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OHIO STATE UNIVERSITY EXTENSION

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Hello Coshocton County! Last week's Farm Science Review was a wet and windy one with the show being canceled on Wednesday. In spite of the weather, it was great to see so many of you in London, Ohio.

While fall officially began last Wednesday, I know many consider the first day of the Coshocton County fair as the first day of fall. It will be great to have a full fair again this year. I hope to see you at the fair over the next week.

In September, I completed our local soybean weed survey and the results are included in today's newsletter. We are also watching the fall armyworm levels closely. Hopefully our cooler night time temperatures are killing many of the emerging caterpillars.

Last week, Barry Ward released his 2022 Crop budgets and I have included the links to them in today's newsletter. I heard lots of comments at Farm Science Review about the scarcity of inputs (like chemicals and machinery parts) and the cost of fertilizer. Key takeaway is to plan now for 2022!

Sincerely,

David L. Marrison

Coshocton County OSU Extension ANR Educator

Coshocton County Fall Foliage & Farm Tour

OSU Extension, Coshocton Soil & Water Conservation District, and the USDA Farm Service Agency invite you to participate in the **50th Coshocton County Fall Foliage & Farm Tour** scheduled for Saturday, October 16 and Sunday, October 17. This year's drive-it-yourself tour will highlight the southeast townships of Franklin, Linton, and Lafayette. The tour attracts nearly 1,500 people each year and is a great way to enjoy Coshocton's fall foliage and to visit various farms and businesses.

This year's tour will include stops at a beef farm, winery, park, dam, dairy farm, training and competition facility, as well as a popular farm market and pumpkin patch. The stops will be open on Saturday, October 16 from 10:00 a.m. to 5:00 p.m. and on Sunday, October 17 from 12:00 to 5:00 p.m.

Just a reminder the tour map will not be released until the weekend of the tour. The map pick-up location has been changed this year to the Coshocton County fairgrounds located at 707 Kenilworth Avenue in Coshocton. Maps can be picked up from 10:00 a.m. to 3:00 p.m. on Saturday and from 12:00 to 3:00 p.m. on Sunday. More information about the tour can be obtained by calling the Coshocton County Extension office at 740-622-2265. We hope to see many of you on this year's tour!

SWCD Annual Meeting & Banquet - October 21

The Coshocton Soil & Water Conservation District invites you to their **79th Annual Meeting and Banquet** on Thursday, October 21, at the Lake Park Pavilion. The doors will open at 6:00 p.m. for Supervisor election voting and dinner will begin at 7:00 p.m. Theo's Restaurant from Cambridge will serve a delicious buffet dinner featuring 5 Cheese & Bacon stuffed chicken breast, mashed potatoes, green beans, coleslaw, and assorted homemade pie. Tickets are $12 per person; children 10 and under are $6.

The Coshocton SWCD will present a short program with awards for the Outstanding Conservation Farmer, Big Tree Contest, and the Hay Show. Additionally, Ken Smailes will be the banquet's featured speaker highlighting the history of agriculture in Coshocton County. Tickets can be obtained by stopping in to the SWCD office, Monday through Friday, from 8:00 a.m. to 4:30 p.m. **Reservation deadline for tickets is October 6, 2021.** More information can be obtained by calling 740-622-8087 ext 4.

Coshocton County Soybean Weed Survey

By David Marrison

During the latter part of September, I drove across around Coshocton County to determine the weeds which are the most prevalent in our local soybean fields. In fact, OSU Extension Educators from most every county in the state are completing this survey for the OSU Agronomic Crops Team to determine which weeds are present in fields prior to harvest (were not adequately controlled during growing season).

As I drove across Coshocton County, I took observations from 121 soybean fields accounting for an estimated 4,035 acres. Overall, 52.9% of the fields were rated clean (55.2% in 2020). Marestail continues to lay claim to our number #1 weed control issue in soybeans with 26.4% of

the fields surveyed having marestail. The #2 weed observed was volunteer corn (up 6.3%) and redroot pigweed (up 1.6%) both at 14.9%. The #4 weed observed was giant ragweed at 12.4% of fields (down 4.7%) followed by giant foxtail and other grasses in 11.6% (up 3.0%) of the fields. The following table list the prevalence of weeds found in the fields surveyed.

2021 Coshocton County Soybean Weed Survey	Percentage of Fields Containing this weed	Percentage Change from 2019
Marestail	26.4%	+0.7%
Volunteer Corn	14.9%	+6.3%
Redroot Pigweed	14.9%	+1.6%
Giant Ragweed	12.4%	-4.7%
Giant Foxtail & Other Grasses	11.6%	+3.0%
Velvetleaf	5.0%	+2.4%
Johnsongrass	0.9%	-2.0%
Pokeweed	1.7%	Not recorded
Common Lambsquarter	1.7%	-0.2%
Common Ragweed	0.8%	-0.15%

So what should farmers be doing now to help themselves next year? It is well worth the time for farmers to jump in their farm truck and do a scouting loop of their fields. Scouts should keep records of their scouting to indicate where exactly a problem was identified, how common the problem was, how damaging the problem was and what, if any, control measures were utilized in 2021. It is important to note the hotspots so you can make sure to address the problem and then re-evaluate the results.

The scouting reports can then be used to design a weed management plan for each field. This plan might mean that a chemical application is needed right after the soybeans are harvested this fall. This is especially crucial with Marestail as fall applications of weed control are superior to in-season control.

Scout Now for Cressleaf Groundsel and Other Winter Weeds in Hayfield and Pastures

By Mark Loux
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/2021-33/scout-now-cressleaf-groundsel-and-other-winter-weeds-hayfields

The next month and a half or so is an ideal time to control a number of weeds that cause problems in hayfields and pastures, and also certain weeds in fencerows and other areas adjacent to fields. We discussed scouting and fall control of cressleaf groundsel in a C.O.R.N. article last fall, to avoid problems with the toxicity of this weed in hay next year. Many of these weeds are most problematic in new hay and forage seedings, since the crop may not yet be dense enough to suppress them without the help of herbicides. A number of winter annuals fit into this category – mustards, marestail, pennycress, chickweed. For biennials such as wild carrot, poision hemlock, burdock, and teasel, the low growing plant after the first year of growth, which is present now, is more susceptible to control with herbicides compared with plants with elongated stems in spring. And it's certainly a good time to go after dandelion, Canada thistle, and curly dock.

Fall herbicide options for grass hay and pastures, and non-crop areas, are considerably greater in number and often also effectiveness than those labeled for use in a first-year legume or legume/grass stand. For example, herbicides for a new stand of pure alfalfa include 2,4-DB (Butyrac), Pursuit, Raptor, and clethodim. The mixture of grasses and legumes removes all of these options except 2,4-DB, which we have sometimes characterized as "almost an herbicide on a good day". A bit of an exaggeration, but it has a very limited spectrum of control and weed size range. In an established stand, dormant application of metribuzin or Velpar

can also be an effective option. Glyphosate is of course an option in a stand of pure RR alfalfa (if you can get it). There are a number of more effective options in grass hay and pasture. Most of the herbicides in the pasture section of the OH/IN/IL Weed Control Guide can be used for grass hay also, as long as they specify a minimum interval between application and cutting for hay. The absence of legumes allows use of products and premixes containing 2,4-D, dicamba, metsulfuron, triclopyr, and aminopyralid. Be sure to understand the restrictions on feeding or grazing aminopyralid-treated hay or areas prior to use.

Poison hemlock deserves specific mention here because it got a lot of press in Ohio this year. While it has substantial toxicity when ingested, and can cause reactions on skin of sensitive individuals, it's otherwise fairly benign. It has been fairly endemic to southern Ohio for a while, and is apparently creeping north. In addition to toxicity to animals when ingested, cressleaf groundsel and poison hemlock share the property of being weeds that appear to "all of a sudden" show up in spring, when they were really present the previous fall. Herbicides are more effective on these weeds in the fall, but there is a general lack of awareness and scouting for them at that time of the year. Waiting until spring to control them, when they become clearly evident, increases the difficulty of control. And killing sizable plants in spring results in dead plants that are still toxic, which does not resolve issues in hay. Herbicides containing triclopyr (Remedy Ultra, Garlon, numerous others) or triclopyr plus 2,4-D (Crossbow) are most effective in controlling poison hemlock. Other herbicides that provide adequate control when applied at the proper timing are dicamba (Clarity, numerous others), metsulfuron-methyl (Escort XP), metsulfuron-methyl plus dicamba plus 2,4-D (Cimarron Max) and clopyralid plus 2,4-D (Curtail).

Don't Let Your Guard Down on Fall Armyworms

By: Andy Michel, Curtis Young, Aaron Wilson, Kelley Tilmon & Mark Sulc
Source" https://agcrops.osu.edu/newsletter/corn-newsletter/2021-33/don%E2%80%99t-let-your-guard-down-fall-armyworm-just-yet

Last week, we discussed the possibility of a cold snap limiting any future fall armyworm outbreaks. We did have some fairly low temperatures last week—most areas had 40 to 60 straight hours of temperatures below 65oF (this was the temperature when mortality significantly impacted fall armyworm larvae). Today, several OSU extension educators have noticed a very large number of adult moths caught in our expanded trap network. As adults are migratory (often flying with winds in the atmosphere), they may be more cold-tolerant than the larvae, so it may not be surprising to still see some moths. However, we do not yet know how the cold snap affected the larvae. Fields should continue to be scouted for the presence of fall armyworm larvae at least for this week and likely until we get a significant frost. Check alfalfa, forage, cover crops, winter wheat, and even turf for damage and small larvae. As we get closer to the winter, we want to protect against any further damage that could compromise winter survival and regrowth in the spring.

Cover Crop Seeding Rates

By: Alyssa Essman & Mark Loux
Source: https://agcrops.osu.edu/newsletter/corn-newsletter/2021-33/cover-crop-seeding-rates

Cooler temperatures and maturing crops indicate the start of harvest season. For those growers using cover crops to protect soil and suppress weeds over the winter, it also means the time to establish fall-planted cover crops is imminent. When it comes to cover crops that are used for the suppression of weeds, one species stands alone in effectiveness, affordability, and simplicity of management. Cereal rye is the most popular species planted in the state and in the Midwest for these and many other reasons. Increasingly unpredictable fall weather can delay harvest, and rye can tolerate later fall planting in comparison with some other more frost sensitive species. Rye germinates and grows in lower temperatures than other species and resumes growth with robust biomass production in spring. We know that for the suppression of weeds by cover crops, there are

two main drivers – ground cover and biomass production – both of which rye excels at. Beyond planting time and method, rye seeding rate is another factor that requires some consideration when planning establishment. But what is the effect of seeding rate on weed suppression?

If biomass production and ground cover are the main drivers of weed suppression, it would be logical to assume that increased seeding rates would optimize both of these factors and increase the weed suppression potential of a cover crop. Studies have shown that increased seeding rates often lead to higher levels of biomass production. However, the data are less clear in how that translates to differences in weed suppression. When compared to other factors such as spring termination timing, the seeding rate of rye tends to have less of an effect on weed density. Consider the following:

- A study in Ohio comparing spring marestail density in rye planted at 0, 45 or 90 lb/A found an increase in rye biomass at the higher seeding rate and higher marestail density where no rye was planted. However, there was no difference in marestail density between the two seeding rates of 45 and 90 lb/A.
- Similar marestail suppression was provided by a wheat and cereal rye cover crop drilled at 60 and 120 lb/A before no-till soybeans in a Michigan study.
- In Missouri, researchers saw no difference in biomass among rye seeding rates of 30, 50, 70, 90, and 110 lb/A, and only incremental increases in waterhemp suppression at the higher rates, which they contributed to increases in ground cover.

Results of these and other studies in the Midwest suggest that when cereal rye is used to suppress weeds, increases in seeding rate above 50 lb/A may have less influence than other factors such as spring termination timing. Rates lower than 50 lb/A may also suppress weeds well, but the uniformity of the rye stand and biomass can be more variable. Weed suppression may therefore also be more variable.

For more information on cover crops for weed suppression, visit: https://iwilltakeaction.com/news/cover-crop-fact-sheet-series. This series of four fact sheets covers species selection, establishment, herbicide persistence and carryover, and termination, and how these different factors influence the weed suppression potential of cover crops.

OSU Extension Crop Budgets Updated

Several agriculture business enterprise budgets from the OSU Farm Office have been updated recently. They are all available at the Farm Office Website located at https://farmoffice.osu.edu/farm-management/enterprise-budgets The most recent budgets published by the Farm Office Team are listed below:

2022
Corn Production Budget 2022
Soybean Production Budget 2022
Wheat Production Budget 2022
Alfalfa Hay Production Budget 2022
Alfalfa Haylage Production Budget 2022
Corn Silage Production Budget 2022

2021
Corn Production Budget 2021
Soybean Production Budget 2021
Wheat Production Budget 2021
Soybean following Cover Crop Production Budget 2021
Market Beef Budget (Self-Fed) 2021
Market Beef Budget (Bunk-Fed) 2021

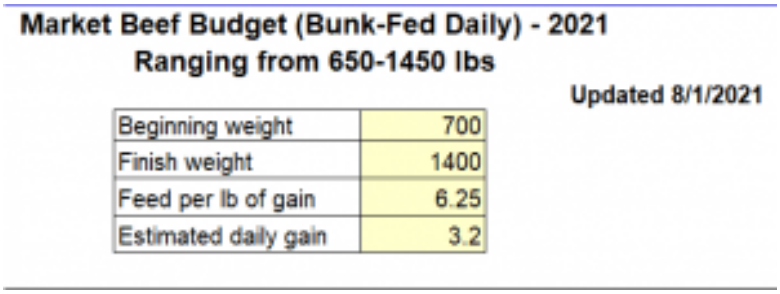
Copies of these budgets can be obtained by clicking on the hyperlinks above or by calling the Coshocton County Extension office at 740-622-2265 or by emailing David Marrison at marrison.2@osu.edu

Market Beef Budgets Updated by OSU Extension

Source: https://u.osu.edu/beef/2021/09/22/market-beef-budgets-updated-by-osu-extension/

During the past 18 months, for many, finishing and marketing fed cattle has been a roller coaster ride. Considerable commodity market disruptions have caused wide swings in not only the value of cattle, but also the cost of feed and related feeding and marketing expenses.

To provide tools that allow cattlemen to quickly compare and speculate on potential cattle feeding margins, OSU's Market Beef Budgets have recently been updated. They may be downloaded in spreadsheet form from the OSU Extension Farm Office website at: https://farmoffice.osu.edu/farm-management/farm-budgets



Market Beef Budget (Bunk-Fed Daily) - 2021
Ranging from 650-1450 lbs

Updated 8/1/2021

Beginning weight	700
Finish weight	1400
Feed per lb of gain	6.25
Estimated daily gain	3.2

To provide a view of differences found in efficiencies when self-feeding versus bunk feeding, two different budgets are offered. Each spreadsheet is designed similarly and allows the user to override any of the default numbers found in the sheets.

Once downloaded, users are encouraged to begin by plugging their own numbers based on previous experience and current or speculated future market conditions into the yellow cells. New opportunities to speculate with the updated budgets include comparing different feed efficiencies, performance levels, and feed stuffs at different levels and prices. For more information on utilizing the updated Market Beef Budgets, contact any of the authors found listed at the bottom of each budget spreadsheet, or your local OSU Extension office.

Preparing for Weaning and Beyond

By: Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory
Source: https://u.osu.edu/beef/2021/09/22/preparing-for-weaning-and-beyond/

Preconditioning programs for feeder cattle have long been recognized by the beef industry as a way for cow-calf operators to add credibility and, therefore, value to their annual calf crops. These programs prepare the calf for the known stressors ahead associated with weaning, transportation, and commingling that make calves more likely to get sick with bronchopneumonia, also known as Bovine Respiratory Disease (BRD). Most preconditioning programs recommend starting vaccinations 2-3 weeks prior to weaning because it allows sufficient time to develop protection before natural exposure to the BRD "bugs". At minimum, preconditioning programs require two rounds of viral vaccine (at least one must be modified-live vaccine or "MLV") and Clostridial (blackleg) vaccinations, a Mannheimia haemolytica toxoid ("Pasteurella" shot), deworming, castration of bull calves and healed, heifers guaranteed not pregnant, and a minimum of 45-60 days weaned. Some programs require producers to use products manufactured by only one pharmaceutical company. In addition, weaned calves are expected to know how to eat from a feed bunk and drink from a fountain or tank but should not be over-conditioned or "fleshy". Buyers prefer weaned calves that have been properly fed and with documented vaccinations and parasite control compared to similar quality non-vaccinated and non-weaned calves, which can translate to price premiums that vary in size depending on the market that day. Additional information on weaning strategies can be found in the Extension fact sheet ID-258 Weaning Beef Calves http://www2.ca.uky.edu/agcomm/pubs/ID/ID258/ID258.pdf .

The importance of preparing calves properly before weaning cannot be emphasized enough when it comes to health. Prevention of disease, especially BRD, is far more effective and less expensive than treatment but it requires the protective antibodies to be in place before leaving the farm and before the inevitable exposure to the respiratory viruses and bacterial pathogens that cause disease. "Stress" is a known factor that negatively affects a calf's immune system and plays just as important a role in disease development as the infectious pathogens ("bad bugs"). However, research has shown that there are 2 distinct types of stress; acute (short-

term) lasting less than 24 hours and chronic (long-term) lasting 24 hours or more. Acute stress is actually believed to be a "good thing" because it revs up the immune system and increases resistance to infection and response to vaccines. Conversely, chronic stress causes immune dysfunction due to the excess production of cortisol which reduces the ability of white blood cells to do their job fighting disease-causing organisms. Calves properly vaccinated and retained on the farm at least 60 days after weaning are known to have less sickness and health costs at the feedlot, provided their nutritional needs, including critical trace minerals, were fully met.

It is important to understand that the cow-calf sector of the beef industry single-handedly holds the keys to successful reduction of BRD and antibiotic use throughout the feeding period and all the way to slaughter. First and foremost, proper nutrition and vaccination of the mature cow herd is the foundation for a healthy calf crop. "Fetal programming" is an emerging topic of importance as researchers are starting to understand the critical steps involved in fetal immune system development that only occurs during pregnancy. Secondly, vaccinations against the viral and bacterial agents involved in BRD, when given to nursing calves while still on the home farm, are strong weapons against future disease challenge. Vaccinations given to healthy calves while still "on the cow" induce acute or short term stress that enhances the antibody response in healthy animals. There are 3 distinct times a cow-calf producer should give vaccines to completely precondition their calves; at "branding" (1-4 months of age), pre-weaning (2-3 weeks prior to separation from dams) and after weaning (once the stress is over, typically 10 days to 2 weeks post-weaning, but prior to leaving the farm). The Animal and Plant Health Inspection Service (APHIS) veterinary website echoes the need to vaccinate healthy animals; it specifically states that licensed cattle vaccines "… are typically shown to be effective in healthy animals. A protective immune response may not be elicited if animals are incubating an infectious disease, are malnourished or parasitized, are stressed due to shipment or environmental conditions, are otherwise immunocompromised, or the vaccine is not administered in accordance with label directions." https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/veterinary-biologics/CT_Vb_licensed_products

Although we live in an age with state-of-the-art cattle respiratory vaccines and potent antibiotics specifically formulated for bronchopneumonia, BRD sickness and death rates continue to climb year after year. Indeed, there is little incentive for a producer with a small herd to implement a pre-conditioning program and a majority of cow-calf operations are small and typically run a bull year-round. But these calves will eventually leave the farm and enter stocker or backgrounder operations as "high risk calves", meaning they are lightweight, unweaned (or weaned on the trailer on the way to the yards), never or poorly vaccinated and most are trace mineral deficient. At the auction barn they are mixed or "commingled" with similar calves from multiple farms then sold, allowing virus transmission to begin prior to delivery to the stocker/backgrounder facility or feedlot. After arrival and a brief rest period, these calves are usually processed through the chute and receive multiple vaccines, deworming and the bulls are castrated. These calves experience chronic stress causing immune dysfunction and will typically break with respiratory disease within the first 2 weeks after arrival. It is estimated that 60-70% of calves marketed through sale barns are considered high risk.

If considering implementing a preconditioning protocol, talk to your veterinarian first to develop a comprehensive vaccination plan and find a marketing program to promote this extra effort. For additional help with vaccine selection and marketing, most pharmaceutical companies offer "cookbook" preconditioning programs using their products:

- Zoetis "Selectvac" https://www.selectvac.com/cattle-vaccination-program.aspx
- Boerhinger Ingelheim "Market Ready" https://www.bi-vetmedica.com/species/cattle/keep_calves_healthy/KCH_Market_Ready.html#get-started
- Merck "PrimeVac" http://www.the-best-defense.com/primevac.aspx
- Elanco "Cattle Vaccine Promise" for product support https://www.elanco.us/products-services/dairy/cattle-vaccines

The following is a protocol including the minimum requirements for most calf preconditioning programs but be aware that certain marketing programs may have additional requirements. Some preconditioning programs are now requiring vaccines to be given to the dams as well as the calves. Linked here (in PDF) is an up-to-date listing of available vaccines and dewormers and their manufacturers to help with product selection. The

products listed are in no particular order and are not to be considered as endorsements by the University of Kentucky. In addition, the list is not “all- inclusive” as there are too many products on the market to list them all.

“Two Rounds Viral Vaccines”
a. First round contains the respiratory viruses (IBR, BVD, PI3, BRSV) in either a killed or modified live viral (MLV) vaccine preparation.
• Best Time to Administer First Round: 2-3 weeks prior to weaning
• Best Type of Vaccine: Modified Live (MLV)- (List D1)

Warning: Only use modified live vaccines in calves nursing pregnant cows if the dams were vaccinated with MLV within the last 12 months. The virus vaccines replicate in the newly vaccinated calf and can be spread to the pregnant dam, increasing the risk of abortion if the dam is not adequately vaccinated (always check vaccine label for specific requirements).
• If this requirement is not met, a killed vaccine (List D2) should be used or wait until the calf is weaned to begin the program.
• 2nd Best Option to Administer First Round: “At” weaning (after stress is over). Use MLV (List D1)
• What you actually see on the label of a respiratory virus vaccine:
Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza 3-Respiratory Syncytial Virus Vaccine (See Figure 1 for label examples)

b. Second Round-Booster according to label directions. Use MLV (List D1)

c. A combination product containing both MLV viral vaccine and Mannheimia haemolytica (“Pasteurella”) vaccine may be used instead as the 1st or 2nd round. See “Live Product with Pasteurella” option below for further explanation.

d. Virus vaccines may also contain Histophilus somni bacterin or “Somnus”. Killed virus vaccine + Somnus (List D2B) and MLV vaccine + Somnus (List D1B) are both available.

“Two Rounds of Blackleg”
• There are many 7 or 8-way Clostridial vaccine products available (List D5). Most require a two shot series, administered 2-3 weeks apart for protection. A few vaccines also contain tetanus toxoid (important if banding bull calves).
• Blackleg vaccines may be found in combinations with Pinkeye Vaccine (List D5B), with Histophilus somni bacterin “Blackleg + Somnus” (List D5C), or with Mannheimia haemolytica toxoid “Blackleg + Pasteurella” (List D5D)
• What you typically see on the label for a 7-way blackleg vaccine:
Clostridium chauvoei-septicum-novyi-sordelli-Perfringens Types C & D Bacterin-Toxoid

“A ‘Pasteurella’ shot-calves must get at least one round”
• This is actually a Mannheimia haemolytica toxoid (List C3). Some of these products also contain a Pasteurella multocida bacterial extract.
• Best Time to Administer: 2-3 weeks prior to weaning. Safe in all nursing calves.
• Read the label! Available in many combinations so be careful when selecting products.
• What you see on the label: Mannheimia haemolytica toxoid (may also say “Pasteurella multocida” “bacterial extract” or “bacterin”). See Figure 2 for a label example.

“Live Product with Pasteurella” option
• A Mannheimia haemolytica toxoid and MLV Respiratory Virus Vaccine Combination product (List C4) can be given to meet the “Pasteurella” vaccine requirement and the MLV viral vaccine requirement with just one injection. Merck and Zoetis also offer this combination by administration of an intranasal vaccine and an injectable vaccine manufactured to be given at the same time.
• Best Time to Administer: 2-3 weeks prior to weaning
• Warning: Only use modified live vaccines in calves nursing pregnant cows if the dams were vaccinated with

MLV within the last 12 months because of the risk of abortion (always check vaccine label for specific requirements).
• If this requirement is not met, wait until the calf is weaned to use this product.
• What you actually see on the label:
Bovine Rhinotracheitis-Virus Diarrhea-Parainfluenza 3-Respiratory Syncytial Virus-
Mannheimia haemolytica (± Pasteurella multocida) Vaccine. (see Figure 2 Example)

"Deworming-must include product and date"
• Deworming with an endectocide (List D6A) will control internal and external parasites, usually 30 days or slightly longer (LongRange is an extended duration product of 120+ days).
• A drench anthelmintic or 'white dewormer' (List D6B) is given by mouth and has a short duration but very effective clean-out of internal parasites. An insecticide is often required for external parasite (lice/flies/ticks) control as well.
• Giving newly weaned calves both types of dewormers at the same time, a white dewormer by mouth (List D6B) and an endectocide by either injection or pour-on (List D6A), is a tremendously effective combination to remove internal parasites, control external parasites, and prevent reinfection for a 30 to 40-day period.

Marketing as Part of the Plan

By: Garth Ruff, Beef Cattle Field Specialist, OSU Extension
Originally published in The Ohio Cattleman Early Fall, 2021 edition
Source: https://u.osu.edu/beef/2021/09/22/marketing-as-part-of-the-plan/

While summer is winding down there is no shortage of things to keep a beef producer busy this time of year. Depending on the calving season of choice, we are either approaching fall calving or wrapping up the breeding season for some spring calving herds. There is still hay to be made and corn silage harvest is not too far away. Now is the time to manage some pesky pasture weeds and perhaps sneak in that last minute summer vacation.

I mention all the above in an effort to encourage producers to begin thinking about fall and making those management decisions that have positive impacts on the 2021 spring calf crop. So, before we think about kicking back and watching the Buckeyes on the gridiron, consider practices that will add value to the calf crop about to be marketed.

Feeder cattle prices continue to be strong, perhaps better than predicted during our cow-calf outlook program around the first of the year. While I am not an economist, my colleagues across the Land-Grant system contribute the strong prices in part to the slight contraction we have seen to the national cow herd.
In July, USDA reported the largest midyear reduction in cow inventory, in large part due to the extreme drought in the western US and the northern plains. At the time of writing this there are nearly 100 wildfires burning in the West, with little relief in sight. Locally, high selling cull cows and several retirements from the cow-calf business, have helped shorten the supply of feeder cattle.

When feeder cattle are in short supply, there is even greater opportunity to capitalize on premiums in the marketplace, but planning should be underway, as adding value to feeder cattle doesn't just happen overnight. An ideal plan is to have calves weaned for at least 45 days before marketing. "But, I don't have a place to keep calves separate for 45 days." I understand for many producers this is an obstacle for many cattlemen in the state, however it is one that can be overcome with we look at return on investment. A simple corral, a good fence to split a pasture, and alley with headgate are more than enough to get the job done.

With workable handling facilities, vaccination and castration are less limiting factors to increasing calf value as well. As part of Beef Quality Assurance reach out to your veterinarian to develop a vaccination plan that fits your target market.

Sale data is pretty clear that preconditioned cattle, that have been weaned for 45+ days, outsell cattle that are weaned off the cow the day they are sold. It does take time, a little bit of feed, and some workable handling facilities, but the revenue generated from the improved management will cover that cost over time.

Remember to market the value that you have added to your cattle. If selling at auction, the market needs to have recorded exactly what you have done in order to announce it to the potential buyers in the seats. It doesn't make sense to go through the extra work and put he cattle through the chute if you aren't able to take a few moments to market what you have done. A beef cow has only limited opportunities to generate revenue in her lifetime, once a year when she as a calf, and once when she is culled. We might as well make the most out each of those opportunities.

Ohio Legislation on the Move: The Farm Science Review Edition

By: Peggy Kirk Hall, Associate Professor, Agricultural & Resource Law
Source: https://farmoffice.osu.edu/blog/fri-09242021-1217pm/ohio-legislation-move-farm-science-review-edition

As it often goes with farming, the weather interfered a bit with Farm Science Review this year. We missed seeing farmers and students from across the state gather for the show on Wednesday. But even wind and rain didn't stop our Farm Office team, above, from presenting Farm Office Live from the Review on Thursday. I gave an update on Ohio legislation, as Ohio's legislature is back from its summer break. Here's a summary of the legislation I discussed at our Farm Science Review program.

Bills passed and soon effective

S.B. 52 – Solar and wind facilities. S.B. 52 passed several months ago and will be effective on October 11, 2021. The new law will allow counties to designate "restricted areas" in a county where wind and solar projects may not locate and creates a county referendum process for a public vote on restricted area designation. The law will also require developers to hold a public meeting in the county where a facility is proposed at least 90 days before applying for project approval with the Ohio Power Siting Board. After the meeting, the county commissioner may choose to prohibit or limit the proposed project. Another provision of the new law appoints 2 local officials from the proposed location to serve on the OPSB board that reviews a project. And importantly for landowners, the new law requires a developer to submit a decommissioning plan to OPSB for approval with the application and to post and regularly update a performance bond for the amount of decommissioning costs. Watch for our new law bulletins on S.B. 52, which we'll publish soon.

Bills on the move

H.B. 30 – Slow-moving vehicles. The bill passed the House on June 23, 2021, and just received its second hearing before the Senate Transportation on September 22, 2021. It proposes revisions to marking and lighting requirements for animal-drawn vehicles to make the vehicles more visible and reduce roadway accidents.

H.B. 95 – Beginning farmers. We've been hoping this bill aiding beginning farmers would continue to receive attention. It would allow individuals to be certified as beginning farmers and create income tax credits for owners who sell land and agricultural assets to certified beginning farmers and for beginning farmers who attend approved financial management programs. The bill passed the House on June 28, 2021 and was referred to the Senate Ways and Means Committee on September 8, 2021.

S.B. 47 – Overtime pay. The Senate passed S.B. 47 on September 22, soon after returning from break. It would exempt an employer from paying overtime wages for certain activities, including traveling to the workplace, actions before or after beginning principal work activities, or "de minimus" acts requiring insignificant time. The bill sponsors state that it will bring necessary clarity to overtime pay in the era of more employees working unsupervised from home.

Bills newly introduced

H.B. 397 – Termination of Agricultural Lease. A bill that aims to bring certainty to farmland leases was introduced in the House on August 24, 2021 and referred to the Agriculture and Conservation Committee. The proposal states that where a farm lease agreement does not provide for a termination date or a method for giving notice of termination, a landlord who wants to terminate that agreement must do so in writing by September 1. Unless otherwise agreed in writing, the termination date would be either the date harvest or removal of the crops is complete or December 31, whichever is earlier.

H.B. 385 – Municipal waste discharges to Lake Erie western basin Municipalities would be prohibited from discharging waste from treatment plants into Lake Erie under a new bill proposed by Rep. Jon Cross (R-Kenton). The bill would require the Ohio EPA to revoke all existing NPDES permits for municipal treatment works or sewerage systems to in the western basin and prohibit any additional permits for that purpose. It would also fine municipalities up to $250,000 per day for knowingly discharging waste into Lake Erie on the first offense and $1,000 per day for subsequent offenses, or to fine $100 million if the discharge amount exceeds 100 million gallons in a 12-month period. Introduced on August 6, 2021, the bill has been referred to the House Agriculture and Conservation Committee.

Catch a replay Farm Office Live from Farm Science Review at https://farmoffice.osu.edu/farmofficelive. Register at that site to join us for the next Farm Office Live on October 13 at 7 p.m. or a repeat on October 15 at 10 a.m., whern the Farm Office team will digest the latest news and information on agricultural law and farm management issues that affect Ohio's farm offices.

Earn $ While Helping Tick & Tick Borne Disease Research

By: Dr. Risa Pesapane

Ticks and tick-borne diseases are a growing problem for both humans and animals in Ohio. The Ohio State University is interested in learning about your knowledge and experience related to ticks through completion of a survey. Only livestock producers or veterinary professionals that reside in Ohio and are over the age of 18 are eligible to participate. Your responses to the survey are confidential. Results of this survey will be used to develop customized training and educational materials about ticks for the livestock production community.

If you complete the survey, you will be eligible for a monetary compensation of $5.00 in the form of a gift card to the business of your choosing. Choose the one survey category that best describes your profession. To take the survey, please click or copy-paste the following link into your browser:

Livestock producer survey is available here: https://osu.az1.qualtrics.com/jfe/form/SV_9KXdJTr05f5BrBs

Veterinary professional survey is available here: https://osu.az1.qualtrics.com/jfe/form/SV_cOR5PdPM51Fi7s2

If you have questions about this survey, please contact the primary investigator, Dr. Risa Pesapane, by email at ticks@osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact the Office of Responsible Research Practices at 1-800-678-6251 or hsconcerns@osu.edu.

Ag Extension Talk

By: David L Marrison
Written for publication in the September 30, 2021- The Beacon

Hello Coshocton County! The fall is by far my favorite time of the year as it has something for every sense. The feel of the cooler night temperatures, the taste of hot apple cider, the sight of pumpkins and mums, the smell and sound of corn and soybean harvest, and the anticipation of the fall color palette in our trees are all great reminders how blessed we are to call Coshocton County home.

For some, tomorrow serves as the "official" start of fall as the Coshocton County Fair gets underway. The fair has a special place in the hearts of many in Coshocton County. It is a great time to catch up with neighbors, see some amazing youth in action, and to take in the sights, smells, and tastes of the harvest season.

So, as we ready ourselves for the fair, I would like to share an update on the fall armyworm and remind you of the Coshocton County Fall Foliage & Farm Tour.

Fall Armyworm- One month ago, parts of Coshocton County were hit hard by troops of armyworms eating area lawns, hayfields, and alfalfa fields. Armyworm moths hitched a ride up on the jet stream from the south in mid-August and then laid their eggs. Once the eggs hatched, they transformed into hungry caterpillars. Their voracious appetites allowed them to completely wipe out hay fields and lawns in a short period of time. Grass today and gone tomorrow. In fact, one farmer outside of Fresno lost 35 acres of alfalfa hay in just 2 days. Once done feeding, these armyworms move into the soil to pupate. After a short pupation cycle, the adult moths re-emerge to start the life cycle all over again.

Early last week, our OSU Extension monitoring traps indicated a sharp increase in moth activity which means the next round is underway. So, the major question has been, are we in for a repeat of hungry caterpillars eating our lawns and hayfields as we move into Coshocton County fair week?

Well, our OSU Extension entomologists are betting NO as the fall armyworm is a tropical insect and needs warmer temperatures to grow and develop. Research shows that even average temperatures of 64 degrees can kill 70% of the newly hatched caterpillars. Our cooler temperatures over the past week arrived at the right time to help suppress the new caterpillar hatch. On the flip side, the hot temperatures we had in August were ideal for the development of the caterpillars a month ago.

We all know that predictions are not certain. So, we will be watching the average daily temperatures, checking our traps, and scouting local fields. We have learned a lot about the fall armyworm over the past month and hope we don't see them again!

Fall Foliage & Farm Tour – Make sure to circle the weekend of October 16-17 on your calendar as OSU Extension, Coshocton Soil & Water Conservation District, and the USDA Farm Service Agency will be sponsoring the **50th Fall Foliage & Farm Tour**. This year's drive-it-yourself tour will highlight the southeast townships of Franklin, Linton, and Lafayette. The tour attracts nearly 1,500 people each year and is a great way to enjoy Coshocton's fall foliage and to visit various farms and businesses.

This year's tour will include stops at a beef farm, winery, park, dam, dairy farm, training and competition facility, as well as a popular farm market and pumpkin patch. The stops will be open on Saturday, October 16 from 10:00 a.m. to 5:00 p.m. and on Sunday, October 17 from 12:00 to 5:00 p.m.

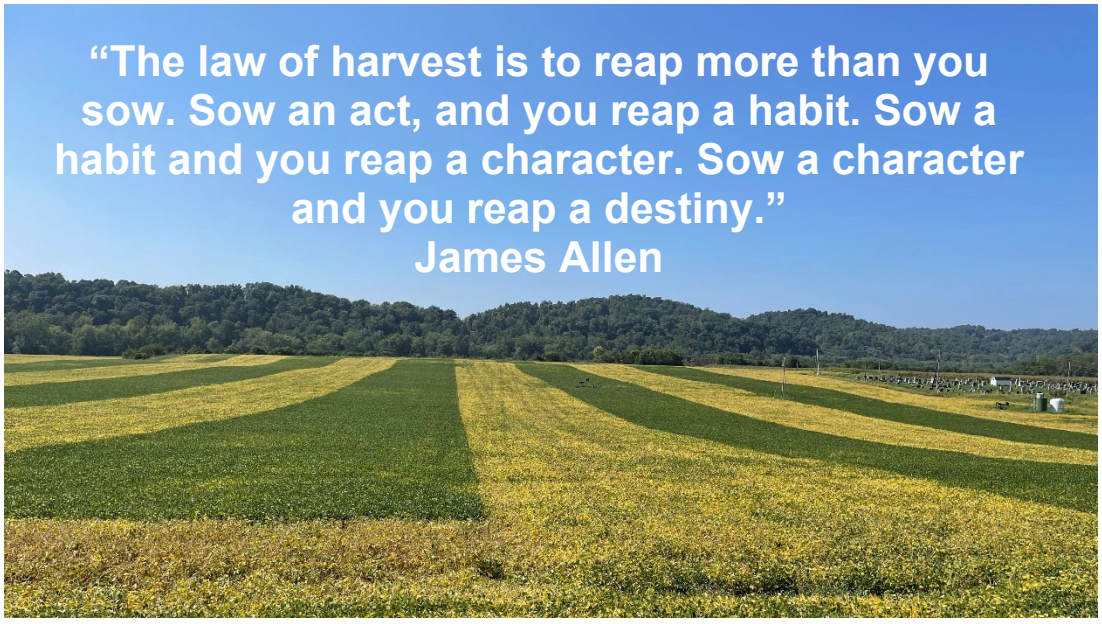
Just a reminder the tour map will not be released until that weekend. The map pick-up location has been changed this year to the Coshocton County fairgrounds located at 707 Kenilworth Avenue in Coshocton. Maps can be picked up from 10:00 a.m. to 3:00 p.m. on Saturday and from 12:00 to 3:00 p.m. on Sunday. I hope to see many of you on the tour.

Food for Thought- In honor of the many 4-H and FFA youth who will be showing at the Coshocton County fair, I would like to share a quote from Howard Cosell who stated "The ultimate victory in competition is derived from the inner satisfaction of knowing that you have done your best and that you have gotten the most out of what you had to give." Have a good and safe day!

BQA Re-certification Sessions Planned

The Coshocton County Extension office will be offering a series of **Beef Quality Assurance (BQA)** re-certification meetings to help producers renew their BQA certification. These sessions will be held in Room 145 at the Coshocton County Services Building located at 724 South 7th Street in Coshocton County. Producers can choose the session which bests fits their schedule. Sessions will be held on: October 11, November 3, December 1 & 14. Each will be held from 7:00 to 8:30 p.m. 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.

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



THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL AND ENVIRONMENTAL SCIENCES

SOYBEAN PRODUCTION BUDGET - 2022

No-Tillage Practices

Reflects 2000 acres, Conservation Tillage Corn/No-Till XtendFlex Soybeans

Updated: **9/24/2021**

ITEM	EXPLANATION	YOUR PROD. NUMBERS	PRICE PER UNIT	YIELD (bu/A)[1] 45	57	68	YOUR BUDGET *70*
RECEIPTS							
Soybeans[1]			***$12.20*** bu	554.37	692.96	831.55	**854.00**
ARC/PLC Payment (paid October 2022)[2]				0.00	0.00	0.00	**0.00**
Crop Insurance Indemnity				0.00	0.00	0.00	**0.00**
Ad Hoc Payment				0.00	0.00	0.00	**0.00**
Grower or Market Premium				0.00	0.00	0.00	**0.00**
TOTAL RECEIPTS				554.37	692.96	831.55	**854.00**
VARIABLE COSTS							
Seed[3]	160000 seeds /acre	***160000***	***0.432*** /1000 seeds	69.12	69.12	69.12	**69.12**
Fertilizer[4]							
P2O5(lbs)	36.4 45.4 54.5	***56***	***0.77*** lb	27.96	34.95	41.94	**43.08**
K2O(lbs)	52.3 65.3 78.4	***80.5***	***0.54*** lb	28.31	35.38	42.46	**43.60**
Lime(ton)	0.25	***0.25***	***25*** ton	6.25	6.25	6.25	**6.25**
Chemicals[5] Herbicide				59.70	59.70	59.70	**59.70**
Insecticide				0.00	0.00	0.00	**0.00**
Fungicide				0.00	0.00	0.00	**0.00**
Hauling[6]	**$0.155** /per bushel			7.04	8.80	10.56	**10.85**
Fuel, Oil, Grease[7]				12.04	12.04	12.04	**12.04**
Repairs[8]				23.98	23.98	23.98	**23.98**
Crop Insurance[9]				16.00	17.00	20.00	**20.00**
Miscellaneous[10]				3.75	3.75	3.75	**3.75**
Hired Custom Work[11]				7.00	7.00	7.00	**7.00**
Hired Labor[12]				0.00	0.00	0.00	**0.00**
Int. on Oper. Cap.[13]	**6** mo.		***4.00%***	4.76	5.04	5.32	5.37
TOTAL VARIABLE COSTS	**-Per Acre**			265.92	283.02	302.13	**304.74**
	-Per Bushel			5.85	4.98	4.43	**4.35**
FIXED COSTS							
Labor Charge[14]	***1.1*** hours		***17.00*** /hr	18.70	18.70	18.70	**18.70**
Management Charge[15]	***5%*** of gross income			27.72	34.65	41.58	**42.70**
Mach. and Equip. Charge[16]				62.16	62.16	62.16	62.16
Land Charge[17]				168.00	207.00	252.00	**252.00**
Miscellaneous[18]				13.70	13.70	13.70	**13.70**
TOTAL FIXED COSTS				290.28	336.21	388.14	**389.26**
TOTAL COSTS	**-Per Acre**			556.20	619.23	690.27	**694.00**
	-Per Bushel			12.24	10.90	10.13	**9.91**
RETURN ABOVE VARIABLE COSTS[19]				288.45	409.94	529.42	549.26
RETURN ABOVE VARIABLE AND LAND COSTS				120.45	202.94	277.42	297.26
RETURN ABOVE TOTAL COSTS				-1.83	73.73	141.28	160.00
RETURN TO LAND				166.17	280.73	393.28	412.00
RETURN TO LABOR AND MANAGEMENT				44.59	127.07	201.56	221.40
RETURN TO LAND, LABOR, AND MANAGEMENT				212.59	334.07	453.56	473.40

Values highlighted in gold may be changed to assist in computing "Your Budget" Column using macros embeded within the spreadsheet.

Values highlighted in light blue are cells embedded with macros and will be calculated for the user based on data entered. These cells may be input manually, but macros will be overwritten!

Values highlighted in gray are stand alone cells that require direct input from the user.

[1] Yield is based on Ohio NASS 20 Year Trend Yield for Ohio plus and minus 20%.
Price is based on current CME November Futures less $0.30 basis.

[2] Commodity Program Payment estimates were calculated by using a 40 year trend estimate for Ohio commodity specific yields and the 2021/2022 marketing year average price: USDA baseline: ARC-CO, ARC-IC & PLC.
Payments for corn, soybeans and wheat were weighted by the share of acres enrolled in ARC-CO, ARC-IC and PLC and then by share of commodity specific base acres to the aggregate total. Both numbers were provided by the Farm Service Agency.

[3] Seed costs are per 1000 seeds, treated.

[4] Assumes only maintenance application of fertilizer needed, corn-soybean rotation, 3.8 O.M., 20 CEC, and soil test values of 25 ppm P/A and 125 ppm K/A. Fertilizer prices vary over time and area. Check with local sources for current prices.
Nutrients added through manure or other soil amendments will reduce the need for inorganic fertilizers.
Assumes MAP(11-52-0): 800 /ton Potash(0-0-60): 650

[5] Based on use of: Fall application: glyphosate (Roundup PowerMax), 2,4-D LV6, Ammonium Sulfate (AMS)
Spring Preplant/Preemergence: glyphosate (Roundup PowerMax), XtendiMax, Vaporgrip Xtra, Valor XLT, Metribuzin 75DF
Post: XtendiMax, glyphoste (Roundup PowerMax), Vaporgrip Xtra

[6] Hauling based on Ohio Farm Custom Rates charge per bushel - Farm to Market - 30 miles, one-way

[7] See 'machinery costs' tab for specific calculations. Lubrication costs are assumed to be 10% of fuel costs

[8] See 'machinery costs' tab for specific calculations.

[9] Crop Insurance: Revenue Protection (with Trend Adjusted Yield Endorsement), Basic (without SCO), 80% coverage level.

[10] Includes marketing, farm insurance, dues and professional fees, supplies, utilities, soil tests, small tools, software/hardware, business use of vehicle, transport of supplies and equipment, etc…

[11] Includes hired custom operations for dry bulk fertilizer application

[12] Part or all of labor may be a variable cost if paid labor varies with acres farmed.
Labor is considered a fixed cost if labor costs do not change with acres farmed.
Labor rate includes cash wages plus benefits.

[13] Interest on all variable costs, except hauling and crop insurance

[14] Part or all of labor may be a variable cost if paid labor varies with acres farmed.
Labor is considered a fixed cost if labor costs do not change with acres farmed.
Labor rate includes cash wages plus benefits.
Labor hours: FINBIN, Labor rate: Ohio Farm Custom Rates

[15] Management Charge is calculated as 5% of total receipts.

[16] Machinery and Equipment Charge Reflects 2000 acres, conservation tillage corn/no-till RR soybean rotation.
See 'machinery costs' tab for specific calculations.

[17] Average based on "Ohio Cropland Values and Cash Rents" factsheet found at: https://farmoffice.osu.edu
Land charges vary throughout the state, check your local rates.

[18] Includes marketing, farm insurance, dues and professional fees, supplies, utilities, soil tests, small tools, software/hardware, business use of vehicle, transport of supplies and equipment, etc…

[19] Return Above Variable Costs equals total receipts minus total variable costs.
Return Above Variable and Land Costs equals total receipts minus total variable and land costs.
Return Above Total Costs equals total receipts minus total costs.
Return to Land equals total receipts minus total costs except land costs.
Return to Labor and Management equals total receipts minus total expenses except operator labor and management cost.
Return to Land, Labor and Management equals total receipts minus total expenses except operator labor and management and land costs.

Authors:
Barry Ward, Leader, Production Business Management; Dianne Shoemaker, Field Specialist, Dairy Production Economics
Laura Lindsey, Extension Soybean and Small Grain Specialist, Mark Loux, Extension Specialist - Weed Management in Field Crops

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CORN PRODUCTION BUDGET- 2022

Conservation Tillage Practices: N-Source - NH3

Reflects 2000 acres, Conservation Tillage Corn/No-Till RR Soybeans

Updated: **9/24/2021**

ITEM	EXPLANATION			YOUR PROD. NUMBERS	PRICE PER UNIT		YIELD (bu/A)[1]			YOUR BUDGET
							146.5	183.1	219.7	***220.0***
RECEIPTS										
Corn[1]					***$4.80***	/bu	703.10	878.88	1,054.66	**1,056.00**
ARC/PLC Payment (paid October 2022)[2]							0.00	0.00	0.00	**0.00**
Crop Insurance Indemnity							0.00	0.00	0.00	**0.00**
Ad Hoc Payment							0.00	0.00	0.00	**0.00**
Grower or Market Premium							0.00	0.00	0.00	**0.00**
TOTAL RECEIPTS							703.10	878.88	1,054.66	**1,056.00**
VARIABLE COSTS										
Seed (kernels)[3]	28000	32000	34000	***34000***	***$3.58***	/1000	100.10	114.40	121.55	**121.55**
	Seed Cost Per Bag				***$286.00***	/bag				
Fertilizer[4]										
Starter Fertilizer							0.00	0.00	0.00	**0.00**
N (lbs.)	178.0	194.0	210.0	***210.0***	***0.47***	/lb	94.12	101.68	109.24	**109.24**
P_2O_5(lbs)	51.3	64.1	76.9	***77.0***	***0.77***	/lb	39.44	49.30	59.16	**59.23**
K_2O(lbs)	29.3	36.6	43.9	***44.0***	***0.54***	/lb	15.87	19.84	23.80	**23.83**
Lime(ton)		0.25		***0.25***	***25***	/ton	6.25	6.25	6.25	**6.25**
Chemicals[5] Herbicide							57.78	57.78	57.78	**57.78**
Fungicide							0.00	0.00	0.00	**0.00**
Insecticide							0.00	0.00	0.00	**0.00**
Drying[6]	***20.0*** % moisture at harvest			***0.059***	/cent/bu/point		42.85	53.56	64.27	**64.35**
Hauling[7]	***$0.155*** /per bushel						22.70	28.38	34.06	**34.10**
Fuel, Oil, Grease[8]							14.30	14.30	14.30	**14.30**
Repairs[9]							28.12	28.12	28.12	**28.12**
Crop Insurance[10]							19.00	21.00	26.00	**26.00**
Miscellaneous[11]							5.50	5.50	5.50	**5.50**
Hired Custom Work[12]							22.20	22.20	22.20	**22.20**
Hired Labor[13]							0.00	0.00	0.00	**0.00**
Int. on Oper. Cap.[14]	***7*** mo.				***4.00%***		8.95	9.79	10.45	**10.45**
TOTAL VARIABLE COSTS			**-Per Acre**				477.18	532.09	582.68	**582.91**
			-Per Bushel				3.26	2.91	2.65	**2.65**
FIXED COSTS										
Labor Charge[15]	***2.25*** hours				***17.00***	/hr	38.25	38.25	38.25	**38.25**
Management Charge[16]	***5%*** of gross revenue						35.16	43.94	52.73	52.80
Mach. And Equip. Charge[17]							77.67	77.67	77.67	77.67
Land Charge[18]	Rent						168.00	207.00	252.00	**252.00**
Miscellaneous[19]							20.50	20.50	20.50	**20.50**
TOTAL FIXED COSTS							339.58	387.36	441.15	**441.22**
TOTAL COSTS			**-Per Acre**				816.75	919.45	1,023.83	**1,024.13**
			-Per Bushel				5.58	5.02	4.66	**4.66**
RETURN ABOVE VARIABLE COSTS[20]							225.93	346.79	471.98	**473.09**
RETURN ABOVE VARIABLE AND LAND COSTS							57.93	139.79	219.98	**221.09**
RETURN ABOVE TOTAL COSTS							-113.65	-40.57	30.83	**31.87**
RETURN TO LAND							54.35	166.43	282.83	**283.87**

RETURN TO LABOR AND MANAGEMENT	-40.24	41.62	121.81	**122.92**
RETURN TO LAND, LABOR AND MANAGEMENT	127.76	248.62	373.81	**374.92**

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Payments for corn, soybeans and wheat were weighted by the share of acres enrolled in ARC-CO, ARC-IC and PLC and then by the share of commodity specific base acres to the aggregate total. Both numbers were provided by the Farm Service Agency.

[3] Seed price based on traited seed corn, 80,000 kernels/bag.
Includes seed treatment at low level.

[4] Assumes maintenance application of P &K fertilizer needed, corn-soybean rotation, 3.8 O.M., 20 CEC, and soil test values of 25 ppm P/A and 125 ppm K/A. Fertilizer prices vary over time and area. Check with local sources for current prices.
Nutrients added through manure or other soil amendments will reduce the need for inorganic fertilizers.
Assumes NH3(82-0-0): $775 /ton MAP(11-52-0): $800 /ton Potash(0-0-60): $650 /ton
Nitrogen (N) rates based on Maximum Return to Nitrogen (MRTN). Corn Nitrogen Rate Calculator http://cnrc.agron.iastate.edu/
N cost includes cost of N-Serve.

[5] Based on use of: Preplant/Preemergence: Corvus plus atrazine, Post: glyphosate (Roundup PowerMax) with ammonium sulfate (AMS).

[6] Drying costs are based on Ohio Farm Custom Rates - 3.9 cents per bushel per point of moisture removed - 5% moisture removed

[7] Hauling based on Ohio Farm Custom Rates charge per bushel - Farm to Market - 30 miles, one-way

[8] See 'machinery costs' tab for specific calculations. Lubrication costs are assumed to be 10% of fuel costs

[9] See 'machinery costs' tab for specific calculations.

[10] Crop Insurance: Revenue Protection (with Trend Adjusted Yield Endorsement), Basic (without SCO), 80% coverage level.

[11] Includes marketing, farm insurance, dues and professional fees, supplies, utilities, soil tests, small tools, software/hardware, business use of vehicle, transport of supplies and equipment, etc…

[12] Includes hired custom operations for dry bulk fertilizer application and anhydrous ammonia (NH3) application

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