"Field Notes" The McCracken County AG Newsletter



University of Kentucky College of Agriculture, Food and Environment Cooperative Extension Service

Cooperative Extension Service

McCracken County 2025 New Holt Road Paducah, KY 42001 (270) 554-9520 Fax: (270) 554-8283 extension.ca.uky.edu

Samantha Anderson ANR Agent

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Nuisance Weed Spraying Program.

12) Drone Pilot Certification Workshop and Calloway County Cattlemen's 2021 Heifer Workshop As another year is coming to a close, I want to wish you and your family a happy and healthy holiday season. With the wrap up of the harvest season, I want to remind you that the McCracken County Cooperative Extension Service is still here to serve our community.

Inside, you will find updates on current

trends and markets from a variety of University of Kentucky specialists. Additionally, McCracken County specific updates and programs are detailed. A list of current virtual learning opportunities and upcoming events is included as well.

If you have an idea for a program or other educational project, please reach out. Together we can work to provide relevant and timely resources for McCracken County and the region.

In closing, I would like to say "thank you" to you and your families for a rewarding second year of service in McCracken County. Your hospitality will not soon be forgotten.

As long as you are working, I promise that Cooperative Extension will be there beside you every step of the way!

Attention Producers!

If you are wanting to complete your Private Applicator, Commercial Applicator, CAIP, or any other training, we are making every effort to complete these courses while adhering to all of the recommended safety standards from the CDC.

If you have any ANR questions regarding trainings or otherwise, please contract ANR Agent Samantha Anderson at (859) 771-4680.

Cooperative Extension Service Agriculture and Natural Resources Family and Consumer Sciences 4-H Youth Development Community and Economic Development Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, or physical or mental disability. University of Kentucky, Kentucky State University, U.S. Department of Agriculture, and Kentucky Counties, Cooperating.



LEXINGTON, KY 40546

Disabilities accommodated with prior notification.



McCracken County Cooperative Extension Service Programs and Services

Soil Samples- Review "Taking a Soil Test Sample" at https://bit.ly/3Ezowk3

Cost of \$7.00 for the basic test. Two cups of dry soil needed for each sample.

Free sampling for McCracken County residents - Limits apply — contact us at (270) 554-9520 or visit McCracken Co. Extension website at https://mccracken.ca.uky.edu/content/about-soil-tests.

Plant Disease samples - For commercial sample submission, an appointment is highly encouraged. Please call Sam Anderson at (859) 771-4680.

Upcoming Events/Virtual Learning Opportunities

Beef Minutes – new videos posted every Thursday https://www.youtube.com/channel/UCu4t18Zo2E_4_DBBELPjPMg

Coffee KATS – "Agriculture information in the time it takes to get a cup of coffee!" <u>https://kats.ca.uky.edu/coffee-kats</u>

Holiday Closings

Thanksgiving Holiday November 25th & 26th

Christmas Holiday December 24th to December 31st



Inclement Weather Policy

If the McCracken County Schools are closed, our office programs will be cancelled.



Watch Snowman 6 for delayed schedule



Sweet Potato Crisp

1 teaspoon vanilla

2 medium apples,

cinnamon

chopped

1 tablespoon ground

with chopped apples.

combine flour, oats,

Cut in butter until

mixture resembles

6. Sprinkle mixture over

35-40 minutes or until

7. Bake uncovered for

and $\frac{1}{3}$ cup brown sugar.

coarse crumbles. Stir in

5. In a small bowl,

pecans.

apples.

3 large fresh sweet potatoes, cooked until tender.

8 ounces reduced fat cream cheese, softened

1 cup brown sugar, divided

1. Preheat oven to 350° F. Lightly spray a 13 x 9 x 2 inch pan with non-stick spray.

 Mash sweet potatoes. Add cream cheese, ²/₃ cup brown sugar, vanilla and cinnamon. Mix until smooth.

- 3. Spread sweet potato mixture evenly into pan.
- 4. Top sweet potatoes

Buying Kentucky Proud is easy. Look for the label at your grocery store, farmers' market, or roadside stand.

oats 3 tablespoons butter

²/₃ cup quick cooking

1/2 cup all-purpose flour

1/4 cup chopped pecans

topping is golden brown and fruit is tender.

Yield: 16, 3/4 cup servings.

Nutritional Analysis:

240 calories, 6 g fat, 3 g sat fat, 5 mg cholesterol, 200 mg sodium, 44g carbohydrate, 4 g fiber, 20 g sugar, 4 q protein.



Estate Planning: Get Ready

Steve Isaacs, UK Agricultural Economist, Nichole Huff, Extension Specialist for Family Finance & Resource Management and Jennifer Hunter, Assistant Director of Family and Consumer Sciences Extension

Whether you farm 10 or 10,000 acres, it is important to have a plan in place in the event that you die or are no longer able to farm. Making an estate plan ensures a smoother farm transition and that your wishes are followed. It can also save your family time, money and emotional stress compared to if you were to die without a plan in place.

Research shows only 32.9% of Americans have a will. Even though the average age of American farmers is 59.4 years, only one-third of farmers have identified their successor.

To start planning your estate, you need to determine what you want to transfer, their monetary values and your beneficiaries.

There is a lot to consider before deciding to transfer anything. Transferable things include tangible and intangible assets, management and leadership. Make a list of these.

Know your current financial situation. Determine your net worth by listing all of your assets and subtracting your liabilities. You also need to determine whether your farm is profitable. Calculate your operation's net income to determine if the farm would support one or multiple families and what their anticipated standard of living might be.

Determine who you want to transfer your things to and the goals for your estate. This may include one or more people. For example, you may want one person to receive your estate but transfer your business to another. You will need to also consider if your estate could provide for a surviving spouse (if applicable) and any minor children.

Gather important documents. These include a list of assets, net worth, birth certificate, marriage certificate (if married), car titles, bank account records, stock certificates, property deeds, earning records, personal and business tax returns, property records, property improvements and insurance policies. Keep these documents in a secure place that your heirs or estate executor know about, such as a fireproof safe.

UK Cooperative Extension Service has developed a worksheet to help you determine your estate planning goals. It is available in the FCS5-420 publication titled, "Estate Planning Part 1: Getting Started." The publication is available online at <u>https:// bit.ly/3H9sIYX</u> or by contacting the McCracken County office of the UK Cooperative Extension Service.

UK Beef Management Webinar Series

Darrh Bullock, Extension Professor, University of Kentucky

Please join us for our Beef Management Webinar Series that meets via Zoom in the evening of the second Tuesday of each month. Registration is necessary, however, if you previously signed up for the ROWLI webinar series we conducted over the past 18 months or have already signed up for this webinar series then you do not need to re-register, you will automatically receive the invitation the morning of each presentation. If you need to register please send an email to **dbullock@uky.edu** with Beef Webinar in the subject line and your name and county in the message. You will receive the direct link with a password the morning of each meeting. This invitation will directly link you to the site and you will be asked for the password which can be found just below the link. Each session will be recorded and posted for later viewing. All meeting times are 8:00pm ET/7:00pm CT. The following is the planned agenda to date:

December 14, 2021

Shooting the Bull: Answering all your beef related questions! – Roundtable discussion with UK Beef Specialists

January 11, 2022 Milk: Benefit or Burden – Dr. Darrh Bullock and Dr. Jeff Lehmkuhler

February 8, 2022 AFS Beef Research Update Titles and speakers to be announced.

March 8, 2022 Shooting the Bull: Answering all your beef related questions! – Roundtable discussion with UK Beef Specialists

Corn Time



Improving Nutrient Use Efficiency More Important with High Fertilizer Prices

Dr. John Grove, Professor of Agronomy/ Soils Research and Extension and Dr. Edwin Ritchey Extension Soils Specialist

As we write this newsletter article, fall fertilizer prices continue to increase, albeit at a slower pace for most materials than earlier this fall. The latest DTN retail price survey https://www.dtnpf.com/agriculture/web/ ag/crops/article/2021/10/06/fertilizer-price-gainslosing-steam has urea (46-0-0) at \$620/ton, DAP (18 -46-0) at \$722/ton and potash (0-0-60) at \$647/ton. This gives \$0.675/lb N, \$0.52/lb P2O5 (after accounting for the N value in DAP), and \$0.54/lb K2O. Compared to this time last year, urea, DAP and muriate of potash are 71, 64 and 92% higher, respectively. Other important materials used in Kentucky are also higher: ammonium polyphosphate solution (APP, 10-34-0); UAN (32-0-0); and anhy-drous (82-0-0) are 40, 78 and 84% more expensive, respectively. When fertilizer prices are high, im-proving profitability and/or the probability of an economic response to fertilizer addition becomes more critical and more of a challenge.

The first task is to have recent soil test information for your fields. This is especially important with high fertilizer prices and is also important this year because nutrient removal in grain was also high, with the good grain yields. Soil sampling (Figure 1) provides you data that will be the basis of your field-by-field nutrient management plan. You can use soil test data to 'target' lime and fertilizer applications to fields/ field areas that have more potential to give you a profitable response to those additions.



Figure 1. Taking a composite soil sample of 15 to 20 cores from each representative area/zone within a field, is the most im-portant step in the soil testing process. The sampling depth should be

4 inches in no-till fields and deeper, to the depth of pri-mary tillage, in tilled fields (photo courtesy Chris Teutsch). See also AGR-16, Taking Soil Test Samples (http://www2.ca.uky.edu/ agcomm/pubs/agr/agr16/agr16.pdf)

The first soil test result to check is the field's soil pH and lime requirement (if any). The 'fixation' that lowers plant availability of nutrients like P is itself often reduced by maintaining soil pH between 6 and 7 (Figure 2). Acid soils inhibit N fixation and growth of soybean. Agricultural lime is widely available in Kentucky, ag lime price changes have not been notable, so liming those fields with acid soils is a priority. Because of its high price, pelletized lime is not recommended for row crop fields.



Figure 2. Impact of soil pH on soil nutrient availability to plants. The wider the band, the more plant available a given nutrient is. Maintaining soil pH between 6.0 and 7.0 optimizes essential plant nutrient availability (Figure courtesy NSW Dep. Primary Industries and Chris Teutsch)

The second thing to look at are the soil test P and potassium (K) values and where these fall in terms of their availability (very low to high) to corn and soybean. The rate is easiest to adjust, putting only what is needed where needed. If soil test P or K is in the very low to low range, then the probability of a yield response that will pay for the fertilizer is relatively good (Figure 3). If the P or K soil test level is in the upper medium to high range, the probability of a profitable yield response falls off.



Figure 3. Likelihood of a profitable grain yield response to the recommended applied fertilizer rate as related to the initial soil test value (adapted from Havlin et al., 2005)

When the soil test P or K are in the high range, UK makes no fertilizer P or K recommendation. The UK fertilizer P and K rate recommendations at soil test P and K values in the upper portion of the medium range are not entirely intended for next year's crop. That added fertilizer is largely recommended to 'maintain' soil test P and K. An example is shown in Table 1, which gives recommended phosphate (P2O5) and potash (K2O) rates for soybean according to soil test P and K values, respectively. The upper portion of the medium range (40 to 60 for soil test P and 242 to 300 for soil test K) is bounded in red. Maintenance fertilizer cannot always be afforded. Further, nutrients left in the 'soil bank account' are subject to physical loss and reduced plant availability - negative interest/return on investment (Thomas, 1989). So, if the field's soil test P and/or K values are in the upper medium to high range, our current advice is to forego recommended P or K fertilizer until prices moderate.

Table 1. Phosphate and potash rate (lb/acre) recommendations for soy-bean (from Table 15 in AGR-1, Ritchey and McGrath, 2020).

Category	Test Result: P	P ₂ O ₅ Needed	Test Result: K	K ₂ O Needed	
High	>60	0	>300	0	
Medium	40 - 60	30	242 - 300	30	
	34 - 39	40	226 - 241	40	
	28 - 33	50	209 - 225	50	
			191 - 208	60	
Low	22 - 27	60	173 - 190	70	
	16-21	70	155 - 172	80	
	11 - 15	80	136 - 154	90	
	9-10	90	118 - 135	100	
	7-8	100	100 - 117	110	
	6	110			
Very low	1-5	120	82 - 99	120	
			64 - 81	130	
			46 - 63	140	
			<46	150	

Time nutrient applications close enough to the period of greater crop nutrient demand. Generally, soluble nu-trient sources, especially N, need to be 'on time' and neither too early nor too late. Too early and various nutri-ent losses should be expected. For example, fall applied DAP (18-46-0) will not provide much of an N benefit to the next corn crop, causing the P2O5 cost to rise from \$0.52/lb to \$0.78/lb, a 50% increase. Too late and the crops have advanced in their annual lifecycle such that they can no longer take advantage of the applied nutri-ents to rapidly increase growth and make best use of other resources (water, temperature, sunlight) as these are available. Optimal timing gives optimal economics - causes success when using the lower end of the recom-mended rate range.

Better timing can be combined with better nutrient placement. Sub-surface nutrient placement – banding – avoids physical (erosion/runoff) and chemical (fixation) losses in availability with nutrients like P and zinc (Zn). Banding can be done in a separate operation (usually strip-till) or at-planting. At-planting application as a 2 x 2 band allows total P2O5 and K2O application rates to be reduced by 33 to 50%. Banding Zn causes the rec-ommended rate to drop by 80% (Ritchey and McGrath, 2020).

In the absence of need, when soil test levels of all nutrients are adequate, at-planting supplementation (either in -furrow/pop-up or 2 x2) often does not result in a profitable yield response, especially when highpriced mate-rials are used with in-furrow/pop-up protocols. The value of the planting time lost in filling/ refilling at-planting fertilizer tanks can also be considerable, especially in wet spring planting seasons. UK research has shown that unless there is a particular need for Zn, a positive yield response occurs when P, and especially N, are deficient at planting. Consider replacing expensive in-furrow/pop-up liquid formulations with a simple APP plus UAN mix. You will get more nutrition for the same cost, or the same nutrition for less cost. If you need Zn, buy a compatible Zn-only product. Don't buy stuff you don't need.

Improved nutrient use efficiency occurs when the nutrient management plan is modified to consider current economics. Fertilizer nutrient rates, timing, placement, and sources are changed to better optimize profit for the investment in materials, equipment, and time.

References:

Havlin, J.L., S.L. Tisdale, W.L. Nelson and J.D. Beaton. 2005. Soil Fertility and Fertilizers (7th ed.). Pearson, Inc. Saddle River, NJ.

Ritchey, E., and J. McGrath. 2020. Lime and Nutrient Recommendations. Univ. Kentucky Coop. Ext. Bull. AGR-1. Lexington, KY. http://www2.ca.uky.edu/agcomm/ pubs/agr/agr1/agr1.pdf

Thomas, G.W. 1989. The soil bank account and the farmer's bank account. Journal of Production Agriculture 2:122-124

Dr. John Grove

Professor of Agronomy/ Soils Research and Extension (270) 365-7541 - Ext. 21301 jgrove@uky.edu

Dr. Edwin Ritchey Extension Soils Specialist (270) 365-7541 - Ext. 21331 edwin.ritchey@uky.edu

FAQs about Cyanide or "Prussic Acid" Poisoning in Ruminants

Dr. Michelle Arnold, UK Veterinary Diagnostic Laboratory

Usually within the month of October when the first frosts are expected in KY, the questions begin regarding the risk of prussic acid poisoning from Johnsongrass (*Sorghum halepense*) after frost and when is it "safe to graze again". Prussic acid, cyanide, or hydrocyanic acid are all terms relating to the same toxic substance. Hydrogen cyanide was first isolated from a blue dye (Prussian blue) and because of its acidic nature, it became known by the common name "prussic acid". No matter which name is used, cyanide is one of the most rapid and deadly toxins that affects cattle.

Where does the cyanide come from in a plant? Certain plants contain compounds called "cyanogenic glycosides" which are not toxic by themselves but only when the plant is damaged. These cyanogenic glycosides and the enzymes necessary to convert them to free cyanide gas are separated in different locations within the plant cells. Sorghum species including Johnsongrass, sorghum, sudan grass and hybrid sorghum-sudan contain the cyanogenic glycoside "dhurrin". When plant cells are damaged, the plant enzymes can reach dhurrin and cleave it, releasing cyanide gas (abbreviated as HCN). Dhurrin concentrations are highest in the leaves, particularly new growth. Peak concentrations occur in the first week after germination, declining markedly once the plant reaches approximately 2 ft in height. Regrowth (for example, after a light frost) contains extremely high dhurrin concentrations.

Why is Johnsongrass and other Sorghum species only risky at certain times of the season but safe in others? The cyanogenic glycosides are used by the plant as protection from grazing animals, insects, and parasites when the plant is most vulnerable. The cyanogenic "potential" of plants is affected by the type (species and variety) of the plant, weather, soil fertility and stage of plant growth. Cyanide poisoning of livestock has been associated with Sorghum species including johnsongrass, sorghum-sudangrass, and other forage sorghum; Prunus species (e.g., wild cherry, black cherry, and chokecherry); elderberry (Sambucus spp); serviceberry (Amelanchier alnifolia); and less frequently arrowgrass (Triglochin spp), white clover (Trifolium repens), birdsfoot trefoil (Lotus spp); and many others.

Certain environmental conditions reduce protein synthesis within a plant but nitrate conversion to amino acids continues and these form the "building blocks" of cyanogenic glycosides. Obviously factors that damage the plant such as crushing, wilting, freezing, herbicide treatment, drought, insects, and plant disease will reduce growth and protein synthesis. However, cool, cloudy days and moist growing conditions, high nitrogen fertilization, high soil nitrogen: phosphorus ratio, and low soil sulfur can also increase the cyanogenic potential. Application of herbicides such as 2,4-D have been shown to increase the cyanogenic potentially increases palatability.

Highest cyanide potential occurs when these plants are growing rapidly after a period of retarded growth such as after drought or frost. The early stages of plant growth, especially young, rapidly growing areas and areas of regrowth after cutting also contain high levels of cyanogenic glycosides. The risk of poisoning decreases as forages mature. Leaf blades are higher risk than leaf sheaths or stems, upper leaves are higher risk than older leaves, and seed heads are considered low risk.

How much cyanide is considered dangerous? The lethal dose of cyanide is in the range of 2 to 2.5 mg/kg body weight. Forages can be tested for cyanide content. Hay, green chop silage or growing plants containing >220 ppm cyanide on a wet weight basis are very dangerous and <100 ppm is considered safe. On a dry weight basis, >750 ppm is considered hazardous, < 500 ppm is considered safe and suspect in between.

Conflicting information is available with regards to risk of cyanide in hay. A study from 2012 investigating methods to prepare sorghum for cyanogenic analysis found that whole leaves or entire plants can be harvested and dried then analyzed later, so air drying plants did not decrease dhurrin concentrations during storage. However, the enzyme beta-glucosidase which converts dhurrin to cyanide was significantly decreased during drying. Bottom line- hay is rarely hazardous if adequately cured but should be tested if the cyanide risk was high when cut. Ensiling plants will significantly reduce the cyanogenic glycoside content.

How does cyanide attack the animal's system? As ruminants consume these plant materials, hydrogen cyanide gas that is released in the rumen is quickly

absorbed into the bloodstream. In addition, the rumen microflora contain enzymes that, in the presence of water, are also capable of converting cyanogenic glycosides in plants to free cyanide gas. Under conditions of low-level exposure, cattle can detoxify cyanide to thiocyanate which is excreted in the urine. If large quantities of cyanide are absorbed rapidly enough, the body's detoxification mechanisms are overwhelmed, and the animal soon dies. Rumen pH is an important factor in determining rate and amount of HCN released in the rumen. The enzymes are more active at a higher pH of 6.5-7 so cattle on grass or hay diets are at higher risk than those on grain diets. Consumption of water, either before or after grazing, also increases the HCN risk. Animals that are most at risk are hungry and/or have not had time to adapt to these plants as they may tolerate higher amounts over time.

What does an animal with cyanide poisoning look

like? Affected animals may begin showing signs of poisoning within 15-20 minutes and rarely survive more than 1-2 hours after consuming lethal quantities of cyanogenic plants. Death may be sudden without symptoms. If seen alive, cattle may exhibit rapid labored breathing, frothing at the mouth, dilated pupils, muscle tremors, and staggering prior to death. There may be a "bitter almond" smell to the breath but the ability to detect this smell is genetically determined in people, so this is an unreliable sign. The mucous membranes are bright red in color due to oxygen saturation of the hemoglobin but may become more cyanotic (blue) at the end of life.

How is cyanide poisoning diagnosed? History, clinical signs, and detection of cyanide in rumen contents support a diagnosis of cyanide poisoning. Cyanide is rapidly lost from animal tissues unless collected within a few hours of death and sealed in airtight containers. Liver, muscle (heart, especially the ventricular myocardium), whole blood, and rumen contents should be collected in airtight containers before shipment to a laboratory capable of performing cyanide analysis. Personal protective equipment should be worn when gathering samples from the animal. Minimal lethal blood concentrations are approximately 3 mcg/ml or less. Perhaps most important in the diagnosis of cyanide poisoning is to identify plants in the area accessible to the animals and determine if they are likely to contain cyanogenic glycosides. Cyanide concentration determinations in suspect plants can be performed if samples are collected and immediately sent on ice overnight to a diagnostic laboratory. Some diagnostic laboratories prefer samples to be frozen immediately after collection and prior to shipment.

Is there an effective treatment? Treatment can be attempted if affected animals are discovered quickly, but often animals are found dead. Contact a veterinarian immediately if cyanide poisoning is suspected. The intravenous administration of sodium thiosulfate by a veterinarian is an effective treatment for cyanide poisoning although this compound has been difficult to find in recent years. The dose can be repeated after a few minutes if the animal does not respond. Administering 0.5 -1.0 liter of a diluted vinegar solution (one gallon of vinegar diluted in 3 to 5 gallons of water) via stomach tube can lower rumen pH, reducing the production of

hydrogen cyanide, however, stress of handling may exacerbate signs and possibly lead to the animal's death. Most animals that survive treatment recover fully.

What can be done to prevent cyanide poisoning in cattle?

- Graze sorghum, sorghum crosses, or Johnsongrass plants only when they are at least 18-24 inches tall. Young rapidly growing plants or regrowth have the highest concentrations of cyanogenic glycosides, especially in the newest leaves and tender tips. Do not graze plants with young tillers. Do not turn out hungry animals in high-risk pastures because they may consume forage too rapidly to detoxify the cyanide released in the rumen. Animals should be turned out to new pasture later in the day as potential for cyanide release is highest in the morning.
- Do not graze plants during drought periods when growth is severely reduced or the plant is wilted or twisted. Drought increases the chance for cyanide because slowed growth and the inability of the plant to mature favors the formation of cyanogenic compounds in the leaves. Do not graze sorghums after drought until growth has resumed for a minimum of 4-5 days after rainfall.
- 3. Do not graze potentially hazardous forages when frost is likely (including at night). Frost allows rapid conversion to hydrogen cyanide within the plant. Do not graze for at least two weeks after a non-killing (>28 degrees) frost. Grazing after a light frost is extremely dangerous and it may be several weeks before the cyanide risk subsides. Do not graze after a killing frost until plant material is completely dry and brown (the toxin is usually dissipated within 72 hours).
- 4. Do not allow access to wild cherry leaves. After storms or before turnout to a new pasture, always check for and remove fallen cherry tree limbs.
- 5. If high cyanide is suspected in forages, do not feed as green chop. If cut for hay, allow to dry completely before baling. Allow slow and thorough drying because toxicity can be retained in cool or moist weather. Delay feeding silage 6 to 8 weeks following ensiling. Sorghum hay and silage usually lose > 50% of prussic acid during curing and ensiling. However, these feeds should be analyzed before use whenever the forage likely had an extremely high content prior to cutting.
- 6. Forage species and varieties may be selected for low cyanide potential. There are wide differences among plant varieties. Some of the sudangrasses, such as Piper, are low in cyanide.
- 7. Test any suspect forages before allowing animal access. A rapid field test is available that can provide on-site results. Contact your county Agricultural Extension Agent for further information.

Don't Let "Feed Price Sticker Shock" Paralyze your Management

Kevin Laurent, Extension Specialist, Department of Animal and Food Sciences, University of KY

The ancient Greek philosopher Heraclitus once said, "The only constant in life is change" and boy have things been changing lately. Given all the negativity that seems to catch the headlines, there has been some positive changes in the cattle markets. The late summer price rise in heavy feeders is historically normal. What's not so normal is heavy feeder prices have held their ground and, in some cases, strengthened as we have entered the fall runs. This contraseasonal move in the market is good news for beef producers, especially for folks backgrounding or preconditioning calves this fall and winter. This recent market move along with a generally favorable market outlook was a one of several areas that Dr. Kenny Burdine covered in his keynote presentation at the recent Stockmanship and Stewardship School in Bowling Green, KY. However, as good and informative as this presentation was, the one statement my good friend Kenny made that stuck with me the most was when he warned producers not to fall victim to "feed price sticker shock" when making management decisions. We all know that feed prices are higher this fall than they were this time last year. But what we need to remind ourselves is that the biology of our cows has not changed since last year, meaning that we still need to provide balanced nutrition for desired outcomes. So how do we overcome "Feed Price Sticker Shock" and avoid management paralysis?

Inventory your feed resources and test your hay/

forage. With current feed prices, if there was ever a time to test your hay it is this year. Many county extension offices provide this service free of charge. Once you get those results back, plug the numbers into the UK Beef Cow Forage Supplement Tool forage-supplement-tool.ca.uky.edu to determine what supplement you will need. You may find that some of your poorer hay will still meet the needs of a dry cow in mid gestation. Those are the cows you just weaned. Consider closing some gates and feeding weaned dry cows hay now and saving stockpiled forage for closer to calving. Most years stockpiled fescue will test 10-12 % protein and 60-62% TDN well into February or even March. Those numbers will maintain a lactating cow with little to no supplement.

Maintain body condition and supplement cows if needed. Make sure cows are in body condition score 5-6 by calving time. This means no visible backbone, hooks/hip bones or middle ribs. Supplementing hay this fall and winter and having cows in proper condition at calving will result in stronger calves at birth and higher quality colostrum. After calving, continue to meet nutritional needs. For spring calving herds, the February/March period can be the most challenging time to maintain body condition. Use any available stockpiled fescue and/or supplement hay diets with the proper concentrates. Don't try and make it on hay alone. Obviously if your hay is good enough to maintain body condition you can just feed hay. But we know most of the time our hay is not sufficient to get this done. Let's use a 30 cow herd and a decent hay that tested 9% protein and 54% TDN on a dry matter basis for an example. We know that lactating cows need a diet that is roughly 11% protein and 60% TDN to maintain condition. We plug the hay numbers into the UK Beef Cow Forage Supplement Tool and it recommends either 4 lbs of dried distillers or 5-6 lbs of 50:50 soyhull:gluten. So, what will that cost? Let's say feed is \$300 per ton. If we feed 5 lbs for 60 days (February/March) that will cost \$45/cow or \$1350 total. Remember how you manage prior to and after calving also affects breed back rate and the 2023 calf crop which could be the highest value calves we have sold in recent years. Proper feeding may be the difference between a 70% 2023 calf crop and a 90% 2023 calf crop. In a 30 cow herd, that could be a difference of 6 additional higher value calves to sell in the fall of 2023. The \$1350 you spend on supplement this winter could reap huge dividends in 2023.

Don't abandon preconditioning and backgrounding programs. Currently price spreads between unweaned bawling calves and weaned value added calves has narrowed dramatically. Average prices for the week of 10/17/21-10/23/21 for medium and large 1-2 525-575 lb steers were \$154.11 - \$146.35, whereas 675 to 825 value added steers ranged from \$153.13 - \$151.58. With this value of gain, preconditioning and backgrounding budgets still look favorable even in the face of higher feed costs. Remember, calves need to gain to make these programs work. Feeding at 2% body weight of a 14-16% protein concentrate feed is

of a 14-16% protein concentrate feed is still the best practice for the 60-90 day preconditioning programs. Recent closeouts from PVAP participants with the highest returns over expenses were the ones who put 150 lbs or more of weight gains on calves prior to sale.

Finally, try and stay positive. There is lots of negativity out there so try and filter the negative and concentrate on the good. Its times like these that challenge us to do a little better and rethink some of our habits and practices. Market dynamics are good so let's negotiate our way through these high input times so we can be there to reap the benefits of better prices and times.

Announcing the University of Kentucky 2021 Fall Crop Protection Webinar Series

he University of Kentucky has organized five webinars on field crop protection topics that will be hosted through the Southern Integrated Pest Management Center starting on November 11. These weekly webinars will cover topics such as new research on foliar corn disease management, soybean disease identification and management, updates on fall armyworm, guidelines for choosing herbicide options and herbicide-tolerant crop traits, and recommendations for control of weeds like Palmer amaranth, waterhemp, marestail (horseweed), annual ryegrass, and Johnsongrass. Kentucky pesticide applicator credits and Certified Crop Advisor continuing education credits have been applied for. **Pre-registration for the meetings is required through the registration URL provided**. Dates, speak-

ers and presentation registration links are listed below:

All webinars will start at 9:00 AM Central/10:00 AM Eastern



Date: November 11, 2021 Speaker: Dr. Carl Bradley Title: Spots, Rots, and Syndromes: Managing Challenging Soybean Diseases Registration URL: <u>https://zoom.us/webinar/register/WN 9fde3p9mSe-SSUdatGHjHQ</u>



Date: November 18, 2021 Speaker: Dr. Travis Legleiter Title: Re-setting the Defense for Control of Problematic Weeds Registration URL: <u>https://zoom.us/webinar/register/WN NcCn1dgjQ0C8fbvXHDMggw</u>



Date: December 2, 2021 Speaker: Dr. Kiersten Wise Title: What We Learned About Corn Fungicide Applications in 2021 Registration URL: https://zoom.us/webinar/register/WN zd9vPB1m0EiG VW83piXug



 Date: December 9, 2021

 Speaker: Dr. JD Green

 Title: A Resurgence of Other Weeds from the Past

 Registration URL: https://zoom.us/webinar/register/WN-0eliDIYARfe5m26zWImRNg



Date: December 16, 2021 Speaker: Dr. Raul Villanueva Title: Studies on the management of bean leaf beetle, three cornered alfalfa hoppers and the fall armyworm outbreak in soybeans Registration URL: https://zoom.us/webinar/register/WN_Agg56bgkSX-bix-uZLT3Pg

COVID-19 and Kentucky's Migrant and Resident Agriculture Worker Population

Savannah Columbia, Center for Crop Diversification Extension Associate

COVID-19 has impacted the lives of every resident in the Commonwealth of Kentucky. Many Kentuckians have dealt with school and workplace closures, supply chain malfunctions, and so, so much more over the past two years. Interestingly, a connection can be made between COVID-19 and Kentucky's migrant and resident agricultural worker population.

Kentucky is home to a multi-billion-dollar agriculture industry which operates in part by the labor inputs of foreign-born residents and migrant or H2A workers. Kentucky is home to 196,618 foreign-born residents, making up 4.4% of Kentucky's total population (Migration Policy Institute, 2019). Foreign-born residents include naturalized U.S. citizens, immigrants holding green cards, work visas, or student visas, and refugees. Of these 196.6K foreign-born residents, 3.1% work in the agriculture, forestry, fishing and hunting, and mining workforce sector (MPI, 2019). While the Migration Policy Institute assigned a value to the number of foreign-born workers in our industry, it is still an extremely hard number to quantify. However, Kentucky is one of the top 10 states of employment for H2A workers – approving 6,952 H2A workers in 2020 and 7,200 workers in 2021. With our state being dependent on the labor contribution of migrant and resident workers, there is a need for us to be aware of how COVID is impacting our labor force.

Exposure risk for COVID-19 among agricultural workers can be higher than expected because many farm crews carpool or travel together and share sleeping guarters or communal areas which may be difficult to social distance in. Migrant workers also may not feel like they can take advantage of prevention tools, such as vaccines, due to a lack of accessibility and misinformation. However, many states have developed variations of farmworker safety programs to help mitigate the spread of COVID-19 among agriculture workers. These include screening procedures, guidelines to follow for quarantine, and vaccination and/or testing incentives. Programs like these are important, especially for our state, as Kentucky is ranked 13th in agriculture worker deaths resulting from COVID-19 (for all ag workers, foreign and domestic). Purdue University recently published an interactive tool, Purdue's Food and Ag Vulnerability Index (pictured below), which gives us an idea of Kentucky's food and agriculture worker population and how it has been affected by COVID-19. Kentucky has one of the highest worker populations in the country, estimated at around 269,300 foreign and domestic workers. Of these, there have been 31,391 and 1,236 worker cases and migrant-specific worker cases, respectively. Worker safety is of the utmost importance to keep our food supply chain steady and sustainable. The University of Kentucky Cooperative Extension Service has worked to provide producers with guidelines and suggestions on best health practices to combat COVID, in both English and Spanish. Likewise, the University of Florida Extension has developed a farmworker safety training program to educate farm labor supervisors on COVID-19 mitigation in the workplace. Ideally, efforts such as these can aid in maintaining a safe workplace for our agriculture labor force.

PURDUE UNIVERSITY	Agricultural Economics	All Workers	Producers		Hired	Migrant	Unpaid
	Population of Workers Affected by COVID (Estimate)		Confirmed Cases	Total deaths	Worker Populat	ion Worker Cases	Worker Deaths
Total Ag Worker COVID19 cases	Kentucky	USA					
31K Total US COVID19 cases 1M		3,329,808 4,033,203	53,081 64,040	83) 674	i445 98,433.45 1062 70,649.60	1,569.14	
				6,210 27,966			572.12
	- 269.3K (89.43%)		722,399				509.07
	Worker Population Worker Cases Worker Deaths			40,584			502.43
Ag Worker COVID19 Cases by State				21,304		347 24,054.97	499.97
			954,610				480.38
		New York Kentucky	2,192,336	53,664 7,451	26	18,644.44 1300 31,391.46	456.38 450.68
			807,034 996,653	14,144 22,014			439.62 382.64
			350,384	5,394		1884 22,993.88	353.98
			637,363	11,799			330.70
		707,327 514,903	6,248			329.50	
it is the second s			419,809 388,986	6,498 7,813	14	289 20,741.72 1887 15,734.71	321.05 316.04
	Virginia North Carolina	723,727 1,122,413	11,618 13,880	15	391 19,523.06 299 23,752.79	313.40 293.73	

Links:

https://ag.purdue.edu/agecon/Pages/FoodandAgVulnerabilityIndex.aspx https://bit.ly/3FnTFGB https://www.youtube.com/watch?v=A1TLauXsRyc

Family Living Expenses on Kentucky Farms

Steve Isaacs, Department of Agricultural Economics

There is likely no single item in a farm business cash flow with more uncertainty and more variability than "family living expense." Farm income and expense items are measured pretty accurately because they will be needed for tax reporting and for borrowing eligibility...two pretty good reasons. The difference in income and expenses is net farm income. Net farm income is what's leftover to 1) pay debt, 2) grow the business, 3) pay taxes, and 4) live on. The last two are "family living."

We tend to live on what's leftover after paying debt and taxes. That "leftover" spending may or may not be tracked with much accuracy. Thus, when someone asks, "What's family living expense for a farm family?" we tend to answer with, "It's hard to say, but here's an average."

2020 Results

The Kentucky Farm Business Management program does have accurate family living data for some of the farms in their records and management program. The average family living expense for 168 farms in 2020 was \$88,743. That breaks down to \$71,964 for living expenses and \$16,779 for income and social security taxes on the net farm income. Data from 2020 and the two previous years are presented in Table 1. The net income from farm and non-farm sources to cover those expenses are also indicated in Table 1 with the residual difference being what is then left for debt payment and growth.

	2018	2019	2020
Total Family Living Expense	\$73,039	\$78,569	\$71,964
Income Taxes and Social Security	\$13,028	\$13,645	\$16,779
Total	\$86,067	\$92,214	\$88,743
Net Farm Income	\$77,980	\$82,461	\$227,438
Net Non-farm Income	\$26,941	\$31,020	\$41,260
Total Net Income	\$104,921	\$113,481	\$268,698
RESIDUAL	\$18,854	\$21,267	\$179,995

Table 1: KFBM Farms' Residual Income (2018-2020)

Family living expense is a catch-all term that includes a number of items. The \$71,964 average in 2020 is the sum of several categories that break out as follows. CONTRIBUTIONS: \$5,552, MEDICAL: \$7,875, LIFE INSURANCE: \$4,500, EXPENDABLES: \$50,591, and CAPITAL ITEMS: \$3,445.

While the \$71,964 of living expenses in 2020 is an average of 168 farms, there is considerable variation in family living expenses. When ranked by family living expense into three categories, the 55 farms in the high one-third category spent an average of \$131,970 while the low one-third category spent only \$11,032. As odd as it seems the monthly expenditures of the high one-third is about equal to the annual expenses of the low one-third. Indeed, for family living expenses, "It's hard to say."

The Long View

Family living expenses and farm income and expense data have been collected in the KFBM program for decades. The following graphics are a visual representation of the totals in Table 1, but extended over a twenty-year period.

The relatively stable but generally increasing line in Figure 1 would indicate that the average family living expense (including income taxes and social security) has been in the \$60 to \$100 thousand range. There is no such stability in net income (farm and non-farm combined). Adding the net income data in Figure 2 suggests what we already know...farm income has been highly variable over the past twenty years. In the peak years net farm income exceeded \$200 thousand and the low years were in the \$20 thousand range. Net non-farm income tended to be in the \$30-40 thousand range.

The difference in these two lines in Figure 2 is the income remaining to retire debt (i.e. principal payments) and/or to grow the business with asset purchases. This "residual" is graphed in Figure 3. In eleven of the twenty years that residual was less than \$50 thousand, and was negative in some years when net farm and non-farm income was not sufficient to cover family living. Those years can be particularly troublesome when money must be found from other sources, or borrowing has to increase, with nothing left to pay principle on debt.

Farm income is highly variable. Family living expenses aren't. While the data presented here from the Kentucky Farm Business Management program are averages, individual farms can vary considerably. An awareness of, and planning for, this variability is critical to the future of the farm...and the family.

Figure 1: KFBM Family Living Expenses Including Income Taxes and Social Security



Figure 2: KFBM Family Living and Net Income (farm and non-farm)



Figure 3: KFBM Residual Income (Net Income-Family Living and Taxes) \$250,000.00



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JANUARY 27— FSA, NRCS, K-CARD, OAP **GRAND RIVERS COMMUNITY CENTER 6:00 P.M.**

CALL YOUR COUNTY EXTENSION OFFICE TO REGISTER: CALDWELL: 270.365.2787 CALLOWAY: 270,753,1452 CRITTENDON: 270.965.5236 LIVINGSTON: 270.928.2168 MARSHALL: 270,527,3285 MCCRACKEN: 270.554.9520

TRIGG: 270.522.3269



College of Agriculture, Food and Environment Cooperative Extension Service

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Cooperative Extension Service Agriculture and Natural Resources Family and Consumer Sciences 4-H Youth Development Community and Economic Development

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Nuisance Weed Spraying Program

Kentucky Department of Agriculture

This program consists of weed spraving demonstration plots. The department will provide the sprayer and enough chemical for the treatment of 10 acres of agricultural land or 200 gallons of spot spraving mix to be used on agricultural land. The department's representative will demonstrate proper mixing and application techniques. A number of nuisance weeds can be treated under this program depending on the needs of the participant. This program is limited to broadleaf weeds.

Broadcast Spraying demonstration plots consist of:

- 10 acres of agricultural land will be treated with chemical provided by the department
- Application is performed with a two-wheeled trailer type sprayer equipped with non-boom nozzles
- If additional chemical is provided by the participant, an additional 10 acres can be treated

Spot Spraying demonstration plots consist of:

- 200 gallons of broadleaf chemical mix which is applied until sprayer is empty
- Application is performed with a two-wheeled trailer type sprayer equipped with a handheld spray wand used by the tractor operator
- If additional chemical is provided by the participant, an additional 200 gallons can be sprayed

For each demonstration:

- The participant must provide water source
- The participant must provide tractor and operator
- All chemical products must be labeled and the product label will be strictly followed
- A maximum of 7 participants per county. Participants may only apply to the program every 36 months.

This program is designed to target weeds that have a negative impact on the participant's agricultural production. There will be an annual online application period to participate in this program. You may submit an application using our on-line services (located in the top menu bar) on the Kentucky Department of Agriculture Website. Dates to apply February 1 to February 28 of 2022.

https://www.kyagr.com/



Drone Pilot Certification Workshop

An intensive prep course to obtain a drone pilot license



<u>Course:</u> Dec 20 and 21, 2021 9 am- 4 pm each day (Lunch will be provided both days) University of KY Research and Education Center, Princeton KY Course: \$400

For more information and to register contact:

Lori Rogers

270-365-7541 ext 21317

Lori.Rogers@uky.edu

Exam: The exam takes approximately 2 hours and appointments will be scheduled on Dec 22 and 23rd.

Exam: \$175

Class size is limited!



MULTIMIN

culture and Natural Resource

amily and Consumer Sciences

-H Youth Develo

Course will be taught by Mandy Briggs, Certified Flight Instructor

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CCA: 12 CEUs

Calloway County Cattlemen's 2021 Heifer Workshop

December 14th 2021

- Heifer Development--Evaluating Heifer's for Structure--Tailhead Bleeding Demo.--Pelvic Measurement Demo.--Chute-Side Evaluations--Live Cattle & Hands on Event-

To register please contact the Calloway County Extension Office: 270-753-1452

Location: MSU Expo Center- College Farm Rd.- Murray, KY Date: December 14th, 2021 Time: 6:00pm (Dinner Provided)

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