield does not pay for the additional pound of N fertilizer applied.

This is not a hypothetical. It's the normal. It's what we see year after year in the majority of N rate trials we run across the state. And that's why Land Grant Universities in the Midwest have universally adopted an economic model to N fertilizer rates in corn. It's called the maximum return to nitrogen (MRTN) because it seeks to do just this, provide a rate where you will get the greatest return to your N investment and therefore grow the most profitable corn possible. So what is the magic peak where adding an additional pound of N fertilizer doesn't pay for itself? It depends of course! It depends on the current price of corn grain and N fertilizer. As fertilizer prices increase, the peak comes at lower N rates. But as grain prices increase, the peak comes at higher N rates. Both fertilizer and grain prices are higher than they've been in some time, so they work against each other in terms of increasing or decreasing the N fertilizer recommended rate.

Table 1. Price per Ton of Anhydrous and 28% UAN at Various Price per Pound of Nitrogen Fertilizer Costs.

	Price of Nitrogen Fertilizer (\$/lb)						
N Source	\$0.45	\$ 0.55	\$0.65	\$0.75	\$0.85	\$0.95	\$1.05
82-0-0	\$738	\$900	\$1066	\$1230	\$1394	\$1558	\$1722
28-0-0	\$252	\$308	\$364	\$420	\$476	\$532	\$588

Table 1 shows the price of nitrogen fertilizer at various costs per pound and the equivalent per ton price of two familiar nitrogen sources used in Ohio. Table 2 shows Ohio recommended nitrogen rate for corn following soybean at various price combinations for corn and nitrogen. First, select the nitrogen price (column), then select the corn price (row). The cell where the selections intersect is the recommended nitrogen rate. With current fertilizer and grain prices, our recommended corn N rates are 15-20 lbs/acre less this year than they have been in years past. This might cause some growers to pause and consider if this is really a good idea, but if you want to maximize your profitability, lower rates will ensure you're not applying additional fertilizer that isn't yielding a high enough return to pay for itself.

Table 2. Ohio MRTN recommended Nitrogen Rates (lbs nitrogen/acre) for Corn following Soybean based on the Price of Corn Grain and Nitrogen Fertilizer.

	Price of Nitrogen Fertilizer (\$/lb)						
Price/Bushel Corn	\$0.45	\$ 0.55	\$0.65	\$0.75	\$0.85	\$0.95	\$1.05
\$4.50	180	169	159	150	143	136	129
\$5.00	185	175	165	157	149	142	136
\$5.50	190	180	171	162	155	148	142
\$6.00	195	185	176	168	160	153	147
\$6.50	200	188	180	172	165	158	152
\$7.00	200	192	184	176	169	163	157

Nitrogen Fertilizer Strategies for 2022

By: [Gary Schnitkey](#), [Krista Swanson](#), [Nick Paulson](#) and [Jim Baltz](#) from Department of Agricultural and Consumer Economics, University of Illinois and [Carl Zulauf](#), Department of Agricultural, Environmental and Development Economics, Ohio State University

Source: <https://farmdocdaily.illinois.edu/2021/11/nitrogen-fertilizer-strategies-for-2022.html>

Nitrogen fertilizer prices continue to surge, leading to difficult decisions for farmers. Herein, we discuss some strategies for dealing with higher nitrogen fertilizer prices. All these strategies carry risks. Therefore, a number of these strategies have suggestions for mitigating risks. One item is certain: from an economic standpoint, almost all farmers should be reducing nitrogen application rates in 2022.

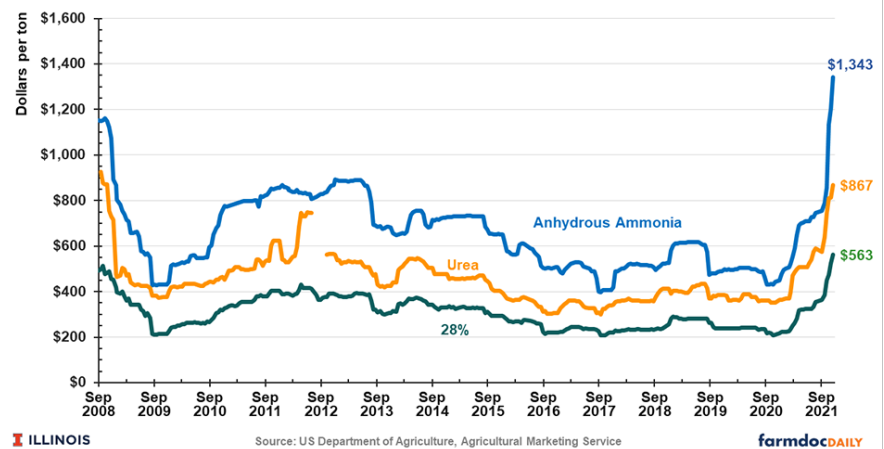
Current Situation

All major nitrogen fertilizers have continued to increase in recent weeks, according to prices published in the [Illinois Production Cost Report](#), a bi-weekly publication of the Agricultural Marketing Service, an agency of the U.S. Department of Agriculture. On November 18th, anhydrous ammonia prices averaged \$1,343 per ton in Illinois, up by \$138 per ton from the \$1,205 price two weeks earlier. Since July 2021, ammonia prices increased from \$726 to \$1,343 per ton, an increase of 84%. In November of 2020, ammonia prices were \$440. The increase from November 2020 to November 2021 is 209% (see Figure 1).

All other nitrogen prices have increased as well. For example, on November 18th, the price of 28% solution was \$563 per ton, up from \$211 per ton a year earlier, an increase of 155%.

Questions exist on whether nitrogen prices will continue to rise into spring. It is difficult to say as the 2021-22 year is considerably different from any previous year. Supply disruptions play a role in price increases, as well as increases in both corn and natural gas prices. Supply disruptions likely will decrease in the future, but maybe not by the spring application season. Futures prices on natural gas have declined in recent weeks but could increase again if winter weather is cold or new supply issues occur.

Figure 1. Fertilizer Prices in Illinois From 2008 To 2021



The last time anhydrous ammonia prices were above \$1,000 per ton was in the fall of 2008. Ammonia prices averaged \$1,142 in October. Much of the increase that year revolved around the turmoil associated with the 2008 financial crisis. By March of 2019, ammonia prices were in the mid-\$700 per ton range. Natural gas prices declined from \$7.67 per million BTUs in September 2008 to \$4.96 per million BTUs in March 2009. In October 2021, the natural gas price averaged \$5.45 per million BTUs, down from a recent high of \$6.32 per million BTUs in the previous month. None of that indicates that ammonia prices will decrease into spring, but the fact that large declines occurred in the past does suggest that it is a possibility.

Strategy #1: Plant More Soybeans

Given current large price increases, one strategy is to plant more soybeans and less corn. Since nitrogen is used at much higher levels on corn than soybeans, a switch to soybeans reduces the impacts of higher nitrogen fertilizer prices.

The downside to this strategy is that, while uncertainty over 2022 market conditions remains high, some profitability projections for corn are currently above those for soybeans. Table 1 shows corn-minus-soybean returns for different corn and soybean prices. When a corn-minus-soybean return is positive, corn has a relative advantage compared to soybeans. Conversely, soybeans are more profitable when corn-minus-

soybean returns are negative.

Current 2022 fall delivery bids are \$5.25 per bushel for corn and \$12.00 for soybeans. At those prices, corn-minus-soybean return is \$41 per acre, giving the advantage to corn.

In its long-term outlook, USDA is projecting 2022 prices of \$4.80 per bushel for corn and \$10.50 for soybeans. Relative to current fall bid prices, the USDA projects a more significant price decrease for soybeans than corn. As a result, corn-minus-soybean return increases to \$55 per acre, again giving corn an advantage.

In contrast, during a [November 28th farmdoc daily webinar](#), Professors Irwin and Jansen estimated 2022 prices at \$4.00 per bushel for corn and \$11 for soybeans. These prices result in a -\$100 corn-minus-soybean return, giving the advantage to soybeans.

The range in price projections point to the uncertainty of fall conditions, a situation that is typical for this time of the year. Moreover, they also point to the fact that there is considerable downside risk to both corn and soybean prices, with soybean prices perhaps having more of a downside than corn. Furthermore, a significant movement of acres from corn to soybeans in 2022 would likely result in soybean prices facing further downward pressure relative to corn prices.

Considering a movement to more soybeans has merit, particularly given that prices in the long-run likely favor soybeans over corn (see farmdoc daily, [November 9, 2021](#)). Still, this strategy has risks. If this strategy is undertaken, we suggest hedging the additional production if soybeans. For example, if 10% more acreage is shifted to soybeans, consider hedging the production on those additional acres now while prices are relatively favorable. Current fall bids are \$12 per bushel, a high price that should provide a profitable soybean crop if yields are at or above trend.

Strategy #2: Falls Application

Much of Illinois's fall nitrogen applications have been delayed because of wet weather. However, a window for fall applications may be opening. Some farmers may have priced nitrogen below \$1,000 per ton and need to apply it in the fall for this price to be effective. If this is the case, all efforts should be made to apply this nitrogen.

If ammonia has not been booked for the fall, current nitrogen prices over \$1,300 per ton present a bit of a quandary about fall applications. The uncertainty of how current prices may compare to a spring price for other forms of nitrogen could be more favorable or less favorable. Field days are another consideration, that there is always uncertainty as to what field conditions will allow pre-plant or post-plant. An appropriate strategy, in this case, may be to split apply nitrogen to moderate risks related to cost changes and field conditions.

Strategy #3: Split Applications

Splitting applications manage risks by allowing for the pricing of fertilizer multiple times. Moreover, splitting nitrogen will delay some fertilizer decisions to the point where commodity price and weather outlooks are more certain. However, splitting applications will require applying nitrogen after planting, which can increase the risks around having suitable field days to apply nitrogen.

Table 1. 2022 Corn-Minus-Soybean Returns for Different Corn and Soybean Prices

Price		Corn-minus Soybean Return
Corn	Soybeans	
\$/bu	\$/bu	\$/acre
5.25	12.00	41
5.00	12.00	-3
4.80	10.50	\$55
4.00	11.00	(\$100)

1. See the budget in the appendix for yields and costs used to calculate these returns

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If fall application is still an alternative, a split application strategy could be to:

1. Apply 75% of the Maximum Return to Nitrogen (MRTN) rate as generated by the [Nitrogen Rate Calculator](#).
2. Apply the remaining after planting.

We suggest having the fall application at a high enough rate so that there is a possibility of not making the spring application. A 75% MRTN appears to be at that level, but that is an individual farmer decision. Again, this strategy would allow for pricing at two points: once in the fall and once after planting. Moreover, the second application after planting could be skipped or reduced if 1) plant conditions suggest that additional nitrogen will have limited impacts on yields or 2) nitrogen fertilizer prices continue to be high.

This strategy could also be followed with spring applications:

1. Apply 75% of the MRTN in the spring before planting, and
2. Apply the remaining nitrogen after planting.

This strategy continues to allow pricing at two points and adjustments made to the after-planting application. The pre-plant application could allow the use of anhydrous ammonia rather than 28% solution.

Strategy #4 Apply Most Nitrogen as Anhydrous Ammonia

Anhydrous ammonia is nearly always the least cost way of applying nitrogen and by applying most nitrogen as ammonia will lower fertilizer costs. To illustrate, prices on November 19th were \$1,344 per ton for anhydrous ammonia and \$563 per ton for 28% solution. Nitrogen in anhydrous ammonia has a cost of \$.82 per pound ($\$1,344 \text{ price} / (2,000 \text{ pounds in a ton} \times .82 \text{ analysis of ammonia})$), while 28% has a cost of \$1.00 per pound of nitrogen ($\$563 \text{ price} / (2,000 \times .28 \text{ analysis of } 28\%)$). The costs per pound of N is \$.18 higher for 28% than for ammonia.

The difference in cost between ammonia and 28% changes over time. Currently the ratio of 28% price to ammonia price is .41 ($\$563 \text{ price of } 28\% / \$1,344 \text{ price for ammonia}$). Historically, the average is .46. Given a .46 ratio, a \$1,344 anhydrous ammonia price would imply a 28% price of \$631 per ton ($\$1,344 \times .47$), well above the current 28% price. If 28% price rises to that level, the difference in per pound of actual N will increase. Evaluating the costs of fertilizer alternatives may prove worthwhile at point closer to the purchase.

Many farmers are reluctant to apply ammonia post planting. Using split applications may make it easier to apply some of nitrogen as ammonia.

Strategy #5 Reduce Nitrogen Rates

Significantly reducing nitrogen rates is warranted this year. Table 2 shows the Maximum Return to Nitrogen (MRTN) rates calculated for northern, central, and southern Illinois using the Corn N Rate Calculator. These rates are stated in pounds of actual nitrogen applied, and were generated using a \$5.25 per bushel corn price and differing anhydrous ammonia prices. At an ammonia price of \$1,400 per ton, the MRTN is 162 pounds of actual N per acre.

In years past, many farmers have applied at rates above MRTNs. The MRTN rates are designed to maximize expected profits. Costs of applying above MRTNs will be considerably higher in 2021 than in years with lower fertilizer prices.

Table 2. Maximum Return to Nitrogen (MRTN) Rates for Illinois in 2022¹

Anhydrous Ammonia Price	Region of Illinois		
	Northern	Central	Southern
\$/ton	Pounds of Actual N per acre ²		
400	201	209	239
600	187	195	216
800	174	184	203
1000	163	175	195
1200	155	168	187
1400	148	162	178
1600	141	155	170

¹ Generated using a \$5.00 corn price

² The MRTN stated in rate of anhydrous ammonia equals actual N pounds / .82.

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Summary

High nitrogen prices present risks to farmers. Some farmers may find planting more soybeans a prudent alternative. Splitting nitrogen applications may aid in reducing risks. All farmers should consider lowering nitrogen applications rates, particularly if normally applying above the MRTN.

Appendix Table 1. Central Illinois High-Productivity Budgets Used to Calculate Corn-Minus-Soybean Costs		
	Corn	Soybeans
Yield per acre	220	68
Price per bu	\$4.25	\$11.00
Gross revenue	\$935	\$748
Fertilizers	262	111
Pesticides	66	54
Seed	124	80
Drying	24	2
Storage	15	5
Crop insurance	24	16
Total direct costs	\$515	\$268
Machine hire/lease	19	16
Utilities	6	6
Machine repair	33	23
Fuel and oil	20	13
Light vehicle	2	1
Mach. depreciation	71	58
Total power costs	\$151	\$117
Hired labor	23	22
Building repair and rent	8	7
Building depreciation	15	13
Insurance	12	12
Misc	11	11
Interest (non-land)	12	10
Total overhead costs	\$81	\$75
Total non-land costs	\$747	\$460
Operator and land return	\$188	\$288
Corn-Minus-Soybean Return	-\$100	

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Schnitkey, G., N. Paulson, C. Zulauf, K. Swanson and J. Baltz. "[Long-Term Corn and Soybean Use with Implications for Planting Decisions in 2022 and Beyond](#)." farmdoc daily (11):155, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, November 9, 2021.

Transportation Issues are Affecting Harvest Completion

By: [Greg LaBarge, CPAg/CCA](#), [Amanda Douridas](#)

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-39/transportation-issues-are-affecting-harvest-completion>

Evaluating options for grain still in the field

Finding storage for harvested grain in parts of Ohio has become complex due to good corn yields, terminal elevators access to move grain out via rail, and some traditional storage not being available. It is unknown when the ability to accept grain at some terminals will improve. This situation has put some farmers without storage, or storage that is full, in a difficult position to complete the 2021 harvest. Economic decisions will need to be made soon, and none are ideal.

One option may be to haul grain to alternative markets. The availability of trucking and the cost of that trucking will impact this economic decision. A spreadsheet to estimate cost per bushel of trucking is available from the University of Kentucky at https://uky.edu/bae/sites/www.uky.edu.bae/files/Grain_trucking_cost_2010_1.xls It is recommended to check with these alternative markets before heading their direction.

What losses to expect if the grain is left in the field?

Several years ago, Peter Thomison conducted a study that evaluated the effects of four plant populations (24,000, 30,000, 36,000, and 42,000 plants/A) and three harvest dates (early-mid Oct., Nov., and Dec.) on the agronomic performance of four hybrids differing in maturity and stalk quality. The study occurred at three locations in NW, NE, and SW Ohio over three years for a total of eight experiments. This study provides insight into yield losses and changes in grain moisture and stalk quality associated with delaying harvest. Key findings from this research are shown below.

Key Findings:

- Yield losses between mid-October to December averaged 13%, with 90% of the losses occurring after mid-November.
- Grain moisture decreased nearly 6% between harvest dates in Oct. and Nov. Delaying harvest after early to mid-Nov. achieved almost no additional grain drying.
- Higher plant populations resulted in increased grain yields when harvest occurred in early to mid-October. Only when the harvest was delayed until mid-November or later did yields decline at plant populations above 30,000/acre.
- When the harvest was delayed, hybrids with lower stalk strength ratings exhibited greater stalk rot, lodging, and yield loss. Early harvest of these hybrids eliminated this effect.
- The greatest increase in stalk rot incidence came between harvest dates in October and November. In contrast, stalk lodging increased most after early-mid November.
- Harvest delays had little or no effect on grain quality characteristics such as oil, protein, starch, and kernel breakage.

In this study, yields averaged across experiments, populations, and hybrids decreased about 13% between the Oct. and Dec. harvest dates. Most of the yield loss, about 11%, occurred after the early-mid Nov. harvest date. In three of the eight experiments, yield losses between Oct. and Dec. harvest dates ranged from 21 to 24%. In the other five experiments, yield losses ranged from 5 to 12%.

Grain moisture content showed a decrease from the Oct. to Nov. harvest dates but little or no change beyond the Nov. harvest dates. Grain moisture decreased 6.3% points between the Oct. and Dec. harvest dates when results are averaged across experiments, hybrid, and plant populations. Most of the decrease in moisture occurred between the Oct. and Nov. harvest dates (5.8 % points); only a 0.5% point decrease after early-mid Nov. Population effects on grain moisture content were not consistent. Differences in grain moisture were evident among hybrids on the first harvest date in early-mid October but were generally negligible later.

Agronomists at the University of Wisconsin have developed a "Field Loss Calculator" Excel spreadsheet available at: <http://corn.agronomy.wisc.edu/Season/DSS.aspx> that allows producers to calculate the costs of harvesting today versus allowing the crop to stand in the field and harvesting later. The spreadsheet accounts for higher drying costs versus grain losses during field drying. In addition, the tool allows the user to account for elevator discounts and grain shrink.

Alternative Options for On-Farm Grain Storage

Identifying places around the farm for temporary new storage may be an option. The storage capacity of a building, silo, pile, or bags can be determined with a calculator provided by the University of Kentucky at https://uky.edu/bae/sites/www.uky.edu.bae/files/Grain%20storage%20capacity%20of%20various%20structures_UKY_SM_0.xls

The most critical factor in alternative storage is keeping grain dry and cool. That means it must be dry and cool going into the storage facility. Aeration is not an option in most alternative storage situations. Some general considerations regardless of the alternative chosen are:

1. What is the current grain moisture? Corn should be below 15%, and soybeans should be under 13% moisture before going into alternative storages (Gucker, 2018). Below is a chart that shows how many days grain can be stored at different temperature and moisture conditions.
2. Does the storage have options for aeration? When the grain needs to be moved in the spring will be affected by the ability to manage the climate. No aeration means moving the grain before planting.
3. How can grain be loaded for transport?

Here are some considerations for the most likely alternatives.

Flat storage in a farm building. Grain pushing against walls of buildings not designed for grain storage will create damage, according to NDSU agricultural engineer and grain storage expert Ken Hellevang. Walls must be properly anchored. Pole barns will likely need a grain wall built. The best course of action to prevent damage is to hire a structural engineer to ensure proper support is in place. If you have previously used a barn for storage, he recommends looking over the building for signs of misalignment. These could signal damage and indicate areas where the structure may fail if loaded again with the grain.

Grain piles pose a lot of potential for loss, especially in our wet climate. The ability to use a cover will reduce loss, which can be up to 2ft deep into the pile with a couple of 1" rain events. This loss can easily result in \$30,000-\$40,000 worth of grain with today's current prices. The convenience of loading and unloading grain bags in the field and the low cost (6-7 cents/bu) has made this an appealing option for some farms. Grain bags are an alternative storage method that may be more economical than constructing permanent bins. Equipment required includes a bagger and an unloader. Renting this equipment may be an option.

More detailed information on flat storage and piles can be found in Temporary Grain Storage Considerations from Purdue at <https://www.extension.purdue.edu/extmedia/gq/gqtf38/gqtf-38.html>

Polybags are a sound option and are frequently used for the storage of agricultural products.

These bags are thicker than a standard silage bag with a minimum thickness of 9 mils, with 9.3 mils being even better. Again, because drying and aeration are not an option once in the bags, grain should be cool and dry going in. To store in bags, Hellevang (2018) recommends the following:

- Select an elevated, well-drained site for the storage bags. Run the bags north and south so solar heating is similar on both sides. Sunshine on just one side heats that side, which can

Approximate Allowable Storage Time for Cereal Grains						
Moisture Content (%)	--- Grain Temperature (F) ---					
	30	40	50	60	70	80
	Approximate Allowable Storage Time (Days)					
14	300+	300+	300+	300+	200	140
15	300+	300+	300+	240	125	70
16	300+	300+	230	120	70	40
17	300+	280	130	75	45	20
18	300+	200	90	50	30	15
19	300+	140	70	35	20	10
20	300+	90	50	25	14	7

• Allowable storage time is the storage period before quality loss is expected to affect grain quality.

• Airflow through the grain permits maintaining the grain temperature but does not extend the allowable storage time beyond that listed in the table.

Source: <https://cropwatch.unl.edu/2018/alternative-grain-storage>



Photo credit: Mike and Cathy Pullins

lead to moisture accumulation in the grain and spoilage on the cool side.

- Monitor the bags for damage [at least weekly]. Wildlife can puncture the bags, allowing moisture in, which can lead to spoilage and the grain smell being released, which attracts more wildlife.
- Monitor the grain temperature at several places in the bags.
- Never enter a grain bag because it is a suffocation hazard. If unloading the bag with a pneumatic grain conveyor, the suction can "shrink wrap" a person.

When using alternative storage, you should notify your insurance company to ensure this storage is included on your policy against losses from environmental and wildlife damage. It would be best if you also planned to move grain out of these storage situations before the weather warms in the spring to prevent condensation and moisture buildup. Finally, continually check moisture and pest infestations.

Alternative storage options are a great way to improve harvest efficiency and capture potentially higher prices after harvest. Thoroughly investigate each storage option before using it to ensure it fits into your operation, offer an economic advantage above selling it directly out of the field and preserve the grain quality for the intended storage time.

Works Cited:

- Gucker, D. (2018, October 15). Tips for temporary corn storage in grain (silo) bags. University of Illinois Extension. Retrieved October 18, 2021, from <https://extension.illinois.edu/blogs/acres-knowledge/2018-10-15-tips-tem...>
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Fall Herbicide Treatment- Just Do It

By: Mark Loux

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-39/fall-herbicide-treatments-%E2%80%93-just-do-it-%E2%80%93-nag-nag>

We don't usually run articles about fall herbicide application this late in the season, since most everyone is done applying by now. We've run several articles on this subject within the past couple months but here's another one anyway, even if it makes us look pushy and obnoxious. Here's why. The consensus of a bunch of competent field people seems to be that fall herbicide treatments are more important than usual this year, due to the product shortages and price increases that could really mess with spring burndowns. We are all used to a plentiful supply of cheap glyphosate and 2,4-D, which may not occur again for a while. Fall treatments result in fields that are almost weed-free well into spring, so that an early May burndown has to control primarily a few spring-emerging broadleaf weeds (see photos). Benefits are numerous, but a primary one is that fall treatments create a spring burndown situation requiring a less aggressive burndown mixture. So – where shortages or high prices cause a reduction in application rates and complexity in spring burndowns, things are likely to go way better where fall herbicides were applied.

Here's another reason. The current forecast is for a warm and wet winter. The thinking of some weather experts is that the wet may persist into spring planting season. Wet spring means delay in herbicide applications, and burndown situations that will get tougher as we move into May and June without weather that allows application. Leaving us to contemplate the less than ideal combination of big weeds and herbicide shortages. Hence – our one final pitch to get something applied this fall yet. We have applied herbicide into December following very cold conditions and still killed weeds, albeit slowly, so our recommendation is to keep spraying. Check our previous articles for recommendations.

On a final note, we have applied a fair amount of rimsulfuron-containing products (e.g. Basis Blend) in the fall prior to soybeans in our research, and have not observed any crop injury the following spring. Other Ohio users of these products seem to have had the same experience. Apparently, there have been some instances in other states where fall application of rimsulfuron has persisted into spring at levels that can cause injury to soybeans. Rimsulfuron is one of the few herbicides with decent activity on bluegrass in the fall, as well as broadleaf weeds so it definitely has utility. Be sure to follow label guidelines regarding rate and timing of application for rimsulfuron products where soybeans will be planted. Relevant information for several rimsulfuron products can be found on page 35 of the Weed Control Guide and is presented here:



“Basis Blend can be applied in the fall or early spring prior to soybean planting with the following guidelines: 0.825 oz—at least 15 days before planting; 1.25 oz—at least 60 days before planting. These guidelines assume that at least one of the following conditions has been met (if not then soybeans should not be planted for 10 months after Basis Blend application): the soil temperature is above 50 F for at least 10 days between application and planting; the field is tilled; or the soybean variety used has high tolerance to sulfonyleurea herbicides. Crusher can be applied at rates up to 1.3 oz/A in fall or early spring, at least 30 (1 oz) or 60 days (1.3 oz) days before soybean planting. Leopard can be applied at rates up to 2 oz/A in fall or early spring, at least 30 (1.5 oz) or 60 days (2 oz) days before soybean planting.”

If the rimsulfuron needs 10 days of 50 degree weather prior to planting, it seems like the worst case would be something like a late fall application followed by a relatively early-spring soybean planting. Or late fall application followed by a really cold spring prior to soybean planting. The labels for Crusher and Leopard do not contain the same statements about temperature and tillage that are on the Basis Blend labels, but do have statements about possible injury.

Valuing Bedded-Pack Manure

By: Glen Arnold

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2021-39/valuing-bedded-pack-manure>

Due to the increase in fertilizer prices, there is renewed interest in the nutrient value of manure. This article will discuss bedded-pack manures that involve straw, sawdust, or wood chips to absorb moisture. The nutrients and organic matter in pen-pack manure are an excellent addition to farm fields.

The most common types of bedded manure are beef, dairy, and sheep or goats. Small ruminant bedded pack manure contains the most nutrients per ton followed by beef manure and dairy manure.

Pen-pack manure contains the macro nutrients nitrogen, phosphorus, and potash along with a host of micronutrients. The nutrient content can vary depending on species, feed products fed, and the amounts of straw or sawdust used for bedding. The farm's manure handling and storage practices also impact the nutrient content of manure. Manure stored under roof will usually maintain a higher nutrient value than manure exposed to rainfall.

Pen-pack manure nutrients are measured as pounds of nutrient per ton of manure. Typically, the nitrogen content will be 10 to 16 pounds per ton. About two pounds of this nitrogen is in the ammonium form and the remainder will be in the organic form. While ammonium nitrogen is immediately available to a growing crop, organic nitrogen takes time in a field to mineralize and become available over three or four years. The phosphorus content, in the P2O5 form, will usually be from 6 to 12 pounds per ton. The potash content, in the K2O form, will usually be between 10 and 15 pounds per ton.



Applying pen-pack manure can be more precise if you know the application rate being applied in tons per acre. If you are unsure how many tons per acre your solid manure spreader applies there is a simple way to make a determination. Make a tarp that is 56 inches by 56 inches (21.8 square feet). Fasten it to the ground with weights on the corners and apply manure across the tarp. Fold up the tarp and weigh the manure captured. Many people use a bathroom scales for this. One pound of manure captured on the tarp is equivalent to one ton of manure applied per acre. Thus, if you captured 10 pounds of manure the application rate was 10 tons per acre.

We always want to keep water quality in mind when handling manure. The goal is to make good use of the manure nutrients and keep the manure nutrients out of streams and ditches.

For more information about how and when to sample manure, Penn State Extension has a good publication available on-line at <http://extension.psu.edu/plants/nutrient-management/educational/manure-storage-and-handling/manure-sampling-for-nutrient-management-planning>

Winter Grazing Offers Unique Challenges

By: Victor Shelton, Retired NRCS State Agronomist/Grazing Specialist

Source: <https://u.osu.edu/beef/2021/12/01/winter-grazing-offers-unique-challenges/>

I've enjoyed several good autumn days and quirked, "it can just stay this way and then turn nice," but, winter is coming. I do enjoy the different seasons with each providing some traditional features, but my least favorite season is probably winter. Don't get me wrong, there are some beautiful winter days – pristine, clean looking landscapes monotonously all covered white, hiding the scars of prior days and sometimes poor decisions.



My wife and her sister quite often refer to and compare winters to the "winter of '78." To them, it's not only noteworthy weather wise, but also a bit of an age factor indicator. I've certainly not forgotten that winter. Literally mountains of snow that had to be dug through, not plowed, and multiple tractors gelling up, creating the need to feed silage completely by hand. No other winter since has dared to compare – that's a good thing.

Lots of things have changed since then – winter weather is one of them. I'll leave it up to you to decide if it is a trend or a direction. Either way, winter is still challenging. Winters in the past almost always blessed us with extended frozen soil conditions – that is usually not the case now. The past couple of winters it seems I could count the length of frozen soil in days, not weeks. There is a lot of benefit to having some of that free concrete. You could graze or move hay around and even place hay on fields where you might want to feed it, with no or little worries about rutting or excessive compaction.

When winters are mild and especially when they are also wet, soil conditions just are not as compatible for a lot of winter use. If you want to graze under these types of winter conditions, then you're going to have to be very careful how you do it.

One of the first things that you're going to have to pay attention to is the amount of forage that is available in that pasture. If you don't have enough cover, residual or a decent heavy stand of forage, then your potential to cause damage grazing on the site increases.

Ideally, you really need a total of about 3,000 pounds of dry matter per acre to be able to graze under wet soil conditions without causing some potentially long-lasting damage to the forage stand and the soil. That sounds like a lot, but it's only about ten inches of dense forage, sometimes slightly less. A good healthy grass/legume stand can easily produce 250 to 300 pounds of dry matter per acre inch.

When forages have been allowed to regrow and are stockpiled for later use, not only has the above ground biomass increased, but also the below ground system. It is not a failproof system, but certainly does provide some resiliency over pastures or systems that have been continuously grazed closer than ideal and thus lacking the additional underground supportive structure.

That said, there are also benefits to having that much growth on the surface. First, it is winter feed that can be utilized and allocated in such a manner to be very efficient without the need to get a tractor out or worry about relocating manure the next season – it's automated. Second, what isn't consumed is usually laid down upon the soil surface to become litter or residue to protect the soil surface, provide some nutrients for the next seasons growth, improve infiltration of winter precipitation and buffer some of the hoof action under wet conditions.

If you don't have this cover and the associated root mass created from the good cover, then the pasture will not fair nearly as well if grazed under wet conditions – expect excessive pugging, soil disturbance, forage stand reduction and potentially long-lasting compaction. None of that is good, and depending on site conditions, the winter weather and a few other factors, it's a toss up of which one will be worse. Quite often the one that is noticed the most is increased weed presence and pressure the following season. That is primarily due to soil disturbance, then loss of forage stand integrity, and lastly cover. You might have thought you fared well over winter until spring comes when suddenly, where did all these weeds come from?! Early successional annual weed species are expected, especially foxtails and crabgrass, but more aggravating species such as spiny pigweed and cockleburrs like to bounce back from old seed banks to try and reestablish themselves with some vengeance. These seedbanks are only held hostage from persistent maintenance of cover and competition or mechanical and/or chemical treatment after the fact.

Feeding hay on pasture can absolutely reduce time in winter feeding areas and can also boost organic matter and nutrients to sites that need it. Rolling out those bales to feed them helps to more evenly distribute hay and livestock waste across a larger area. It also reduces the impact and time spent on any specific area. A large round bale fed within a ring or on a wet site can quickly turn the area around the bale to a soupy mess. Soil structure is heavily damaged. This is a good reason to try and feed either on frozen or dry soils or on a feed pad.

Feed pads can be built of rock or concrete. They should always be placed a good distance from any water body, yet convenient for access and ideally where wind protection is available for the livestock. Rows of large hay bales, a solid fence, a building, trees or topography can all provide a decent windbreak.

Occasionally, a pasture is damaged from hoof action on wet soils no matter how much we try to prevent it. An unexpected rain during the grazing allocation or, more likely, more rain than expected for any given time frame can quickly compromise the integrity of the stand. It has certainly happened to me – especially when setting up areas to be grazed for a few days while I'm away. The plan can fail. The light drizzle that was predicted can turn into two or more inches of hard rain and the perfect allocation quickly was not enough.

If this has happened, make sure you assess pastures, paddocks, or areas of either, as they might be good candidates for some winter dormant overseeding. Assess the damage. How much bare ground do you see? If you have 80 percent or more live plant cover, then I wouldn't get concerned because most of the spaces will be filled in by spring. If the live plants cover 60 percent or more of the stand, then the addition of some more

legumes such as clover will quickly fill in the void areas. If there is over 40 percent bare ground, then additional seed is normally needed.

Broadcasting some seed during the dormant period on these thin areas will increase the chances of better stands and perhaps some more control of spontaneous weeds the next spring. Clovers are pretty easy – just make sure they are inoculated appropriately with the correct rhizobium for the species. Smooth, small-seeded grasses usually do best for overseeding. I don't recommend doing an entire replanting at this time, but I'd rather risk a little seed to fill in some gaps than wrestle with feisty weeds. Timothy, perennial ryegrass, Italian ryegrass, redtop and bluegrass are probably good choices for such purpose.

May your roots grow deep, and your soils be rich – Merry Christmas! Remember, it's not about maximizing a grazing event, but maximizing a grazing season! May the grass grow deep roots under your feet and your soil be rich. Keep on grazing!

The Ag Law Harvest

By: Jeffrey K. Lewis, Wednesday, November 24th, 2021

Source: <https://farmoffice.osu.edu/blog/archive/202111>

In this edition of the Ag Law Harvest and in the spirit of Thanksgiving, we are thankful for the opportunity to present to you the newly proposed definition of “waters of the United States”, Kansas's battle to protect agricultural facilities, and food labeling cases from across the country.

EPA and Army Corps of Engineers propose rule to establish the definition of “waters of the United States.” The EPA and Army Corps of Engineers [announced](#) a [proposed rule](#) to return the definition of “waters of the United States” (“WOTUS”) to the pre-2015 definition with a few updates to reflect Supreme Court decisions. In 2020, the [Navigable Waters Protection Rule](#) went into effect and interpreted WOTUS to include: “(1) territorial seas and traditional navigable waters; (2) tributaries of such waters; (3) certain lakes, ponds, and impoundments of jurisdictional waters; and (4) wetlands adjacent to other jurisdictional waters (other than jurisdictional wetlands).” On January 20, 2021, President Biden signed [Executive Order 13990](#) directing all executive agencies to review and address any federal regulations that went into effect during the previous administration. After reviewing the Trump Administration's Navigable Waters Protection Rule, the agencies determined that the rule is significantly reducing clean water protections. The new rule proposed by the agencies seeks to interpret WOTUS to include: (1) traditional navigable waters; (2) interstate waters; (3) the territorial seas and their adjacent wetlands; (4) most impoundments of WOTUS; (5) tributaries to traditional navigable waters, interstate waters, the territorial seas, and impoundments, that meet either the relatively permanent standard of the significant nexus standard; (6) wetlands adjacent to impoundments and tributaries, that meet either the relatively permanent standard or the significant nexus standard; and (7) “other waters” that meet either the relatively permanent standard or the significant nexus standard. The agencies will be taking comment on the proposed rule for 60 days once the rule is published in the Federal Register.

Kansas Attorney General asks Supreme Court to review Kansas “Ag Gag” Law. Derek Schmidt, Attorney General of Kansas, has asked the United States Supreme Court to review [the Kansas Farm Animal and Field Crop and Research Facilities Protection Act](#) (the “Act”) which criminalizes the unauthorized access to agricultural facilities without consent of the owner of the facility with the intent to damage the business of the facility. Under the Act, consent is not effective if it is “[i]nduced by force, fraud, deception, duress or threat.” Earlier this year, [the 10th Circuit Court of Appeals found](#) the Kansas law to be unconstitutional by violating the free speech clause in the First Amendment of the United States Constitution and prohibited Kansas from enforcing the Act. Now, [Derek Schmidt has petitioned the Supreme Court](#) to review the Kansas law arguing that the Act does not violate the First Amendment because the Act regulates conduct not speech. The Attorney General goes on to argue that even if trespass by deception were to be considered a form of speech, it is a form of speech that is not protected by the First Amendment. The Attorney General reasoned that the Act protects a private property owner's right to exclude and that the First Amendment does not provide a license to violate a person's property rights.

Oklahoma's meat labeling law on trial. Earlier this month, the Plant Based Foods Association and the Tofurky Company ("Plaintiffs") [filed an amended complaint](#) challenging [Oklahoma's Meat Consumer Protection Act](#) (the "Act") alleging that the Act violates the dormant commerce clause, the due process clause, and the supremacy clause of the United States Constitution. Plaintiffs allege that the Oklahoma law "institutes a protectionist trade barrier" that is contrary to and preempted by federal law. According to Plaintiffs, the Act "forbids plant-based meat producers from using meat terms unless they include a disclaimer on their product labels in the same type size and prominence to the 'name of the product' that their plant-based products are not actually meat derived from animals." Plaintiffs argue that the Oklahoma law would require plant-based meat producers to develop Oklahoma specific labels or abandon the Oklahoma market which is essentially interfering with interstate commerce and in violation of established federal law. This case is set for trial in 2022. But, this is not the first time the Oklahoma law has been challenged on constitutional grounds. Plant Based Foods Association and Upton's Naturals Company also filed suit alleging the Oklahoma law violated the First and Fourteenth Amendments of the Constitution. However, a [Federal District Court in Oklahoma denied an injunction](#) to prevent Oklahoma from enforcing the law. The court found that the disclosure requirement in the Act is reasonably related to Oklahoma's interest in preventing the confusion or deception of consumers. The court reasoned that the commercial speech at issue could potentially be misleading to reasonable consumer. The court argued that "the possibility of deception flowing from the use of meat-related terms for the plant-based products is self-evident from the natural inference a consumer would draw from the meat-related terms used." This not the end of the battle for the Oklahoma law, there will likely be appeals to higher courts to help settle the dispute.

Pepperidge Farm sued over "Golden Butter" cracker label. Hawa Kamara decided to file a lawsuit against Pepperidge Farm, Inc. after purchasing "Golden Butter" crackers at a local Target store in New York. According to the ingredients list attached to Kamara's complaint, the crackers were made with butter but also included vegetable oils. Kamara asserted that the presence of vegetable oils makes the "Golden Butter" packaging misleading and/or deceptive because a reasonable consumer would conclude the crackers were "all or predominantly made with butter." [A Federal District Court in New York, however, did not find the packaging misleading or deceptive.](#) The court reasoned that "the packaging accurately indicated that the product contained butter, and the ingredients list confirmed that butter predominated over other oils and fats." Further, the court argued that a reasonable consumer could believe the "Golden Butter" labeling described the product's flavor and not the ingredient proportions. Ultimately, the court decided to dismiss the case against Pepperidge Farm because Kamara's complaint did not plausibly allege that the "Golden Butter" packaging materially misrepresented the ingredients in the crackers.

Ohio Cow-Calf Assessment- What We Do and Why?

By: [Garth Ruff](#), Beef Cattle Field Specialist, OSU Extension

Source: <https://u.osu.edu/beef/2021/11/24/ohio-cow-calf-assessment-what-we-do-and-why/#more-11785>

Please participate in our survey and help us, help you!

We at OSU Extension want to hear from you regarding basic cow-calf management practices that you implement on your farms. Why? Aside from an individual program evaluation or farm visit, common cow-calf production practices have never been documented on a statewide here in Ohio.

By better understanding practices implemented by Ohio producers, we as in the OSU Extension Beef Team will be able to tailor programming more specifically to meet your needs. Furthermore, this survey might indicate potential for areas of research that we have yet to identify through current processes.

This type of project is nothing new, just new to Ohio. Our colleagues and counterparts in other states have been doing similar work over the years. Our goal is to take the knowledge gained regarding your production practices and be able to create better programming and recommendations that have a positive impact on farm efficiency and profitability.

The link below will take you to an electronic survey that is Phase 1 of this project. Phase 2 will look at a more in-depth questionnaire focused of efficiency and profitability of those practices implemented. There is an opportunity to enroll into Phase 2 if you so choose, within the initial electronic survey.

Survey Link: <https://go.osu.edu/ohiocattlesurvey>

Please take this short voluntary survey regarding current cow-calf production practices. This survey is part of a research effort conducted by The Ohio State University and should take 10 minutes or less to complete. Once again, your feedback is appreciated as we assess current on farm practices on Ohio's beef farms.

Results from this survey in addition to beef cattle research will allow for more specific programming and recommendations from OSU Extension. If you have any questions regarding the survey, contact Garth Ruff, OSU Extension Beef Cattle Field Specialist at ruff.72@osu.edu.

Falling Leaves Poison with Ease

By: [Haley Zynda](#), Agriculture and Natural Resources Educator, OSU Extension, Wayne County

Source: <https://u.osu.edu/beef/2021/11/24/falling-leaves-poison-with-ease/>

Even though we're only a couple weeks away from the true start of winter (hard to believe, I know), some trees are still clutching onto their leaves as if the dying foliage will be enough to fortify their soon-to-be bare branches against the frigid temperatures. It's important to take note of the trees that have leaves yet to fall, especially if you house livestock outside in pastures or sacrifice lots. I'm sure most have heard of the dangers of black/wild cherry limbs and leaves for cattle, but there are several other trees and shrubs that can cause negative impacts on cattle, horses, sheep, and goats.



Wild Cherry. Poisonous to all classes of livestock, wilted cherry leaves and branches can cause prussic acid poisoning, the same poisoning as seen in frosted sorghum-sudangrass. It's best to remove downed limbs and leaves from pastures to prevent incidental intake, or keep animals off the lot until the leaves have completely dried and become brittle.

Red Maple. Poisonous to horses, wilted red maple leaves can destroy red blood cells, which ultimately leads to decreased oxygen supply to the horse's organs and extremities. Similar to the wild cherry, make sure to remove downed limbs and leaves. If total leaf removal isn't possible (i.e., too many trees to adequately clean up after), ensuring there is plenty of forage such as pasture, or hay in the winter, should occupy the horses to keep them away from the leaves. Keeping horses off the pasture is another option.

Oak. Oak leaves are most dangerous in their green form and are most toxic to cattle and sheep, but can affect horses if enough leaves and acorns are eaten. Gallotannin is the compound found in all parts of the oak tree, which is broken down into tannic acid in the digestive tract. This can cause ulceration in various parts of the tract as well as kidney failure, which is typically the cause of death in acorn poisoning. An overload of acorns in the diet can also cause compaction colic in horses.

Yew. This evergreen is extremely toxic to all classes of livestock and all parts of the bush, with the exception of the berry flesh, are poisonous. As little as 1 pound of yew leaves or branches is enough to kill a 1000-pound animal. Taxine is the primary toxin in yew bushes and affects the heart. Removing yew shrubs from fence lines is a way to prevent poisoning, and never dump shrub trimmings into the pastures where animals graze. With the holidays upon us, this evergreen is found in outdoor décor, so take care when disposing of the branches after the holiday season.

Black Walnut. Mainly affecting horses, black walnut toxicity manifests as laminitis and colic. Horses are not only be affected through eating black walnut leaves, but also through sawdust or wood shavings that contain black walnut wood. The mechanism of laminitis is not yet entirely known in black walnut bedding cases, but the

toxin juglone may be absorbed through the coronary band (when the hoof meets the pastern) and interrupts blood flow. Shavings containing 20% black walnut are known to cause ill effects; rapid breathing may also accompany bedding-type poisoning.

In summary, take inventory of the trees and shrubbery around the barn and pastures. In some instances, only a few mouthfuls of leaves is enough to harm or kill livestock, leading to profit losses and replacement costs. Clean pastures and fence lines can do wonders to keeping your livestock safe.

Farmland and Farmland Owner Tax Webinar

Source: <https://farmoffice.osu.edu/tax/farmer-and-farmland-owner-income-tax-webinar>

Are you a farmer or farmland owner wanting to learn more about the recent income tax law changes and proposals? If so, join us for this webinar. If so, please plan to attend the Farmer and Farmland Owner Tax Webinar on Thursday, December 9, 2021 from 6:30 - 8:30 p.m.

This webinar will focus on issues related to farmer and farmland owner tax returns, COVID-19-related legislation introduced in 2020 and 2021 and federal legislative proposals and possible tax changes that may impact the farm sector. This two-hour program will be presented in a live webinar format via Zoom by OSU Extension Educators Barry Ward and David Marrison along with Purdue faculty member Dr. Michael Langemeier. Individuals who operate farms, own property, or are involved with renting farmland should participate.

Topics to be discussed during the webinar include (subject to change based on tax law change):

- Tax Planning for Higher Income Years
- Sale of Farm Assets
- Tax Issues related to COVID-related legislation
- Federal Legislative Proposals and Possible Tax Impacts
- Like Kind Exchanges (farm machinery and equipment no longer are eligible for this provision) how this change may affect state income tax, Social Security credits and eventual payments
- New 1099-Misc and 1099-NEC

The registration fee is \$35 per person. Additional details can be found at:

<https://farmoffice.osu.edu/tax/income-tax-schools> For more information, contact Julie Strawser at strawser.35@osu.edu or call the OSU Extension Farm Office at 614-292-2433.

BQA Re-certification Sessions Planned

The Coshocton County Extension office will be offering two **Beef Quality Assurance (BQA)** re-certification meetings during the month of December to help producers renew their BQA certification. These sessions will be held tonight December 1 and again on December 14 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 for each session 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.

If you cannot attend one of our local sessions, our friends down in Tuscarawas County will also be holding a Beef Quality Assurance class on December 9 beginning at 7:00 p.m. at the Sugarcreek Stockyards. Call 330-339-2337 to pre-register. Online certification and recertification is also available and can be completed anytime at <https://www.bqa.org/beef-quality-assurance-certification/online-certifications>.



Upcoming Programs

2021 Beef Quality Assurance Re-certifications- Coshocton County
December 1 & 14, 2021 (7:00 to 8:30 p.m.)

2022 Private Pesticide & Fertilizer Re-Certification

January 12 from 8:30 a.m. to 12:30 p.m. at Locke Landing in Roscoe Village

January 20 from 9:00 to 10:00 a.m. in Room 145, Coshocton County Services Building (Fert Only)

February 10 from 5:30 p.m. to 9:30 p.m. in Room 145, Coshocton County Services Building

2022 Agronomic Weeds School

February 2 from 9:00 a.m. to 4:00 p.m. in Room 145, Coshocton County Services Building

2022 Tiverton Institute

March 1 & 2, 2022

Check out <http://go.osu.edu/coshocton-agnews> for
back issues of the Coshocton County Agriculture &
Natural Resources Newsletter

