

COSHOCTON COUNTY AGRICULTURE & NATURAL RESOURCES**April 14 Issue (Edition #90)**

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Hello Coshocton County! The month of April has given us plenty of sunshine and warmer temperatures to really wake the landscapes up. I have enjoyed watching our landscape pop with the brilliant colors from the tulips we planted last fall, eating fresh asparagus, watching our young group of goats frolicking across the pasture, smelling fresh cut grass, and the soil being turned by area farmers. The rain over the past week has also been very helpful. Spring is alive and well in Coshocton County.

The Master Gardener Volunteers were busy this past weekend working in the phenology garden at the Lake Park complex. The group was also selected by the Ohio Department of Agriculture to be one of the counties to receive packets of victory garden seeds. They have 300 packets which include cucumber, radish and sunflower seeds. I encourage you to check out the article in this newsletter to see how you can receive your free packet.

Have a great week!

Sincerely,

David L. Marrison

Coshocton County OSU Extension ANR Educator



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

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Get Your Victory Garden Seeds from Master Gardener Volunteers

It's time to get your hands dirty and start growing! The Ohio Department of Agriculture (ODA) and OSU Extension Offices are kicking off the second year of the Victory Gardens Program. Due to high demand, the program is expanding from 10 to 25 counties across the state, with 8,300 seed packets available free to the public to get people planting.

"We have seen a revived passion for planting through our Victory Gardens Program, which has expanded to 15 additional counties this year," said Dorothy Pelanda, Director of the Ohio Department of Agriculture. "Our Ohio Victory Gardens are meant to be enjoyed by everyone, from urban apartment dwellers, to those living in the country, and everyone in between. We hope this will inspire a new generation of gardeners who will be able to enjoy the fruits of their labor for years to come."



"We are excited to expand our partnership with ODA on the Victory Garden Program. Last year, we had an overwhelming positive response to the program, so this year, we will be expanding the seed distribution initiative to 25 Ohio State University Extension county offices," said Dr. Cathann A. Kress, Vice President for Agricultural Administration and Dean, College of Food, Agricultural and Environmental Sciences. "No matter your level of gardening experience, our OSU Extension educators will provide expertise that will help your gardens thrive."

OSU Extension and the Coshocton County Master Gardener Volunteers have 300 seed samples for the Coshocton County Community. Each packet contains radishes, cucumbers and sunflowers. The Master Gardeners will be distributing the seed packets on the following dates and locations:

Clary Gardens

Thursday, April 22 from 1:00 to 3:00 p.m.

Compton House (red house)

588 W Chestnut Street, Coshocton, Ohio 43812

Any remaining seeds will be distributed on April 26, 28 and 30, 2021 from 8:00 to 5:00 p.m. at the Coshocton County Extension office located at 724 South 7th Street, Room 110 in Coshocton, Ohio.

Planting resources and other information about gardening can be found at the [Ohio Victory Gardens website](#).

Victory Gardens originated during World War I, an answer to a severe food shortage at the time. The idea was wildly successful, growing an army of amateur gardeners and serving to boost morale and patriotism. Although there's no food shortage now, ODA and OSU Extension are reviving the effort and once again encouraging people to plant seeds, realize the fruits of their labor, and share with others if inspired.



Good or Bad Idea? Planting Corn and Soybean in Early April

By: Alexander Lindsey & Laura Lindsey, OSU

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/09-2021/good-idea-bad-idea-planting-corn-and-soybean-early-april>

Planting when conditions are adequate (soil temperatures above 50°F and greater than 45% plant available water content) is recommended for corn and soybean. This year, these conditions are occurring sooner than normal. At a two-inch depth, average soil temperature ranged from 48 to 51°F between April 1 and April 7 (Table 1). In general, early planting helps increase yield potential of both corn and soybean. For soybean, each day delay in planting after May 1 results in a yield decrease of 0.25 to 1 bu/acre/day. Additionally, there is also the real observation of the last few years that if you don't get planted early, rains in May could prevent planting all together (thinking of you, 2019). While there are benefits of early planting, there are also risks that should be considered (especially if the weather turns cool).



Figure 1. Freeze damage below the cotyledons. The soybean plant will not

Location	Average 2-inch soil temperature (April 1-7, 2021)	Last freeze date- 2020	Last freeze date- 2019	Last freeze date- 2018	Last freeze date- 2017	Last freeze date- 2016
Wood County	48°F	May 13	April 2	April 29	April 23	April 14
Wayne County	48°F	May 13	April 2	April 30	May 9	April 24
Clark County	50°F	May 12	April 2	April 29	May 8	April 12
Pike County	51°F	May 10	April 16	April 30	April 8	May 16

Table 1. Average two-inch soil temperature from April 1 through April 7, 2021 and last freeze date (air temperature $\leq 32^{\circ}\text{F}$) for the past five years. (Data from CFAES Weather System: <https://www.oardc.ohio-state.edu/weather1/>).

The first step in germination is the process of imbibition, or absorbing water from the soil for 24-48 hours after planting. Generally, seeds need to return to their moisture levels at physiological maturity (30% moisture for corn, 50-55% for soybean) before germination begins. The temperature of the water should be above 50°F during this process or it can damage the cells in the seed (referred to as 'imbibitional chilling'). We have had imbibitional chilling occur in parts of Ohio where soil temperatures were warm (>50°F) but then we had snow or cold rain within 12 hours of planting, which damaged seedlings and contributed to poor stands or seed mortality (forcing replant).

The second phase of germination called the lag or activation phase involves seed reserve mobilization and cell wall loosening. Cool temperatures can slow this phase, which can affect how quickly the seeds will sprout. The final step is growth and is marked by radicle emergence. The seed is now fully committed to growth and must rely on internal food reserves to fuel growth until it emerges and can start photosynthesizing. Rate of growth is influenced by accumulated growing degree days (GDDs) or heat units. If days turn cooler after planting, fewer GDDs are gained each day resulting in more days in the soil without photosynthesizing. This can deplete seed reserves. Recent work from Ohio (2017-2019) suggests 155 soil GDDs after planting are needed to facilitate corn emergence without incurring a yield penalty.

After emergence, growth in corn is fueled by GDD accumulation. Late frosts can damage leaf tissue, but the growing point remains belowground for corn until V6 growth stage (approximately 550-600 GDDs from planting). If the growing point is not damaged, the plant should be able to re-grow and no yield loss is

expected. (Complete defoliation of corn through the V5 growth stage resulted in no yield loss.) For soybean, the growing point is above the soil surface at emergence (VE growth stage). If freeze damage occurs below the cotyledons, the plant will not recover (Figure 1). The last freeze date (air temperature $\leq 32^{\circ}\text{F}$) for the past five years has ranged from as early as April 2 to as late as May 16. However, a temperature of $\leq 32^{\circ}\text{F}$ does not necessarily mean there will be freeze damage. Freeze damage can be variable based on soil moisture, landscape position, and crop residue in the field. Also, keep in mind, reported air temperatures are usually from several feet above the soil surface. Temperatures near the soil are often warmer, especially when the soil is wetter. If we do encounter a drop in temperature, wait at least five days to check your plants for damage.

One final consideration with planting early is planting depth. Shallower planted seeds will accumulate GDDs faster than deeper-planted seeds, which may result in more rapid emergence. However, moisture for imbibition tends to be more variable at shallow depths, which can lead to: i) greater fluctuations in temperatures (high temperatures will be greater and low temperatures will be lower compared to deeper planted seeds); and ii) less uniform emergence (takes longer to get all plants to emerge), which can ultimately cause yield decreases. Additionally, the crown of the plant (where the growing point resides) may be closer to the soil surface if planted shallow. This means there is less protection for the crown if temperatures drop unexpectedly prior to V6 growth stage of corn, possibly causing damage to the growing point. Shallow planting can also result in poor nodal root formation in the season and may cause rootless or floppy corn syndrome to develop at the V4-6 growth stages.

Opportunities to Manage Risk in 2021

By: Kenny Burdine, Livestock Marketing Specialist, University of Kentucky

Source: <https://u.osu.edu/beef/2021/04/14/opportunities-to-manage-price-risk-in-2021/>

When Josh, James, and I put together our spring market outlook article and video in early March, we shared an expectation of improving feeder cattle prices throughout 2021. Similar forecasts have been made by many analysts given an expectation of improving domestic demand and some encouraging export levels to start the year. This same general optimism can be seen in CME® feeder cattle futures prices as deferred months are trading at significant premiums to nearer months. This is not uncommon in the spring of the year, but the magnitude of this carry in 2021 is much larger than usual. James referenced the wide April to September spread in his article [last week](#). As I write this on April 12, 2021, the August through November feeder cattle futures contracts were trading at a \$14-\$18 premium over the April contract. The settle prices from Friday April 9th are shown in the table below.

CME® FEEDER CATTLE FUTURES	
APRIL 9 SETTLE	
Contract Month	Price per cwt
April 2021	\$144.750
May 2021	\$149.625
August 2021	\$159.950
September 2021	\$160.875
October 2021	\$161.550
November 2021	\$161.975

The simple way to think about this is that the futures market is expecting heavy feeder cattle prices to increase by \$14-\$18 per cwt between now and the August to November time period. While there is value in that implied forecast, it also speaks of opportunity. From a price risk management perspective, the futures market is giving us an opportunity to capitalize on a much higher price expectation for summer and fall. Cow-calf operators who plan to keep calves through until summer or stocker operators / backgrounders who will be selling heavy feeders this fall, may want to consider what the market is currently offering. Fortunately, there are several ways this can be done.

The first possibility would be to enter into a cash forward contract with a buyer looking to place feeders later in the year. The two parties would agree on a price now for cattle to be delivered at a later date and this

expectation of higher prices should be reflected in the contract price. Assuming the contract is binding and enforceable, this strategy eliminates price risk. However, production risk remains a concern if cattle don't perform as expected, fail to reach the agreed upon weight, or if weather conditions necessitate earlier sale of the cattle. While I certainly feel forward contracts are an excellent price risk management tool, they are very limited in much of the South.

Hedging, through the sale of deferred futures contracts, is another way to capitalize on a strong futures market. As an example, a producer who plans to sell cattle in September, may choose to sell a September CME® Feeder Cattle futures contract now in order to have downside price protection. If feeder cattle markets decline between now and September, they can make money on the short futures position, which will offset the loss in value of the cattle they will sell. Producers who choose to implement this strategy need to be certain they have access to considerable capital for potential margin calls. In a bull market, producers can lose a lot of money on short futures positions well before they are able to sell their cattle on the stronger market. Lenders need to be fully aware of the plans if this strategy is used. Producers must also consider basis as they evaluate this strategy. A September CME® feeder cattle futures price of \$160 per cwt, likely translates into something closer to \$150 for an 800 lb steer in the Southeast, but this will vary based on the location, type and quality of the cattle.

Options on futures contracts provide an opportunity to have some downside protection, but also keep the ability to capitalize on rising prices. For example, if the September CME® feeder cattle futures contract were trading at \$160 per cwt, the producer might buy a put option with a strike price of \$154. The put option gives the producer the right to sell September futures at \$154, which means they will gain on the option as the market falls below \$154. They will pay a premium for this right, which becomes an additional cost. They must also self-insure the first \$6 per cwt drop in the market (the difference between the futures price and the strike price on the put). Much like hedging through the sale of a futures contract, basis must also be considered with an option strategy as the strike price is based on the futures market.

An additional limitation of both futures based strategies (sale of futures and purchasing of options) is the 50,000 lb CME® Feeder Cattle contract size. The vast majority of cattle producers in the South are not large enough to utilize futures and options. Fortunately, Livestock Risk Protection (LRP) insurance provides an opportunity to purchase an insurance product very much like a put option, but that can be scaled to any sized operation. Additionally, the subsidy on LRP has been increased substantially over the last couple of year, which makes it much more attractive from a premium perspective.

LRP is an insurance product that pays an indemnity if the CME® Feeder Cattle Index is below a selected coverage level on the ending date of the insurance policy. The CME® Feeder Cattle Index is used to cash settle open CME® Feeder Cattle contracts at expiration, so this insurance product is very similar to a put option. Consider the option example from before for a producer that planned to sell 800 lb feeder steers in September. Rather than purchasing a September put, that producer could instead purchase LRP insurance with a coverage level of \$154 per cwt and an ending date in September. If the CME® Feeder Cattle Index was below \$154 on the ending date of the policy, they would be indemnified for the difference on every cwt they covered. They must still self-insure the decrease until the index reaches \$154 and they must also understand basis – the policy is indemnified based on the CME® Feeder Cattle Index, rather than what they sell their cattle for.

Risk management strategies are very much dependent on the financial situation and risk preferences of the individual. The purpose of this week's article was largely to point out what is being offered by the market and review some price risk management strategies that are available. The futures market does seem to be offering some attractive opportunities right now for someone who wants to establish some downside price risk protection for the rest of the year. By no means is that to say that this market can't go higher. Ask anyone who jumped on the 2014 market too early and they will quickly tell you that markets can always go higher. But, there are just as many examples of producers who chose not to cover their downside and watched expected profits quickly turn into losses. Predicting the future direction of the cattle market is impossible, but having risk management as part of a marketing plan is something every producer should consider.

2021 Farm Sector Income Forecast

Source: <https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast/>

Net farm income, a broad measure of profits, is forecast to decrease \$9.8 billion (8.1 percent) from 2020 to \$111.4 billion in 2021. This expected decline follows a forecast increase of \$38 billion (45.7 percent) in 2020. After increasing \$27.3 billion (25.0 percent) in 2020, net cash farm income is forecast to decrease \$7.9 billion (5.8 percent) to \$128.3 billion in 2021. In inflation-adjusted 2021 dollars, net farm income is forecast to decrease \$12 billion (9.7 percent) and net cash farm income is forecast to decrease \$10.4 billion (7.5 percent). If realized, both income measures would remain above their historical average across 2000-19 even after adjusting for inflation.

See a summary of the forecasts in the table [U.S. farm sector financial indicators, 2014-21F](#), or see all data tables on [farm income and wealth statistics](#).

Note: In the text below, year-to-year changes in the major aggregate components of farm income are discussed only in nominal dollars unless the direction of the change is reversed when looking at the component in inflation-adjusted dollars.

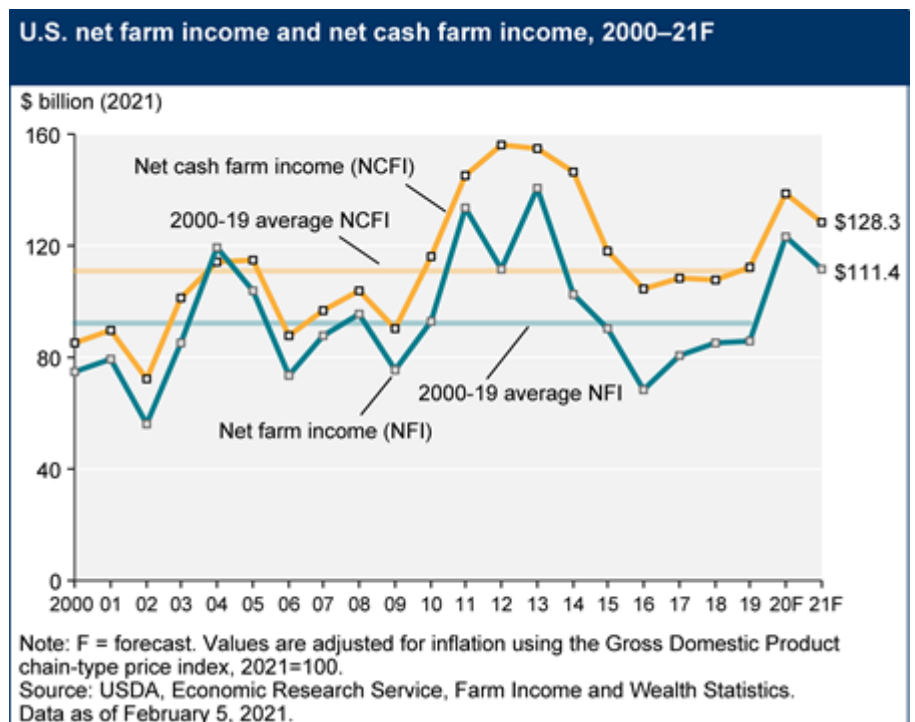
Summary Findings

Overall, farm cash receipts are forecast to increase \$20.4 billion (5.5 percent) to \$390.8 billion in 2021 in nominal dollars. Total animal/animal product receipts are expected to increase \$8.6 billion (5.2 percent) following increases in receipts for cattle/calves, hogs, and broilers. Total crop receipts are forecast to increase \$11.8 billion (5.8 percent) from 2020 levels. When combined, soybean and corn receipts are forecast to increase \$16.1 billion (19 percent) in 2021, more than offsetting declines in fruits/nuts, vegetables/melons, and cotton.

Direct Government farm payments are forecast at \$25.3 billion in 2021, a \$21 billion (45.3 percent) decrease from 2020. Direct Government farm payments include Federal farm program payments paid directly to farmers and ranchers but exclude U.S. Department of Agriculture (USDA) loans and insurance indemnity payments made by the Federal Crop Insurance Corporation. Most of this decline is because of lower supplemental and ad hoc disaster assistance to farmers and ranchers for the coronavirus (COVID-19) pandemic compared with 2020.

Total production expenses, including expenses associated with operator dwellings, are forecast to increase \$8.6 billion (2.5 percent) in 2021 to \$353.7 billion. Expected higher spending in 2021 on feed, fertilizer, and labor is the greatest contribution to this increase.

Farm sector equity is expected to increase by 1.8 percent to \$2.74 trillion in nominal terms, a decline of 0.1 percent after adjusting for inflation. Farm sector assets are forecast to increase 1.8 percent in 2021 to \$3.18 trillion following increases in farm real estate. When adjusted for inflation, total assets are nearly unchanged from 2020. Farm sector debt is forecast to rise 2.2 percent to \$441.7 billion, with real estate debt forecast to rise 3.1 percent. Debt-to-asset levels for the sector have been trending higher since 2012 and are forecast to



rise slightly in 2021 to 13.89 percent. Working capital is forecast to decrease 12 percent in 2021, after a forecast increase of 7.8 percent in 2020.

Growth in Crop Receipts Forecast For 2021

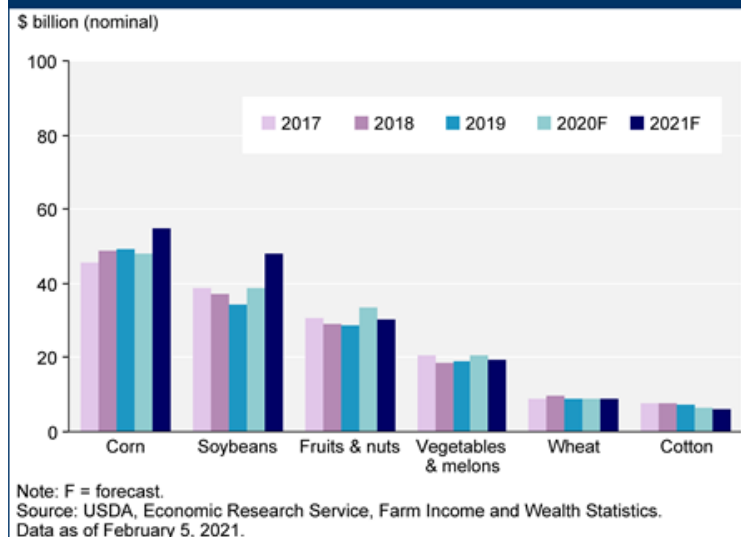
Crop cash receipts are forecast at \$215.7 billion in 2021, an increase of \$11.8 billion (5.8 percent) from 2020 in nominal terms. A \$16.1 billion increase in corn and soybean receipts alone more than accounts for the overall net increase, while receipts are expected to fall for vegetables and melons, fruits and nuts, and cotton.

Soybean receipts in 2021 are expected to increase \$9.4 billion (24.3 percent), because of forecasted growth in both prices and quantities sold. Similarly, corn receipts are forecast to increase by \$6.7 billion (14 percent) in 2021, caused by higher expected prices and quantities. Lower cotton lint and cottonseed receipts are expected to cause a decrease of \$0.3 billion in total cotton receipts (3.9 percent) in 2021. Wheat receipts are forecast to increase \$0.2 billion (2.2 percent), as prices and quantities sold are both expected to increase slightly. Receipts for sorghum are forecast to increase \$0.2 billion (12.3 percent), also because of projected increases in both prices and quantities sold.

Vegetable and melon cash receipts are expected to fall \$1.2 billion (5.7 percent) in 2021, mostly because of lower prices. Cash receipts for fruits and nuts are expected to fall \$3.2 billion (9.6 percent) in 2021, as the effects of lower prices should outweigh a positive quantity effect. A decline in sugar beet receipts is also forecast for 2021, totaling \$0.3 billion (17 percent).

See data on [value of crop production](#) (in the value added table) and [crop cash receipts](#).

U.S. cash receipts for selected crops, 2017–21F



Animal/Animal Product Receipts Forecast to Increase in 2021

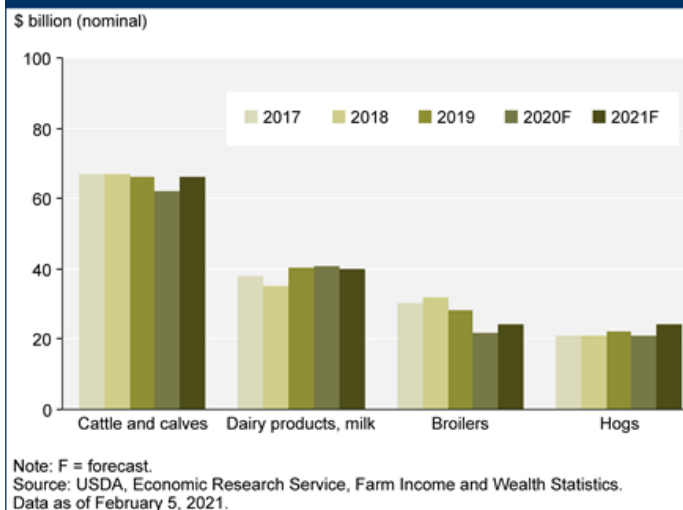
Total animal/animal product cash receipts are expected to increase \$8.6 billion (5.2 percent in nominal terms) to \$175 billion in 2021. This includes growth in receipts for cattle and calves, broilers, and hogs, while declining cash receipts are expected for milk and chicken eggs.

Milk receipts are expected to decrease \$0.8 billion (2 percent) in 2021, reflecting a lower price forecast. Cash receipts from cattle and calves are expected to increase \$3.9 billion (6.4 percent), mainly because of higher price forecasts. Similarly, a higher price forecast is the main driver of the forecasted increase of \$3.2 billion (15 percent) in hog cash receipts in 2021.

Broiler receipts are expected to increase \$2.3 billion (10.6 percent) in 2021, mostly due to higher expectations for prices. Cash receipts for chicken eggs are expected to fall \$0.2 billion (2.2 percent) in 2021, as negative price effects should outweigh positive quantity effects. Slightly higher prices and quantities sold should drive receipts for turkeys \$0.1 billion (1 percent) higher in 2021.

See data on [value of animal/product production](#) (in the value added table) and [animal/product cash receipts](#).

U.S. cash receipts for selected animals/products, 2017–21F



Increasing Prices and Quantities Sold Drive Growth in Cash Receipts in 2021

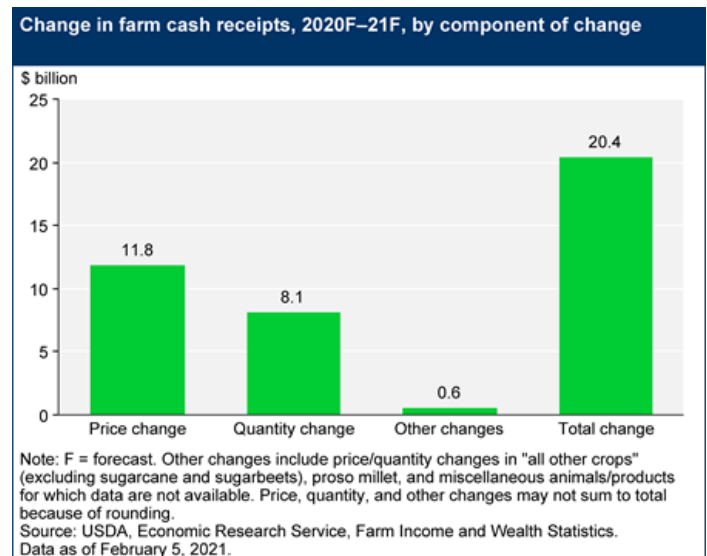
To better understand the factors underlying the forecast change in annual receipts from 2020 to 2021, we decompose the change into two separate effects:

- a "price effect" where we project the change in cash receipts associated with holding the quantity sold constant at 2020 levels and allowing prices to change to forecast 2021 levels, and
- a "quantity effect" where prices are held constant from 2020 and quantities change to forecast 2021 levels.

In 2021, increasing prices and quantities are expected to have positive effects on cash receipts. Overall, cash receipts are forecast to increase \$20.4 billion in 2021, with an estimated positive price effect of \$11.8 billion, and a projected positive quantity effect of \$8.1 billion.

In addition, an upward shift of \$0.6 billion is from forecasts for commodities whose price and quantity effects cannot be separately determined. Price and

quantity effects on cash receipts are positive for both crop and livestock commodities, with stronger price effects for livestock commodities, and stronger quantity effects for crops.



Direct Government Farm Payments Forecast to Decrease in 2021

Direct Government farm program payments are made by the Federal Government to farmers and ranchers with no intermediaries. Typically, most direct payments to farmers and ranchers are administered by USDA under farm bill legislation. Government payment amounts do not include Federal Crop Insurance Corporation indemnity payments (listed as a separate component of farm income) or USDA loans (listed as a liability in the farm sector's balance sheet). After reaching a record high in 2020, direct Government farm program payments are forecast to decrease 45.3 percent (\$21 billion) to \$25.3 billion in 2021. This overall decrease reflects lower anticipated payments from supplemental and ad hoc disaster assistance, mainly direct payments for COVID-19-related assistance.

Supplemental and ad hoc disaster assistance payments in 2021 are forecast at \$15.6 billion, a decrease of \$16.5 billion from 2020, mainly because of lower payments from the Coronavirus Food Assistance Program and the Paycheck Protection Program (PPP).

- The Coronavirus Food Assistance Program provides relief to producers whose operations have been directly affected by COVID-19. Payments in calendar year 2021 for these USDA programs are forecast at \$2.5 billion, compared with \$23.7 billion in 2020.
- Payments from the Paycheck Protection Program (PPP), administered by the Small Business Administration, are forecast at \$2.8 billion in 2021, compared with \$5.9 billion in 2020. The PPP payments are designed to help small businesses keep their workers on the payroll. Although administered as a loan, the loans will be forgiven if the program's requirements are met. We treat these loans as a direct payment to farmers (assuming all recipients will meet the requirements and therefore have their loan forgiven). The forecast amounts may be revised as more data become available, with any unforgiven amounts ending up as farm debt rather than a direct payment.
- Additional COVID-19-related aid to farmers in 2021 is expected to come from the Consolidated Appropriations Act, 2021 signed into law in December 2020. The total direct payments to farmers and ranchers under this legislation is forecast at \$8 billion in 2021 and are recorded under supplemental and ad hoc disaster assistance. This amount may be revised as more information becomes available.

Payments in calendar year 2021 under the Agriculture Risk Coverage (ARC) program are expected to decrease \$1.3 billion from 2020 levels while Price Loss Coverage (PLC) payments in 2021 are expected to

increase \$0.4 billion from 2020 levels. Under the 2018 Farm Bill, producers were able to change their program election (ARC or PLC) for their farms for crop year 2020 compared with the prior election for the farm under the 2014 Farm Bill, and many participants switched from ARC to PLC. Additionally, ARC payments are expected to decrease because of higher market prices for and higher yields in 2020 compared to 2019 levels, particularly for corn and soybeans. PLC payments are expected to increase because of lower prices for seed cotton, rice, and barley compared with 2019. If triggered, ARC and PLC payments for crop year 2020 are received in calendar year 2021.

Conservation payments from the financial assistance programs of USDA's Farm Service Agency and Natural Resources Conservation Service are expected to increase \$0.3 billion to \$4.2 billion in 2021.

The Dairy Margin Coverage Program replaced the Dairy Margin Protection Program in the 2018 Farm Bill and is forecast to make net payments of \$0.1 billion to dairy operators in 2021.

Minimal residual payments from the Market Facilitation Program (MFP) are included in our 2021 forecast, but at a much lower level than 2018-20 because no new payments have been programmed by USDA.

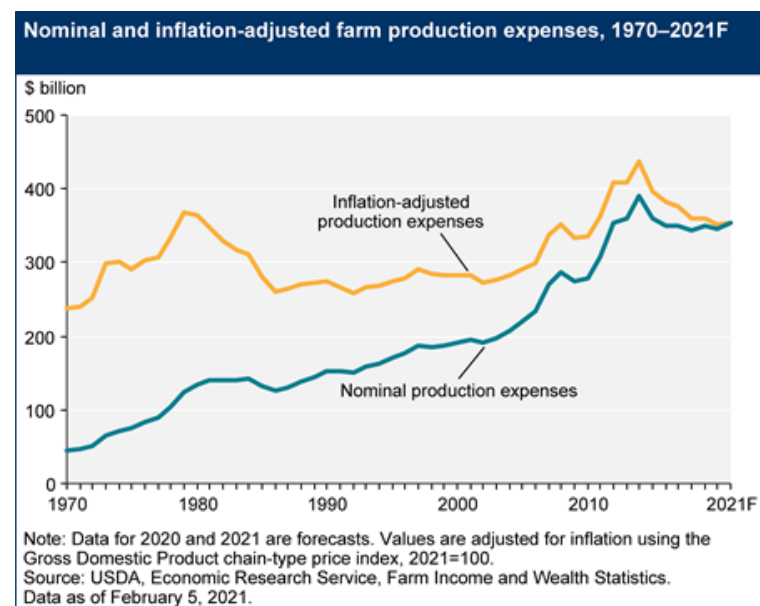
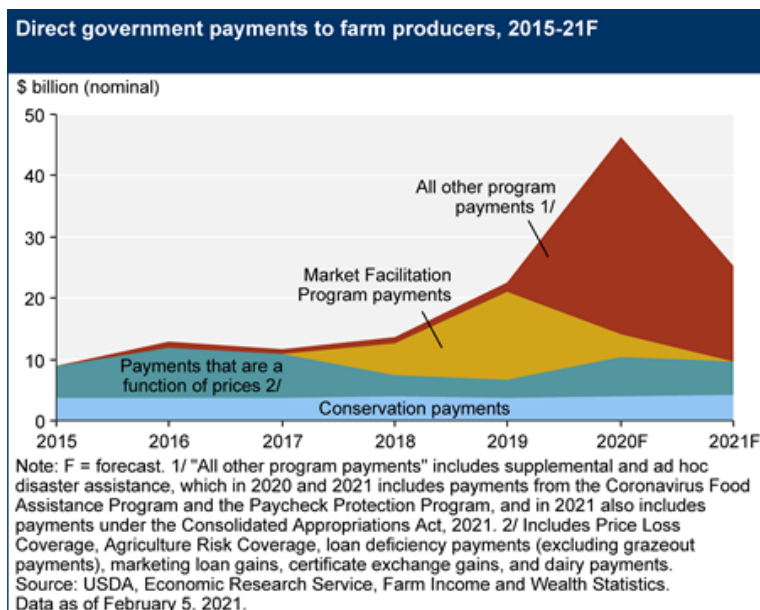
See data [table on government payments](#).

Production Expenses Forecast to Increase in 2021

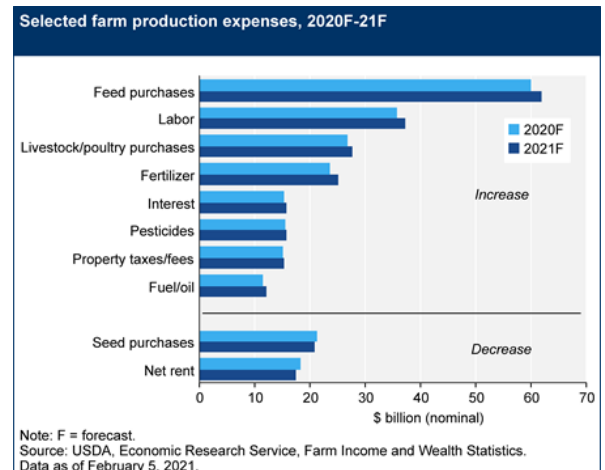
Farm sector production expenses (including expenses associated with operator dwellings) are forecast to increase \$8.6 billion (2.5 percent) in nominal terms to \$353.7 billion in 2021. If this forecast is realized, production expenses would remain 18.9 percent below the record high of \$436.1 billion in 2014 in inflation-adjusted terms. See data tables on [production expenses](#).

Fuel, Fertilizer, and Feed Among Costs Expected to Rise

- Fuel and oil expenses are projected to increase \$0.8 billion (7 percent) to \$12.2 billion in nominal dollars.
- Fertilizer-lime-soil conditioner expenses are expected to rise \$1.4 billion (6 percent) to \$25 billion.



- Overall, cash labor expenses are forecast to go up \$1.6 billion (4.6 percent) to \$36.9 billion, mostly because of an increase of \$1.5 billion (5.3 percent) in hired labor expenses.
- Livestock and poultry expenses are forecast to increase \$1 billion (3.6 percent) to \$27.7 billion.
- Feed expenses, the largest single expense category, are forecast to rise \$1.9 billion (3.2 percent) to \$62 billion in 2021.
- Interest expenses are expected to increase \$0.4 billion (2.6 percent) to \$15.8 billion.
- Pesticide expenses are forecast at \$15.7 billion, a marginal increase from the 2020 forecast.



Rent and Seed Expenses Expected to Fall

Net rent to landlords (including landlord capital consumption) is expected to fall by \$0.8 billion (4.4 percent) in 2021 to \$17.4 billion; property taxes and fees are forecast to increase \$0.2 billion (1.1 percent) to \$15.3 billion. Seed expenses are projected to fall \$0.4 billion (1.9 percent) to \$20.9 billion.

USDA Rolls out its Pandemic Assistance for Producers Initiative

By: Peggy Kirk Hall, Monday, April 12th, 2021

Source: <https://farmoffice.osu.edu/blog/mon-04122021-422pm/usda-rolls-out-its-pandemic-assistance-producers-initiative>

We are used to April showers in Ohio, but this year producers can also prepare for a showering of USDA pandemic assistance. [Secretary Vilsack just announced](#) the new “USDA Pandemic Assistance for Producers Initiative,” which will devote \$12 billion to deliver financial assistance and programs for agricultural producers affected by COVID-19 market disruptions. The USDA aims to spread those programs to a wider set of producers than previous COVID-19 programs.

While many program details and rules are still under development and expected later this spring, several types of CFAP assistance are in motion now. First, the USDA announced the reopening of round two of the Coronavirus Food Assistance Program (CFAP2) on April 5. Producers who haven’t yet signed up for CFAP2 may do so for at least the next 60 days at <https://www.farmers.gov/cfap/apply>. USDA will be distributing \$2.5 million in grants to further reach out to socially disadvantaged farmers who have not enrolled in CFAP2. Several automatically issued payments are also in the works for eligible producers already enrolled in CFAP1 and 2. Producers need not submit new applications for these payments, and we’ve heard some producers have already received them. The payments include:

- Increased CFAP1 payment rates for cattle. Cattle producers eligible under CFAP1 will automatically receive payments based on inventory of cattle between April 16, 2020 and May 14, 2020. Rates per head will be \$7 for feeder cattle less than 600 pounds, \$25.50 for feeder cattle at 600 pounds or more, \$63 for slaughter/fed cattle, \$14.75 for slaughter/mature cattle and \$17.25 for all other cattle.
- CFAP2 crop payments. Additional payments of \$20 per acre for producers of eligible flat-rate or price-trigger crops under CFAP2, which includes Ohio crops of alfalfa, corn, hemp, sorghum, soybeans, sugar beets, wheat and other grains, listed at <https://www.farmers.gov/pandemic-assistance/cfap>.
- CFAP additional assistance payments. Formula adjustments and payments for applications filed under the CFAP AA program will include pullets and turfgrass sod, corrections for row-crop producers with non-Actual Production History insurance to use 100% of 2019 ARC-county option benchmark yield in the payment calculation, revisions to sales commodity applications to include insurance indemnities, noninsured Crop Disaster Assistance Program payments, and Wildfire and Hurricane Indemnity Program Plus payments.

The additional payments for swine producers and contract growers included in the CFAP Additional Assistance are not yet on their way. These payments are on hold as they will require regulatory revisions, but FSA is

accepting applications at <https://www.farmers.gov/pandemic-assistance/cfap>.

Also in the still-under-development category is an additional \$6 billion for new and modified programs from the Consolidated Appropriations Act as well as other unspent COVID-19 funds. The USDA projects that rules for these programs will also begin this Spring and will include funding for:

- Dairy Donation Program purchases and other assistance for dairy farmers
- Euthanized livestock and poultry
- Biofuels
- Specialty crops, beginning farmers and local, urban, and organic farms
- Organic certification costs or to continue or add conservation activities
- Other possible expansion and corrections to the Coronavirus Food Assistance Program such as to support dairy or other livestock producers.
- Timber harvesting and hauling.
- Personal Protective Equipment (PPE) and other protective measures for food and farm workers and specialty crops and seafood processors and distributors.
- Improving the resilience of the food supply chain.
- Developing infrastructure to support donation and distribution of perishable commodities, including food donation and distribution through farm-to-school, restaurants, or other community organizations.
- Reducing food waste.
- And that's not all. Details for allocating an additional \$500 million in new funding are also in development. That funding will be distributed as follows:
 - \$100M for Specialty Crop Block Program
 - \$100M for Local Agricultural Marketing Program
 - \$80M for Domestic Textile Mills Program
 - \$75M for Farmers Opportunities Training and Outreach Program.
 - \$75M for Gus Schumacher Nutrition Incentive Program
 - \$28M for National Institute of Food and Agriculture
 - \$20M for Animal and Plant Health Inspection Service (APHIS)
 - \$20M for Agricultural Research Service (ARS)

The USDA has stated that it will continue to develop program details and regulations through the spring. We'll do our best to forecast what's to come, so stay tuned for more information on the [Pandemic Assistance for Producers Initiative](#).

A Flurry of Tax Proposals in Congress

By: Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law

Source: <https://farmoffice.osu.edu/blog/fri-04092021-350pm/flurry-tax-proposals-congress>

You can count on tax law to generate interest in the agricultural community and that's certainly the case with several tax bills recently introduced in Congress. Within the last month, members of Congress proposed a flurry of tax proposals that could impact agriculture if enacted. Of course, passing tax legislation is always difficult and subject to partisanship, and we expect that to be the case with these bills.

Here's a look at the tax proposals receiving the most attention.

Death Tax Repeal Act of 2021. Sen. Thune (R-SD) and Rep. Smith (R-MO) are the primary sponsors of [S. 617](#) and [H.R. 1712](#), companion bills introduced March 9 that propose to repeal the federal estate tax, which the sponsors claim to be "the most unfair tax on the books." The Act would also repeal the generation-skipping tax and make modifications to the computation of the federal gift tax, beginning at 18% under \$10,000 and incrementally increasing by an additional 2%. Cosponsors of the Senate proposal includes 30 other Republicans, and the House bill has 137 cosponsors including one Democrat. The bills were referred to committee but have yet to see any further action.

For the 99.5 Percent Act. Introduced March 25 by Senators Sanders (D-VT), Gillibrand (D-NY), VanHollen (D-MD), Reed (D-RI) and Whitehouse (D-RI) to “tax the fortunes of the top 0.5% and reduce wealth inequality,” [this bill](#) would reduce the federal estate tax exemption from its current level of \$11.7 million per individual. Under the proposal, estates in excess of \$3.5 million per individual and \$7 million per couple would pay the estate tax, which would begin at 45% for estates between \$3.5 and \$10 million. The tax would increase incrementally, reaching 65% for estates over 1 billion. The proposal would also reduce the lifetime gift tax exemption from its current level of \$11.7 million to \$1 million but would not reduce the annual \$15,000 per person per year gift tax exemption for cash gifts. It would limit the exemption for gifts to trust at \$20,000 per year. Protections for farmland include allowing farmland value to be lowered by up to \$3 million for estate tax purposes and increasing the maximum exclusion for conservation easements to \$2 million. The bill would also prohibit reduced valuation for assets held in a pass-through entity, affecting the 35% valuation discount that is typical for farmland LLCs.

Sensible Tax and Equity Promotion (STEP) Act. A group of Democrats in the Senate introduced the [STEP Act](#) on March 29 in an effort to “close the stepped-up basis loophole by taxing unrealized capital gains when heirs inherit huge fortunes on which the original owner never paid income taxes.” The proposal would tax the transfer of property that has a net gain either during lifetime or at death. During lifetime, a completed transfer to a non-grantor trust or individual other than spouse would be subject to tax but the first \$100,000 of cumulative gain would be exempt. At death, the first \$1 million of appreciated assets would pass without taxation. Transfers to charity, spouses, charitable trusts, qualified disability trusts would be exempt, as would gains on residences up to \$250,000 per individual or \$500,000 for married couples. Taxes on illiquid property such as farms and some farm assets could be paid in installments over a 15-year period, and any taxes paid under the Act would be deductible from the federal estate tax. The bill would also require gains on non-grantor irrevocable trusts to be reported every 21 years.

Corporate Tax Dodging Prevention Act. Another bill by Sen. Sanders (D-VT) would go after the corporate tax rate. [The bill](#) would restore the top corporate tax rate to 35%, its level prior to the reduction to 21% by the Tax Cuts and Jobs Act of 2017. It also includes a number of provisions to reduce the ability of corporations to avoid paying federal taxes by moving income and profits offshore.

We are likely to see several more tax proposals in Congress in the coming year and time will tell whether any of them will have traction. Some may merely be bargaining chips among the many legislative agendas in Washington. One thing is certain--tax bills will continue to generate interest in the agricultural world, so we'll keep readers updated on these and future proposals.

Taking Charge of Baled Silage

By: Jessica Williamson, Hay and Forage Specialist, AGCO

(Previously published in [Progressive Forage: April 2, 2021](#))

Source: <https://u.osu.edu/sheep/2021/04/13/taking-charge-of-baled-silage/>

Baled silage, or baleage, is a highly nutritious livestock feed and can help producers better manage their harvest window and harvest their crop at its optimum quality.

Baleage is forage harvested at a higher moisture than dry hay, which is then wrapped in polyurethane plastic to eliminate oxygen so that anaerobic fermentation takes place. This phase converts available sugars to acids, preserving the forage and improving the nutritional value and palatability of the crop.

Silage bales beat dry hay

Silage bales have advantages over dry hay, but best management practices are in order.

First, bale silage at a higher moisture level than dry hay. This accomplishes



two goals:

1. It gets forage off the field quickly at its optimal nutritional quality because it shortens the time needed for field curing after mowing and before baling. This is especially helpful during unpredictable or exceptionally wet weather.
2. It gives you more feed to work with. Forage baled as silage has less leaf and dry matter loss compared to forage that is harvested as dry hay, which undergoes more mechanical harvesting processes to ensure drydown.

Take the steps needed to ensure your baled silage will be of higher quality than dry hay. The optimal moisture for baling forage as silage ranges between 45% and 60%. Baling forage at this higher moisture helps preserve dry matter yield because every day of delay after mowing and before baling can result in a 5% to 6% yield loss, depending on weather conditions. We all know getting hay dried down to an ideal moisture for dry hay can be tough when the weather is off.

This shorter harvest process can provide a nutritional edge for your livestock. It lets you harvest at a more ideal stage of maturity than if you were simply “making hay while the sun shines.” This is important because as forages mature, the quality generally declines (Figure 1).

Younger, more vegetative forages have greater nutritive content and better meet the needs of a broader range of ruminants, such as growing and lactating animals.

Nutritive value of baled silage

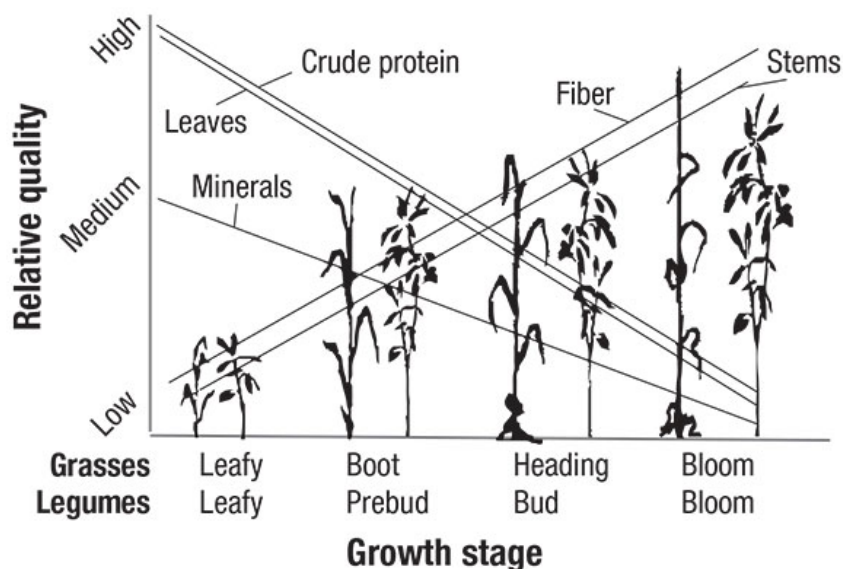
A University of Florida study compared Tifton 85 bermudagrass dry hay and baleage and found the baleage had greater nutritive value overall (Table 1).

Relative forage quality (RFQ) was more than 42 points greater in baled silage than dry hay. Dry matter intake (DMI) was 0.5% greater, crude protein (CP) was more than 2% greater and total digestible nutrients (TDN) was nearly 15% more in silage bales compared to dry hay.

Conclusions from this study indicate the baleage analyzed provided:

- Greater overall forage quality
- The ability to feed baleage to dry beef cows during gestation without supplementation
- The ability to feed it to mature bulls and meet their nutritional requirements without supplementation

FIGURE 1 Effect of plant maturity on forage intake and digestibility



Source: Adapted from Blaser, R., R.C. Hammes, Jr., J.P. Fontenot, H.T. Bryant, C.E. Polan, D.D. Wolf, F.S. McLaugherty, R.G. Klein, and J.S. Moore. 1986. Forage-animal management systems. Virginia Polytechnic Institute, Bulletin 86-7

TABLE 1 Tifton 85 bermudagrass dry hay vs. baleage nutritive values

Measurement	Tifton 85 dry hay	Tifton 85 baleage
% moisture	18.5%	70.4%
RFQ	58.3	100.6
DMI	1.8%	2.3%
CP	8.4%	10.5%
TDN	39.9%	54.8%

RFQ = Relative forage quality DMI = Dry matter intake
CP = Crude protein TDN = Total digestible nutrients

Source: D. Mayo, University of Florida

On the other hand, if you fed dry hay from this study to any class of livestock, you would need additional supplementation to meet their nutritional requirements.

There are forage species, such as cool-season grasses and legumes, that have greater nutritive value than bermudagrass and can be harvested and stored as baled silage. Their resulting increase in digestibility, CP, DMI and RFQ makes baled silage suitable for a wide range of ruminant livestock. The increase in feeding value combined with the ability to harvest the forage at a more ideal stage of growth means the low-quality, stemmy first-cutting hay that previously only met the needs of your low-input mature stock can now be high-quality, highly palatable forage that provides the nutrition needed for your young, growing animals or those in peak lactation.

Plus, your livestock will eat more of the forage you have invested in growing and harvesting and leave less lying on the ground. Baleage has as much as 10% to 30% less refusal than dry hay, depending on forage species and growth stage at which the dry hay was harvested.

As the next hay season draws near, now is the time to review nutrition needs for your livestock and consider effective ways of delivering the most palatable and nutritious forage possible. Baled silage has earned its right to be part of these considerations.

Next month, I'll share how precise management practices make baled silage perform well.

Poisonous Plants to Livestock

By: J.M. Luginbuhl, Extension Specialist (Goats and Forage Systems), North Carolina State University
(Previously published online with [NC State Extension: September 17, 2020](#))

Source: <https://u.osu.edu/sheep/2021/04/13/need-to-do-a-new-write-up-no-toxic-plants/>

As winter feed supplies run low and with producers eager to turn livestock out to pasture this spring, do yourself and your stock a favor by scouting for poisonous plants in your pasture this spring.

Factors contributing to plant poisoning are starvation, accidental eating, and browsing habits of animals. Starvation is the most common reason. Most woodland or swampy-ground pastures contain many species of poisonous plants. These are usually eaten only when animals have nothing else to eat.

Animals accidentally eat certain plants as they graze. A notable example of this is water hemlock. This plant emerges in wet areas, which are the first to become green in early spring. Animals eager to eat the fresh young grass may accidentally bite off the crown of this plant with fatal results. Another type of accidental poisoning occurs when large amounts of cockle are present in wheat, which is fed as grain.

Some animals on good feed in a dry lot or excellent pasture become bored with the same regular diet. They may eat unpalatable weeds or ornamental plants growing along fences. Goats and cattle like to vary the best kind of diet with a little "browse." Many ornamental or wild shrubs may be consumed, not because they are palatable but because the animal craves variation in its diet.

The severity of poisoning is related to the quantity of material eaten, the specie of animal eating the plant, portion of the plant and condition of the plant eaten, level of ground moisture, general health of the animal prior to ingesting the substance and the age and size of the animal. Therefore some livestock can eat some of the bad plants and under several of the mentioned conditions, fail to show symptoms of injury or poisoning. At other times death may occur.

Scores of plants contain material toxic to animals if eaten in sufficient quantity. Some of the plants are well known, some quite rare, some are useful, others are valued ornamentals. They may be grouped by the type of poison contained, the effect of their toxins or the part of the plant containing the poison. Some plants may contain several poisonous principles.

Cyanogenetic Plants (glucosides, glycosides)

These contain under certain conditions, prussic acid (hydrocyanic acid), a deadly poison that interferes with the oxygen-carrying ability of the blood. Death in these cases is usually rapid and with little outward symptoms. Members of the prunus family of plants, especially wild cherries, are dangerous. Peaches, plums, wild cherry, and other stone fruits belong to this group of plants. Wilting of the green leaves caused by frost, storm damage, or by cutting, changes a glucoside (glycoside) found in the leaves to hydrocyanic acid (HCN) and sugar. The sweet, wilted leaves are thus more attractive to animals than normal foliage. Hydrocyanic acid content varies widely, but under some conditions a few handfuls of leaves may be enough to kill a horse or cow. This type of poisoning should be suspected when sudden death of animals follows windstorms or early sharp frosts. These leaves apparently lose their poison after they have become dry; the limp, green or partially yellowed leaves are the most dangerous.

These trees do not have to be directly growing in the paddocks where the animals graze. Small branches and leaves broken off and blown by winds during a tornado, a hurricane, or a strong storm can land in a pasture, wilt, and become very dangerous to livestock ingesting them.

Sudan grass and sorghums are also cyanogenetic plants. These plants are usually deadly when damaged or frozen. Aftermath sprouts following an early frost are particularly dangerous. Very little sudan grass poisoning occurs from animals trampling down plants and later eating them although this is often listed as dangerous. In dry weather, sudan grass is often pastured to the ground without ill effects. After sudan grass has been repeatedly frozen and the plants are completely dead, it is safe but not very valuable for pasture.

Once frozen, sorghum, sorghum sudan hybrids, or their aftermath should never be pastured. As long as the plants show any green color they may be very poisonous. Both frosted sorghum and sudan grass can be best and most safely utilized by ensiling them for at least two weeks before feeding. Normal ensilage fermentation safely eliminates the poisonous principle.

Common milkweed, a perennial that grows three or four feet high, has a heavy stem and leaves and is frequently found in pastures. The milky white sap is sticky and has a bitter taste but livestock eat the topmost, tender leaves if good forage isn't abundant. Remove plants by spading, pulling, cutting, or plowing extensive areas and planting to cultivated crops for a year or two.

Horse nettle is a perennial plant, two-feet-high, with spiny stems and leaves, and smooth, orange-yellow berries. Fruits are more toxic than the foliage. It's a common plant in grasslands and fields and is a member of the nightshade family.

Black nightshade is an annual plant, two-feet high, with many branches. Leaves are variably smooth or hairy. The stems are angled in cross-section and sometimes spiny. Clusters of white flowers, one-fourth inch across, bloom in midsummer and are followed by small, black fruits. Both the foliage and green berries are toxic. The ripe berries are not poisonous. Black nightshade is widely distributed.

Mountain laurels and rhododendrons are evergreen shrubs of the Appalachian Mountain region. Plants grow five-feet tall and have glossy green leaves. Flowers appear in clusters at the ends of branches. Livestock eat the leaves in early spring when little other foliage is available. Piedmont Azaleas are deciduous plants of the Piedmont. Several varieties of Leucothea, also called Fetterbush or Dog-hobble, are evergreen or deciduous plants found in most regions of North Carolina. Weakness, nausea, salivation, and vomiting are symptoms of poisoning. The preventative is to keep livestock out of areas where these plants are abundant.

Plants Containing Deadly Alkaloids

Fortunately these plants are unpalatable for most wild and domestic animals. Water hemlock and poison hemlock are deadly. Poisoning rarely occurs except in early spring when young plants are accidentally eaten, but the roots, stems, leaves, and flowers are always poisonous. Look for and learn to identify these plants in the summer when they are large and showy. The hemlocks are members of the carrot family and have showy, white, umbrella-like flower heads. The roots are the most poisonous parts of the plants. Cut the thick rootstocks lengthwise and you'll find air cavities separated by plate-like partitions of solid tissue. Drops of

yellowish, aromatic, resin-like exudates containing the poisonous alkaloid appear at the cuts. Leaves and seeds contain little of the toxic substance and eaten in small quantities, either green or in hay, do little harm.

Poison hemlock needs dry land to grow and is often found in gardens as an ornamental plant. Flowers are often incorporated into large mixed flower sprays in rural churches and at social events.

Water hemlock – a perennial frequently found in wet, fertile soil – is a five-foot-tall plant with thick rootstocks, doubly compound leaves (fernlike) and small white flowers in umbrella-like clusters. Water hemlock starts growth in early spring. Its green foliage may show up before most other plants leaf out. Livestock tug at the tender leaves and pull roots from the soil which are still soft from late winter rains. The combinations of foliage and roots in considerable quantity can be fatal. As a preventative, pull water hemlock plants from the soil during the summer when they can readily be found and destroy them. Plants usually are not numerous in an area.

Poison hemlock is a hollow-stemmed biennial, four-feet high, with double compound leaves resembling parsley and a large, white taproot like parsnip. Flowers are showy, umbrella-like clusters and appear in late summer. The poison is a volatile alkaloid, coniine, found in the foliage all season and in the seeds in late summer. Most livestock poisoning comes in the spring from eating fresh foliage.

Mayapple, bloodroot, pokeweed, nightshade, and hellebore are other alkaloid-containing plants. They are rarely eaten except when animals are starving for better feed. Deaths from alkaloid-containing plants usually result from severe digestive disturbances, pain, and nervous symptoms. Animals usually die in convulsions.

Plants That Are Photodynamic

This means photo-sensitive animals get a reaction. Conditions necessary for a reaction to occur are: 1) the animals must have white areas of skin (unpigmented); 2) the animals must eat a sufficient quantity of the plants; and 3) the animals must be exposed to bright sun. In typical cases, an animal suddenly becomes sore on the white areas of their bodies. Whole areas of white skin may raise up and slough off. White goats may become severely affected and die from this condition.

Some common plants, which cause photosensitization, are rape, alsike clover, buckwheat, lantana, St. John's wort, and ornamental hypericums. Both St. John's wort and ornamental hypericums have showy, golden-yellow flowers. Animals do not readily eat them. White goats frequently become badly "sunburned" when they are on rape pasture in bright, sunny weather with little or no shade. Alsike clover or other legumes may produce these symptoms in dairy goats under the above conditions

Plants That Produce Mechanical Injury

A number of plants may have a spiny covering, long beards, fine hairs and when eaten may cause mechanical injuries or form hairballs in the stomach and intestines. Sand bur, downy brome grass, squirrel-tail grass, poverty grass, mesquite, and cocklebur are some of the offending plants.

Other Poisonous Plants

Comparatively, few plants containing poisons grow in areas usually used as pastures.

Bracken fern is very common in wooded areas and unimproved pastures. Most animals will not eat bracken fern if there is adequate pasture or other feed. In ruminants, such as goats, bracken fern must be consumed over a period of several weeks before toxicity signs develop. Affected animals are listless, show weight loss, and may exhibit small hemorrhages on the mucous membranes. They may die from internal hemorrhages.

Buttercups contain an acid, volatile alkaloid-amenenol, strong enough to blister the skin and cause inflammation of the intestinal tract. Cattle and goats poisoned by buttercups produce bitter milk and a reddish color. The toxic material volatilizes and is lost when buttercups are dried as in hay. A heavy growth of buttercup is an indication of low soil fertility. Have the soil analyzed and apply ground lime and fertilizers as their need is shown. The increased grass growth soon crowds out buttercups.

Poison ivy is widespread over most of the United States. It's a shrub or vine with woody stems that climb by attaching aerial rootlets to fences, walls, trees, etc. Leaves have three leaflets, glossy green and smooth at the edges. Inflammation of the skin from contact with the plants is an affliction of goat keepers more frequently than of goats. The infection can become serious and may need medical attention.

Several ornamental plants that are green outdoors or indoors are highly toxic. [Small ruminants] should not be fed clippings from ornamental plants. Common poisonous ornamentals are yew, delphinium, oleander, larkspur and lily-of-the-valley. [Small ruminants] should not be allowed access to these plants.

Summary

Cyanogenetic Plants (Glucosides – Glycosides)

Arrow grass, Black Locust, Blue Cohosh, Broomcorn, Buckeye (Horse chestnut), Cherry, Choke Cherry, Corn Cockle, Dogbane, Elderberry, Hemp, Horse Nettle, Indian Hemp, Ivy, Johnsongrass, Kafir, Laurel, Leucothoe, Lily of the Valley, Maleberry, Marijuana, Milkweeds, Milo, Nightshade, Oleander, Rhododendron, Sevenbark, Silver, Sneezewood, Sorghum, Stagger brush, Sudan grass, Velvet grass, White snakeroot, Wild Black Cherry, Wild Hydrangea.

Alkaloid Containing Plants

Aconite, Allspice, Black Snake Root, Bloodroot, Blue Cohosh, Boxwood, Celandine, Common Poppy, Crotalaria, Crow Poison, Death Camas, Dicentra, False Hellebore, False Jessamine, Fume wort, Hellebore, Hemp, Horse Nettle, Indian Hemp, Indian poke, Jimson weed, Larkspur, Lobelia, Lupines, Marijuana, Monkshood, Moonseed, Night shade, Pink Death, Camas, Poison Darnel, Poison Hemlock, Rattleweed, Rock Poppy, Spider Lily, Spotted cowbane, Spotted Water Hemlock, Stagger grass, Staggerweed, Sweet Shrub, Thorn Apple, Virebellas, Wild Parsnip, Wolfsbane, Yellow Jessamine.

Volatile or Essential Oils as Poisonous Principle

Baneberry, Buttercups, Crowfoot, Ground Ivy, Lobelia, Snakeberry, Spurge, White Cohosh.

Saponin-Containing Plants

Bagpod, Coffee weed, Purple sesban, Rattlebox, Soapwort.

Photosensitizing Plants

Buckwheat, Goat weed, Klamath weed, Lantana, Rape, St. John's Wort.

Plants That Cause Mechanical Injury

Cocklebur, Downy Brome grass, Sand Bur, Squirrel tail grass.

Tannin (Tannic Acid) as Poisonous Principle

Oaks, Black locust.

Poisonous Principle Not Exactly Known

Inkberry, Poke weed.

***“Criticism, like rain, should be gentle enough to nourish
a man's growth without destroying his roots.”***

Frank Howard Clark