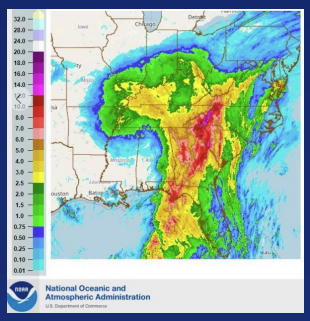

Corn & Soybean News

October 2024
Volume 6, Issue 10

Martin-Gatton College of Agriculture, Food and Environment | Grain and Forage Center of Excellence

Hurricane Helene Effect on Kentucky Soybeans

Dr. Chad Lee, Director - Grain & Forage Center of Excellence, UK Grain Crops Specialist

Remnants of Hurricane Helene and the rains just prior to resulted in about 4 to 5 inches of rainfall in many areas across Kentucky. Some parts of Western Kentucky recorded over 6 inches of rain, according to the Kentucky Mesonet. Wind gusts exceeded 60 mph at times during the storms. The effect of those rains on soybeans depends some on the stages of the plants.

At the time of the storms, about 28% of soybeans were harvested, about 66% were dropping leaves and at least 85% had started to turn yellow, according to the USDA-NASS. Note: The 85% estimate includes all soybeans that are or already have lost green color.

Soybeans that are still conducting photosynthesis will benefit from the rains. Even with the high volume of water, there was little to no water runoff in fields. That means the soils soaked in most of that rain which will be helpful. There is a catch. Many of the soils are saturated and oxygen will need to move back into the rootzone before full benefits can be received.

The heavy rains will be harmful to soybeans that were already mature and no longer conducting photosynthesis. Generally, heavy rains on mature soybeans results in poorer seed quality. Soybeans that were mature will have weakened pods from the storm. As these seeds and pods dry, they are more likely to shatter. Shattered pods result in yield losses. Farmers may want to harvest these soybeans as soon as they can safely get into fields to get ahead of the shattering.

Figure 1. Soybean in central Kentucky after the storms passed. Photos taken Sept. 30, 2024 in Woodford County (left), Oct. 1, 2024 in Fayette County, KY and Oct. 3, 2024 in Mercer County (right).

In some mature fields, the black, saprophytic fungi that normally colonize soybeans appear to be a little heavier this year. We may need to monitor that over the next few weeks.

Some of the good news is that most soybeans are still upright. The situation would be much worse if the plants were lodged.

These rains likely will bring growing season rainfall totals to near normal, but the timing of those rains resulted in crops stressed for water the past month and receiving way too much water a little too late for much of the crop now.

Laura Lindsey at Ohio State University is coordinating a report on soybean conditions across the regions affected by Hurricane Helene. Expect to see a larger report soon through Science for Success.

Optional Citation: Lee, C. 2024. Hurricane Helene Effect on Kentucky Soybeans. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. Chad Lee, Director- Grain & Forage Center of Excellence
UK Grain Crops Specialist (859) 257-3203 Chad.Lee@uky.edu

Outbreak of Fall Armyworm in Cover Crop Wheat, Rye, and Pastures in Central Kentucky

Dr. Raul T. Villanueva, UK Entomology Extension Specialist

Current Situation

A recent correspondence with Phillip Anderson, a crop consultant from Daviess County, reported a significant outbreak of fall armyworms (FAW, *Spodoptera frugiperda*, Noctuidae) in cover crop wheat andrye; and also in pastures located in reclaimed land from coal mines. Mr. Anderson reported that at least six different fields have this FAW outbreak corresponding to approximately 500 acres of wheat and rye cover crop (Figure 1). Injuries have been observed in recently emerged seedlings (Figure 2) and Feekes 1, 2, and 3 (Figure 3). This finding happened on October 8, 2024. In addition, in Princeton we found no FAW egg masses on September 27 but captured 10 FAW adults in pheromone-based traps. On October 4, those traps captured 189 FAW adults.

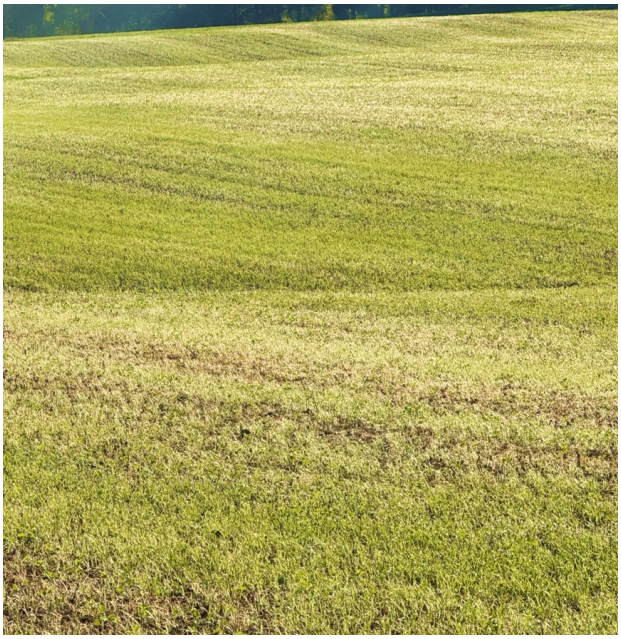

Figure 1. Cover crop wheat field damaged by fall armyworms. Light green areas shown plants eaten by FAW larvae (Photo: Phillip Anderson, Crop consultant from Daviess Co.)

Figure 2. Wheat seedling cut by FAW shown by orange arrow and purple circle, respectively (Photo: Phillip Anderson, Crop consultant from Daviess Co.)

Figure 3. A closeup of the wheat injury caused by fall armyworm, circle shows a fall armyworm larva of a 3rd or 4th instar (Photo: Phillip Anderson, Crop consultant from Daviess Co.)

Discussion and Management

In this newsletter, there are two additional articles on the Fall Armyworm where you can find some aspects related to its biology, identification, and phenology, numbers of eggs and adults collected in non-woven polypropylene weed barrier landscape fabric to detect FAW egg masses, and pheromone-based traps to detect male adult Fall Armyworm in August and September 2024.

Based on the results from the traps and the pheromone-based traps shown above, it seems that the Fall Armyworm strain that is abundant in Kentucky this year might be the rice strain that had preference for rice, wheat, rye, and pastures. Also, the pheromone-based traps showed an increase in the male adult moths flying or migrating northward.

Sprays of insecticides to control Fall Armyworm in August and September reported no failures using pyrethroid applications in pasture fields this year. Thus, this strain might be susceptible to pyrethroids, which are effective against this pest. Also, Steward® and Besiege® insecticides can be used, but these insecticides are more expensive. It is worth noticing that the seed used for wheat and rye in these fields was not treated with insecticides.

Early detection of Fall Armyworm infestations will allow for more effective control of Fall Armyworm if larvae are in the 1st to 3rd instars or smaller than 1/2 inch in length. For the 4th, 5th, and 6th insects, the insecticide efficacy decreases. If sprays are necessary, consult with your county extension agent.

Optional Citation: Villanueva, R., 2024. Outbreak of Fall Armyworm in Cover Crop Wheat, Rye, and Pastures in Central Kentucky. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. Raul Villanueva
UK Extension Entomologist (859) 562-1335 raul.villanueva@uky.edu

Large Grain Crops in Kentucky and Low Prices Put Pressure on Storage

Dr. Sam McNeill, UK Extension Agricultural Engineer
Dr. Grant Gardner, UK Extension Agricultural Economist

Corn harvest is well underway in Kentucky and ahead of the 5-year average for early October. This is largely due to the dry weather conditions throughout August and September, but there was sufficient rainfall during the growing season to make a decent crop statewide. In fact, pre-harvest projected yields were similar to last year (Table 1). Barring any widespread damaging weather as harvest continues, this will be the 6th largest corn crop historically. When combined with the predicted soybean and wheat crops, this will be the 3rd largest number of bushels ever produced in Kentucky (383 million bushels). In comparison, last year's combined production was an all-time record of just over 420 million bushels.

Table 1. Predicted grain production, average of recent cash prices and production value for 2024 in Kentucky. (Source: USDA News Release, Aug. 12, 2024: www.nass.usda.gov/ky).

Crop	Harvested Acres (1000)	Yield bu/ac	Production bu (1000)	Avg. $/bu	Total value $1000
Corn	1,280	187	239,360	$4.00	$957,440
Soybean	2,040	55	112,200	$9.50	$1,065,900
Wheat	410	77	31,570	$5.50	$173,635
Total	3,730		383,130		$2,196,975

These large crops and low prices over the summer have put pressure on existing storage space, so we continue to see new bins on many farms. USDA estimates indicate that 5 million bushels of new on-farm storage was installed in the state last year, bringing the total capacity just over 260 million bushels (Figure 1). In comparison, off-farm storage capacity was unchanged for the year at 94 million bushels, so on-farm storage remains at 2.8 times that, which is among the highest portion in the US (at 73% of total capacity statewide). Also, grain production has been expanding in general and is more pronounced in some areas of Kentucky where storage is limited. For these reasons, the potential growth for short-term and long storage is quite strong.

Recent marketing challenges have put further pressure on storage and resulted in increased interest in temporary structures for the remainder of this year. The University of Kentucky Biosystems and

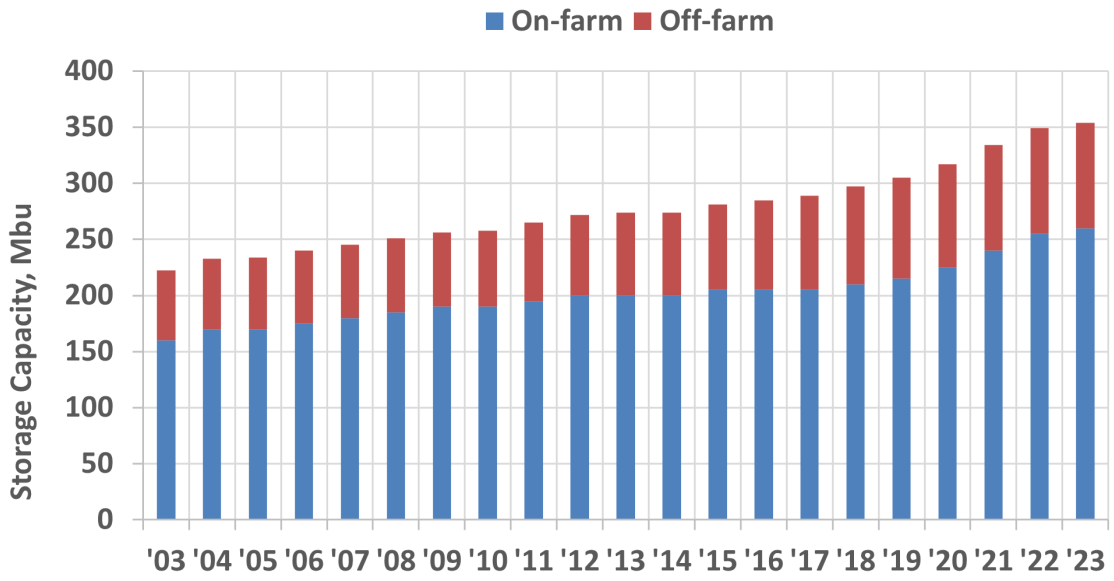

Figure 1. On-farm and off-farm grain storage capacities (Mbu) from 2003 to 2023 in Kentucky.

Agricultural Engineering Department has recently updated a decision tool for calculating the storage capacity of bins and temporary options and is available at https://bae.ca.uky.edu/extension/grain-storage-systems.

Another free decision tool is available to help farmers compare the costs of storing grain in bins or bags. Agricultural economists at the universities of Kentucky and Tennessee developed a spreadsheet tool to compare the full costs of storing grain in silage bags versus conventional bins and posted it at https://arec.tennessee.edu/grain-bag-and-bin-storage. An accompanying publication compares the pros and cons between the two systems.

Although current cash prices are well below the seasonal average for the past few years (since 2019), the combined value is still over $2B (Table 1). Considering that post-harvest losses of 1% or more are not uncommon during storage and most often result in discounts by the elevator or grain buyer, this represents a value over $20 million in lost income statewide! Hence, prudent post-harvest management of stored grain is essential to protect product value and quality during handling, drying and storage. More information on safe grain handling practices, energy efficient drying methods, and proven post-harvest management tools for on-farm and off-farm facilities is also provided at County Extension Offices and the above UK website.

Optional Citation: McNeill, S., Gardner, G. 2024. Large Grain Crops in Kentucky and Low Prices put Pressure on Storage. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. Sam McNeill
UK Extension Professor Emeritus, Ag Engineering (859) 562-1326 sam.mcneill@uky.edu

Dr. Grant Gardner
UK Extension Agricultural Economist (859) 257-7280 grant.gardner@uky.edu

Variability of Soybean Yields in Kentucky

Dr. Dennis B. Egli, UK Professor Emeritus

When it's soybean harvest time we start thinking about yields. This year's yield in Kentucky is estimated at 52.2 bushels per acre from 2.04 million acres (September 1 estimate by the National Agricultural Statistics Service). That is a good yield, but it doesn't beat the 56.6 bushels per acre in 2021.

The average yield provides an indication of the statewide productivity, but what about yields at smaller scales? How much yield variation is there among the counties where soybean is a major crop?

I looked at the average county yields for the last 10 years (2014 – 2023) for 30 counties in Kentucky that grow most of our soybean crop. The average yields, arranged from the lowest (Marshall) to the highest yielding county (Union), are shown in the bar graph in Fig. 1. Union County produced an average yield that was 14.5 bushels per acre higher than Marshall County, but it was only 1.4 bushels higher than the next highest county (Hancock). The big question is – what causes this variability?

The availability of technology (high-yielding, disease-resistant varieties, herbicides, pesticides to control diseases and insects, fertilizers and the industries that supply these inputs) is a vital component of any high-yielding soybean production system. This technology should be equally available to Kentucky producers in all counties, so I don't think the availability of the latest technology caused the yield variation shown in Fig. 1.

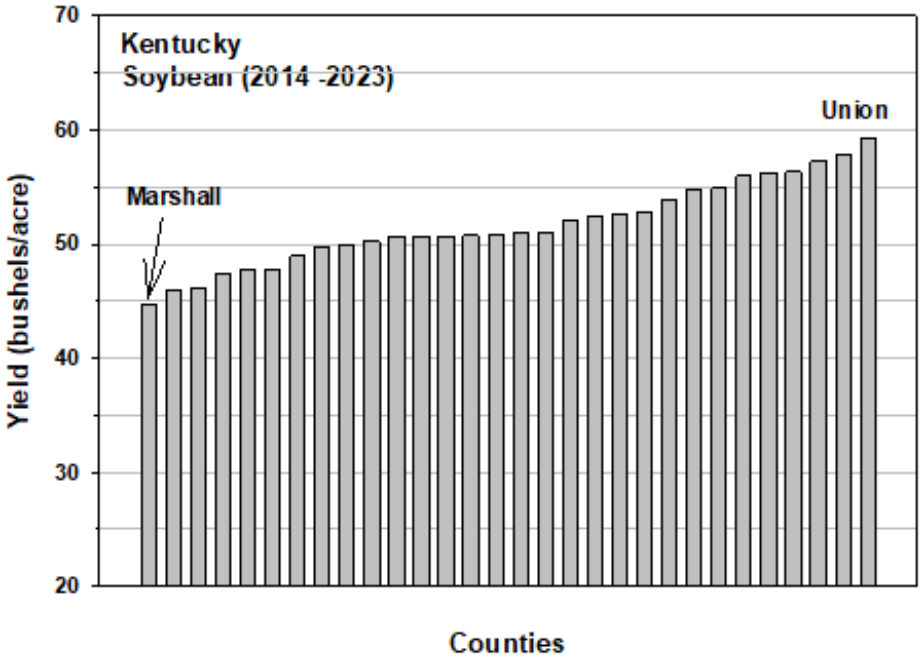

Figure 1. Average Soybean yields (2014 – 2023) for the 30 major soybean producing counties in Kentucky. Yields from the National Agricultural Statistics Service.

Managing the technology is another key to high soybean yields. The availability of technology is one thing; selecting the appropriate technology and applying it correctly is another. Management skills no doubt account for some of the yield variation among producers, but it's hard to argue that farmers in

some counties are better managers than in other counties. Especially in this information age when a blizzard of facts and figures is as close as your cell phone. I don't think that populating Marshall County with farmers from Union County would increase their average yields by14.5 bushels per acre.

High yields are very much dependent on the weather, especially summer rainfall. The summer rainfall in any given year can favor one county over another depending upon the vagaries of the summer thunderstorms. This variation is random in the relatively small area where Kentucky grows its soybeans, but it could have some influence on average yields calculated over only 10 years. However, the variation among counties was similar when yields were averaged over 40 years (1972 – 2011), so it is unlikely, in my opinion, that weather conditions would consistently favor one county over another year after year (after all, Marshall and Union counties are roughly only 60 miles or so apart).

The final item on my list is the soil – a fundamental component of any production system. Could variation in soil characteristics account for some of the differences among counties?

My soil science friends tell me that Union County is blessed with deep soils that store lots of water which could provide the basis for its high yields. The availability of water in the summer often limits soybean yields in Kentucky, so having a larger storage reservoir would be a distinct advantage.

Many counties in Western Kentucky are cursed with soils that contain a hardpan (fragipans) that roots can't penetrate, limiting the amount of water they can store and making them much more dependent on timely summer rains for high yields. It's likely that the variation in soil quality contributes to the variation in county yields (Fig. 1).

Average yields are influenced by year-to-year variation in yield (feast or famine). The yields in the lower yielding counties (e.g., Calloway County in Fig. 2) are really low in bad years (presumably dry years), while the yields in bad years in Union County are lower but not drastically so (Fig. 2). If rainfall is short, a crop on a soil with a smaller reservoir to store water will be affected more than a soil with a large reservoir.

Several years ago, I worked with an ex-student of mine (Dr. Jerry Hatfield, recently retired as Director of the USDA – ARS National Laboratory for Agriculture and the Environment at Ames, IA) to evaluate the variation in potential yields (yield with no stress) among counties. We used a special regression technique to fit a line to the top 5% of the yields in a county over a 40-year period (dotted line in Fig. 2). We took this line, which represented the yields in the most favorable environments over the 40 years, as an estimate of the

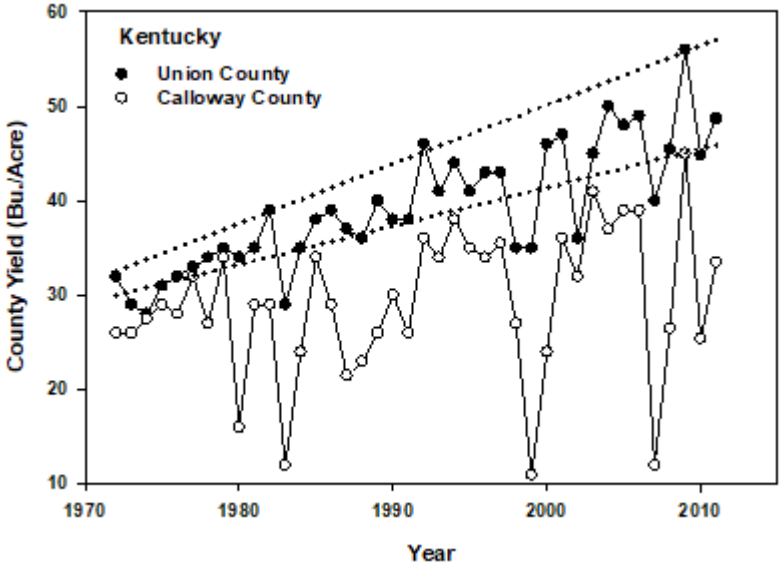

Figure 2. Average and potential yields (1972 – 2011) in Union and Calloway counties in Kentucky. Adapted from Egli, D.B and J.L. Hatfield. (2014). Yield gaps and yield relationships in central U.S. soybean production systems. Agron. J. 106:560-566

potential yield. The potential of Union County was always higher than the potential yield of Calloway County (county next to Marshall County in Fig. 1) (Fig. 2). The potential yield decreased in step with the average yields from Union County down to Marshall County.

The low-yield counties couldn't produce 'Union County' yields even with the most favorable weather conditions. The favorable weather conditions could not overcome the yield limitations (presumably soil based) in the lower-yielding counties. The lower yielding counties produced really low yields in bad years and were not able to produce really high yields in good years – a real double whammy!

We often think that yield in any particular soybean field is a result of management and weather, but there is a third factor lurking in the background – the yield expectations for that field (i.e., soil characteristics). The bottom line is that yield expectations vary among counties (and, for sure, within counties); managing for super-high yields may not be realistic (and uneconomic to boot) in some counties in Kentucky. Don't forget, "it's not the strongest, or the fittest, but the one willing to change that survives" (Often attributed to Charles Darwin, English Biologist, 1809-1882).

Optional Citation: Egli, D. 2024. Variability of Soybean Yields in Kentucky. *Corn & Soybean News, Vol 6, Issue 10*, University of Kentucky, October 11, 2024.

Dr. Dennis Egli
UK Professor Emeritus (859) 218-0753 degli@uly.edu

Johnsongrass Control Moving into 2025

Dr. Travis Legleiter, UK Extension Weed Specialist

Johnsongrass has long been a problematic weed in Kentucky, but it hasn't always been at the top of our minds the last several years with the continual onslaught of weeds like waterhemp, Palmer amaranth, and Italian ryegrass. This year though, it seems Johnsongrass made a comeback or at least reminded us that it is still very much a problematic weed that needs to be managed. Unlike many of the weeds we deal with in our row crop acres, Johnsongrass is perennial that spread by seed and rhizomes. This allows Johnsongrass to gain a foothold in the Kentucky landscape of no-till row crops in close proximity to rights of way and perennial forage fields and pastures where this weed tends to thrive and spread.

This past spring and summer, Johnsongrass seemed to really explode and was much more prominent in our corn and soybean acres. I believe there was a couple of reasons for the perceived sudden increase in Johnsongrass pressure. I believe we have been building our Johnsongrass stock (rhizomes) for the past couple of years and the weather this year was set up perfectly for Johnsongrass to thrive. Generally, across the state we had a great April for field work and planting of corn and early soybean and for burndown of winter annuals for May planted crops. Then we received multiple heavy rainfall events in May that kept planters and sprayers out of the field. These spring conditions in combination with a warm winter and fields with existing Johnsongrass rhizomes allowed for a perfect scenario for Johnsongrass to thrive. Following the successful clearing of winter annuals from the field, Johnsongrass was able to immediately emerge from rhizomes and thrive in the late April and May conditions with little interruption from field activities.

Image 1. Johnsongrass emergence from rhizomes following corn harvest. (Oct. 2, 2024)

The good news is that our postemergence applications in both corn and soybeans were largely successful. Other than a few isolated locations, herbicide resistant Johnsongrass has not become prevalent in Kentucky and no cases of glyphosate-resistance has been identified. This is not to say that we should not worry about that possibility

though.

As I indicated above, I believe in many of our no-till fields we have been allowing for the establishment of Johnsongrass rhizome networks. Johnsongrass emerging from rhizomes is significantly harder to control than seedling Johnsongrass. Management of rhizome Johnsongrass should be approached from a long-term perspective rather than the short-term approach often taken with annual weeds.

Having this long-term approach in mind producers and consultants should be evaluating fields for the potential need for fall herbicide application. If you had fields with particularly heavy Johnsongrass infestations this year, even if your post programs were effective, you should go observe those fields to see how much Johnsongrass has regrown or emerged since harvest. Fields with significant Johnsongrass regrowth or emergence this fall should be considered for a fall application.

As a perennial plant Johnsongrass has now started the process of preparing for its explosive reemergence next spring. It is doing this by pushing nutrients down into the rhizome network to be stored over the winter and to be used next spring. Farmers can use this to their advantage by making applications of glyphosate to the Johnsongrass that will also move to the rhizome network causing significant damage to the network and overall weakening or killing the plant going into next spring. Although, it should not be expected that a single fall application will permanently take out the Johnsongrass in a field. It will take several years of intense management to deplete an established population. Again, Johnsongrass requires a long-term control approach.

Here are a few keys for fall applications for Johnsongrass:

- Scout fields to assure Johnsongrass has had time to regrow or emerge following harvest
- Apply 0.75 to 1.125 lb ae glyphosate plus AMS
- If applications are occurring in late fall, target periods of warmer weather if possible

Refer to page 16 of AGR-6 (https://publications.ca.uky.edu/files/AGR6.pdf) for a product use rates for the above listed glyphosate rates.

Optional Citation: Legleiter, T. 2024. Johnsongrass control moving into 2025. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. Travis Legleiter
UK Extension Weed Science (859) 562-1323 travis.legleiter@uky.edu **X**@TravisLegleiter

The Soil Calcium to Magnesium Ratio: Not a Factor in Choosing Your Ag Lime Source

Dr. John Grove, UK Agronomy/Soils Research & Extension

Fall is a good time to take soil samples. Fields that need soil pH adjustment (usually need some ag lime to raise pH) are identified. Soils are usually dry and easier to get over with spreaders that are heavy with lime. And every fall I get questions about whether the grower should use calcitic or dolomitic ag lime. The short answer is: Doesn't matter – not much of a lime quality factor.

Ag lime quality depends on the calcium carbonate equivalence (CCE) and the fineness of the particles that make up the lime. The CCE value rises somewhat as the amount of magnesium carbonate in the material rises (only takes 84 pounds of $MgCO_3$ to neutralize the same amount of acidity as 100 pounds of $CaCO_3$ will neutralize). The CCE is much more strongly related to the quantity of impurities (non-carbonate rock) in the lime, falling rapidly as impurity level rises. Ag lime particle fineness is also strongly related to lime quality – the finer the particles, the higher the quality. When these two quality factors are taken together, the ag lime's relative neutralizing value (RNV) is determined and is used to effectively compare among different ag lime materials from different sources when choosing which ag lime to purchase.

So, why the question about the calcium to magnesium ratio? Most of the time, the grower's soil test report is the culprit. Most soil test reports give results for plant available calcium and magnesium in at least two of three ways: mass basis (pounds Ca or Mg/acre, ppm Ca or Mg); charge basis (meq Ca or Mg/100 g soil); and/or charge proportion basis (% Ca or Mg charge on the soil cation exchange capacity-CEC). Many labs then calculate the calcium to magnesium ratio (charge ratio of Ca to Mg on soil CEC). When the ratio is 'high' the soil test lab might recommend dolomitic lime be used – when the ratio is 'low' the lab recommends calcitic lime. The recommendation causes a problem when the grower learns that the recommended type of lime is not locally available – transportation costs become a significant issue.

The problem is that the soil Ca/Mg ratio has no value as a predictor of crop response. This has been shown in many studies, but one of the best (McLean et al. 1983) looked at six years of corn, soybean, wheat and alfalfa yield response to 18 different (2.3 to 26.8) Ca/Mg ratios. The authors tabulated the soil Ca/Mg ratios for the 5 highest, and 5 lowest, yields among the 18 different treatments, for each crop (Table 1). Given the large degree of overlap, there was no relationship between soil Ca/Mg ratio and the yield of any of these crops. In fact, for soybean, the range in soil Ca/Mg ratios for the 5 highest yielding treatments was ***entirely contained*** in the range in soil Ca/Mg ratios for the 5 lowest yielding treatments.

Table 1. Range in soil Ca/Mg ratio for the 5 lowest and 5 highest treatment average yields.

Yield	Soil Ca/Mg Ratio Range			
Level	corn	soybean	wheat	alfalfa
Lowest 5	5.0-21.5	2.3-16.1	6.8-21.5	5.7-21.5
Highest 5	5.7-26.8	5.7-14.9	5.7-14.0	6.8-26.8
Overlap (%)	75	100	87	74

So, if your soil test report calls for a lime application, feel free to apply a local source of good quality ag lime, whether calcitic or dolomitic. The soil Ca/Mg ratio should have no impact on your lime source choice.

Reference:

McLean, E.O., R.C. Hartwig, D.J. Eckert, and G.B. Triplett. 1983. Basic cation saturation ratios as a basis for fertilizing and liming agronomic crops. II. Field studies. Agronomy Journal 75:635-639.

Optional Citation: Grove J. 2024. The Soil Calcium to Magnesium Ratio: Not a Factor in Choosing Your Ag Lime Source. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. John Grove

UK Agronomy/Soils Research & Extension (859) 568-1301 jgrove@uky.edu

Fall Armyworm Egg Masses and Adults Collected in Corn and Forage Fields in the Early Fall of 2024

Dr. Raul T. Villanueva, UK Entomology Extension Specialist

Jose Bravo, Visiting Scholar, UK Research and Education Center .

Current Situation

Recent correspondence with County Extension Agents, growers, and Extension colleagues in forage indicated a surge of fall armyworms (FAW) (*Spodoptera frugiperda*, Noctuidae) in forages. These reports originate from various regions of Kentucky, beginning in August and continuing until the first week of September. Counties reporting the presence and damages in pastures included Carlisle, Russell, Todd, and Wayne counties.

Biology, Identification and Description of the FAW

This insect usually reaches Kentucky by the end of June to the beginning of July as they migrate to northern regions; however, they can eventually develop into large populations during the fall. Female FAW lays 50 to 200 eggs per cluster, which are covered with scales. Egg clusters have been observed on leaves, wood poles, screens, or plastic field flags (Figure 1). A single female can produce up to 2,000 eggs during its life span. Larvae from this egg cluster hatch at the same time and then can move to the ground or ballooning hanging from a strain of silk. The FAW has six larval instars that can be completed in 14 to 30 days, depending on the temperature. Fall armyworm resembles corn earworm and armyworm; however, fall armyworm has a white "Y" mark on the head capsule between the eyes (Figure 2). Pupation occurs in the ground, and adults can live up to 20 days.

Figure 1. Egg mass of fall armyworm: eggs are laid in layers and covered with scales. (Photo R. Villanueva)

Figure 2. A distinctive, light-colored inverted "Y" mark is present on the head capsule of fall armyworms and coloration changes of FAW larvae. (Photo: Raul Villanueva, UK)

Trap to Detect FAW Egg Masses

Two traps were installed at the Research and Education Center in Princeton. One trap was located in a conventional corn (non-GMo) plot and the other in an alfalfa plot distant 3 miles from each. This trap was built using a black woven polypropylene Weed Barrier Landscape fabric. The design was based on a study of asparagus in Peru, where FAW is a pest of this crop. The trap is used in asparagus fields in Peru to detect oviposition and the presence of FAW in these fields. The trap had two wood stakes (49.2 in.) placed in the ground and distant 19.6 in. The area between the two stakes has the weed barrier fabric with pledges (19.6 wide by 39.3 in height), as shown in Figure 3. From August 23 (set up date) to September 27, 2024, 22 egg masses were found in alfalfa. Whereas in the same fields, pheromone-based bucket traps captured 10 and 1 FAW adults in corn, and 50 and 189 FAW adults in alfalfa on September 27 and October 4, respectively.

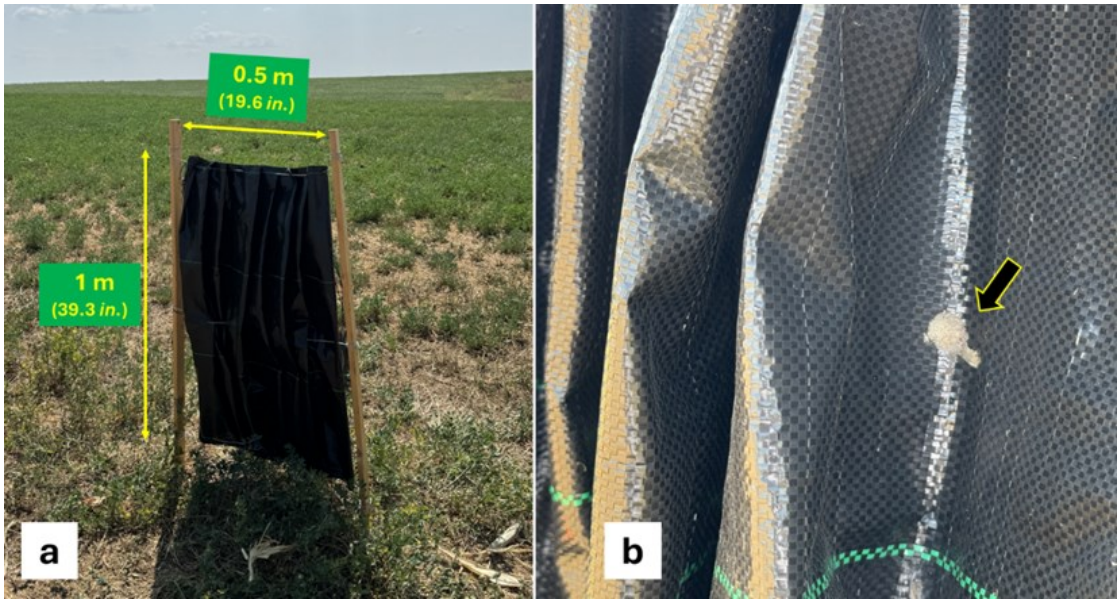

Figure 3. (a) A view of the dimensions of the black non-woven polypropylene weed barrier landscape fabric trap, and (b) pledges and an egg mass (arrow) of the fall armyworm. (Photos by Jose bravo and Raul Villanueva)

Discussion and Management

Based on the results from the black woven fabric traps and the pheromone-based traps shown above, it seems that the FAW strain that is abundant in Kentucky during this period might be the rice strain that had preference for rice, pastures, and forages. Also, the pheromone-based traps showed an increase in the male adult moths flying or migrating northward. Additionally, there was no report on failures of pyrethroid applications to control FAW in forage fields this year. Thus, this strain might be susceptible to pyrethroids, which are effective against this pest. However, it is known that insecticide efficacy decreases for late larval instars. Then, early detection of infestations will allow for more effective control of FAW if larvae are smaller than 1/2 inch in length. If sprays are necessary, consult with your county extension agent.

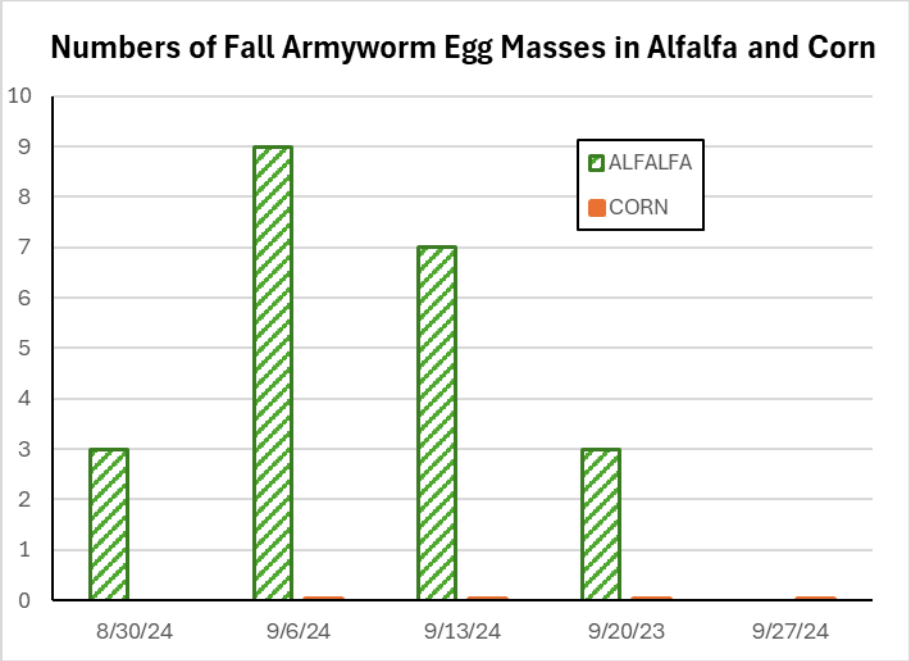

Figure 4. Numbers of Fall armyworm egg masses detected in corn and alfalfa fields from August 30 to September 27, 2024.

More Information

- Watch for Fall Armyworm in Pastures (KPN 08/27/2019)
- Fall armyworm in Featured Creatures (University of Florida) (Last updated 2019)
- Desarrollo de un programa de manejo integrado de plagas para espárrago (Asparagus officinalis L.) en la Irrigación Chavimochic. PhD Dissertation by Castillo Valiente, J.R., 2018 (Universidad Agraria La Molina. Peru

Optional Citation: Villanueva, R., Bravo, J. 2024. Fall Armyworm Egg Masses and Adults Collected in Corn and Forage Fields in the Early Fall of 2024. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. Raul Villanueva
UK Extension Entomologist (859) 562-1335 raul.villanueva@uky.edu

Dr. Jose Bravo
Entomology Visiting Scholar - UKREC

Fall Armyworm is Not the Only Spodoptera Species Present in Fields of Kentucky During the Early Fall 2024

Dr. Raul T. Villanueva, UK Entomology Extension Specialist

Dr. Felipe Batista, UK Entomology Post Doctoral Student

Jose Bravo, Visiting Scholar, UK Research and Education Center

At the University of Kentucky's Research and Education Center in Princeton, we planted some conventional (non-GMo) and GMo corn in August 2024 to have a large population of pests and conduct some studies.

In this field, we identified a beet armyworm (*Spodoptera exigua*) caterpillar. This caterpillar was feeding on corn foliage planted as indicated above. The larva of this species has a light-green coloration with a smooth cuticle, four pairs of abdominal prolegs, and many fine white wavy lines along its dorsum and a broader stripe along each side (Figure 1). The beet armyworm has a wide host range, injuring vegetables, field, flower crops, field crops, alfalfa, hay, and other crops.

Figure 1. Beet armyworm larva with fine white wavy lines along its dor-sum. (Photo Jose Bravo)

The yellow-striped armyworm (YSAW) (*Spodoptera ornithogalli*) is common in the eastern United States. Both immature and older larvae can be recognized by a clear visible yellowish-white stripe on dorsum (Figure 2a, 2b, 2c, and 2d) and two dorsal black spots close to the head and two lateral black spots after the third pair of legs (Figure 2b and 2d). Coloration is variable, but older larvae

have black triangular markings with thin white lines passing through them along each side of dorsum (Figure 2c). Its hosts include greens, tomatoes, peppers, beans, cucurbits, and cole crops, but it also feeds on tobacco, soybeans, corn, and alfalfa. While it is primarily a foliage feeder and can seriously injure young plants in the early season. This species is more common in hay and field crops from May to July. However, in 2024 we observed its presence throughout the entire growing season, and during the last week of September we have been finding egg masses in black traps.

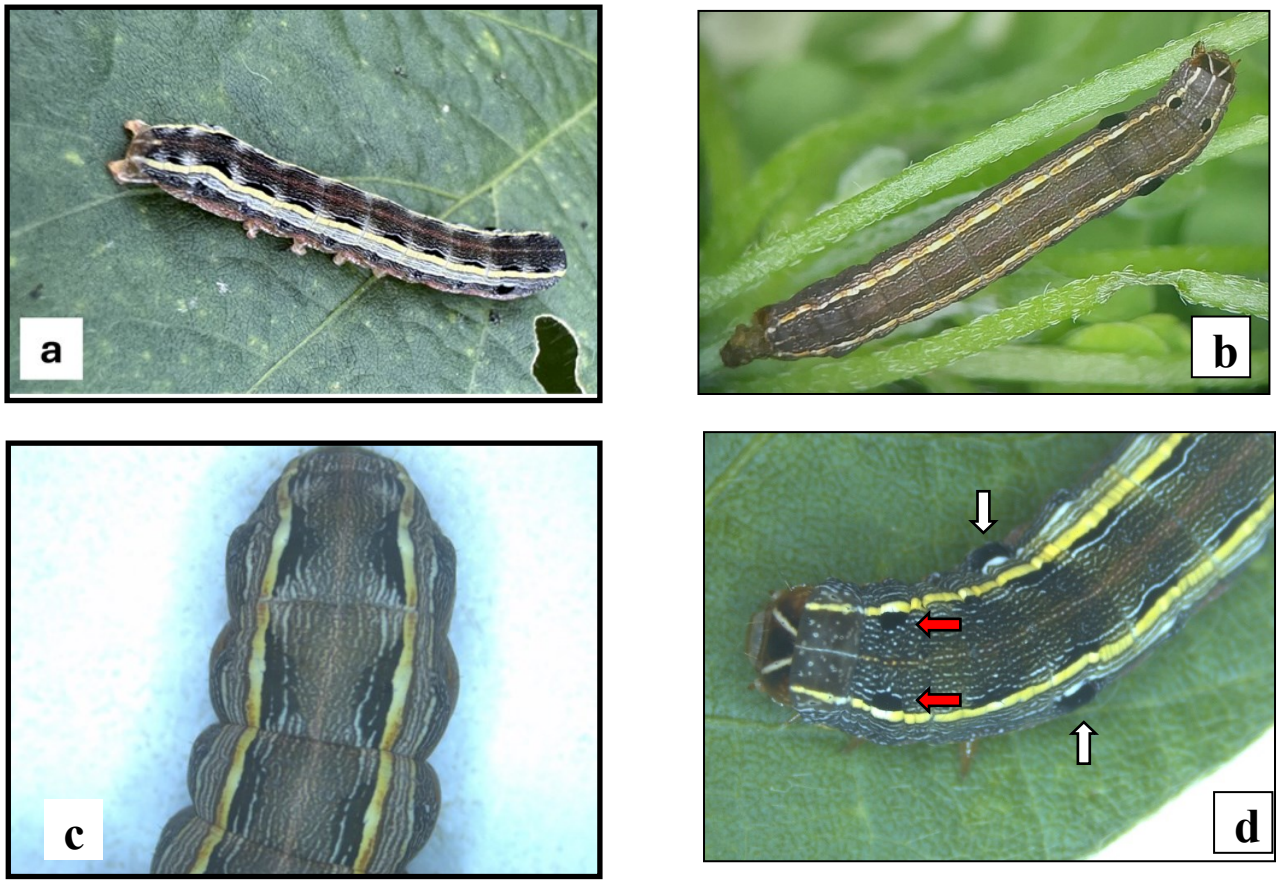

Figure 2. Late (a) and early (b) instar larvae of Yellow-striped armyworm (YSAW). Black dorsal trian-gles with thin white lines passing through them (c). Black dorsal (red arrows) and lateral (white ar-rows) spots present on both early and late instar larvae of YSAW. (d) distinctive, light-colored invert-ed "Y" mark is (Photos: Raul Villanueva, Jose Bravo and Felipe C. Batista - UK)

The most common species present in the fall is the fall armyworm (FAW) (*Spodoptera frugiperda*). This species usually reaches Kentucky by the end of June to the beginning of July as they migrate to northern regions; however, they can eventually develop into large populations during the fall. Both female FAW and YSAW can lay 50 to 200 eggs per cluster, which are covered with scales. Egg clusters have been observed on leaves, wood poles, screens, or plastic field flags.

All these species have six larval instars that can be completed in 14 to 30 days, depending on the tem-perature. Fall armyworm resembles corn earworm and armyworm; however, FAW has a white "Y" in-verted mark on the head capsule between the eyes. The YSAW also has a pattern resembling an white inverted "Y" mark, but with an thinner stem compared to FAW (Figure 2b and 2d).

All these species can be managed with entomopathogens (*Bacillus thuringiensis* or virus), pyrethroids, or other insecticides. There are occasions that populations can reach large numbers, and from one day to the next, farmers can notice that their fields are being affected. Recently, we have received reports during mid-September on the presence of egg masses in Wayne County and this week from Virginia on the application of insecticides on 40 acres of hay. It is important to scout these fields, but in addition, try to identify the species affecting them, as they may be changing their phenological pattern.

More Information

- Watch for Fall Armyworm in Pastures (KPN 08/27/2019)
- yellowstriped armyworm in Featured Creatures (University of Florida) (Last updated 2020)
- Beet armyworm in Featured Creatures (University of Florida) (Last updated 2020)

Optional Citation: Villanueva, R., Batista F., Bravo, J. 2024. Fall Armyworm Is Not the Only Spodoptera Species Present in Fields of Kentucky During the Early Fall 2024. *Corn & Soybean News, Vol 6, Issue 10.* University of Kentucky, October 11, 2024.

Dr. Raul Villanueva
UK Extension Entomologist (859) 562-1335 raul.villanueva@uky.edu

Dr. Felipe Batista
UK Entomology Post Doc

Dr. Jose Bravo
Entomology Visiting Scholar - UKREC

KENTUCKY YIELD CONTESTS

The Kentucky Extension Yield Contests are administered by the University of Kentucky Cooperative Extension Service. Additional information, contest rules and entry forms for these contests can be found on KyGrains.info or Scan the QR codes below:

2024 Kentucky Corn Production Contest

Send in harvest results within two weeks of the final supervised yield check per individual entry or no later than **December 2, 2024**, whichever is the earlier date.

Contest Classes

A. Division I: Tillage, Non-irrigated

B. Division II: No-Till, Non-irrigated

C. Division III: White Corn, Non-irrigated

D. Division IV: Irrigated Corn

The Kentucky Extension Corn Production Contest and the NCGA Corn Contest are two separate contests.

2024 Kentucky Soybean Production Contest

Forms A, B, & C Must Be ENTIRELY completed and submitted on or before **November 30, 2024** to be eligible for awards.

1. Soybean Yield Contest

A. Full Season - Non-Irrigated

B. Full Season - Irrigated

C. Double Crop - Non-Irrigated

D. Double Crop - Irrigated

2. Soybean Quality Contest (oil and protein)

Martin-Gatton College of Agriculture, Food and Environment

Grain and Forage Center of Excellence

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

LEXINGTON, KY 40546

Disabilities accommodated with prior notification.

2024 Fall Crop Protection Webinar Series

Oct. 15, Oct. 29, Nov. 12, and Nov. 26

Each webinar is 1-hour and begins at 10 a.m. ET/9 a.m. CT

Pre-registration is required to attend each free webinar

Webinar #1: Oct. 15 — Dr. Raul Villanueva, Extension Entomologist
Title: Management of stink bugs and other insect pests in soybeans in 2023-24
Webinar link: **https://zoom.us/webinar/register/WN_MAppWNeZR5yCSoTGMGUj_Q**

Webinar #2: Oct. 29 — Dr. Kiersten A. Wise, Extension Plant Pathologist
Title: Maximizing disease control AND return on investment for corn fungicides
Webinar link: **https://zoom.us/webinar/register/WN_irdgz-OATPy3hCKsOVxyGQ**

Webinar #3: Nov. 12 — Dr. Travis Legleiter, Extension Weeds Specialist
Title: Spray Application Parameters – The Offensive Line of Herbicide Applications
Webinar link: **https://zoom.us/webinar/register/WN_rxH9T0W4T4a3HZRFAqGA1w**

Webinar #4: Nov. 26 — Dr. Carl Bradley, Extension Plant Pathologist
Title: Management of important wheat diseases in Kentucky
Webinar link: **https://zoom.us/webinar/register/WN_NUrPmPdgQICwWGHR-qOCEw**

CONTINUING EDUCATIONAL UNITS:

CCA: 1 CEU for each webinar in IPM

Kentucky Pesticide Applicators: 1 CEU for each webinar for Category 1A (Agricultural Plant).

Presented by Martin-Gatton College of Agriculture, Food and Environment, University of Kentucky

Hosted by Southern IPM Center

KCHC
Kentucky Crop Health Conference

9 a.m. to 3 p.m. CST, Feb. 6, 2025 - National Corvette Museum - Bowling Green, Ky.

Wade Webster
North Dakota State University

Topic: Fueling the Future: Driving Predictive Models for Tar Spot

Alyssa Essman
Ohio State University

Topic: Planting green and the influence of cover crop termination timing on weed management

Justin McMechan
University of Nebraska–Lincoln

Topic: Unraveling emerging insect issues in agriculture: Impacts, challenges, and management tactics

Kiersten Wise
University of Kentucky

Topic: Stay one step ahead: Tracking corn diseases in Kentucky

Raul Villanueva
University of Kentucky

Topic: Management of slugs and snails through field efficacy tests in soybeans

Carl Bradley
University of Kentucky

Topic: Research update on Red Crown Rot of Soybean

Travis Legleiter
University of Kentucky

Topic: The fight against Italian Ryegrass in Kentucky:
A persistent challenge

Tickets on sale Nov. 1, 2024 - breakfast and lunch included
Conference sign-in begins at 8 a.m. CST

Scan QR Code or visit: https://kchc2025.eventbrite.com
Tickets non-refundable after January 30, 2025

CCA and Kentucky Pesticide Applicator credits are pending

UPCOMING EVENTS

2024

Fall Crop Protection Webinar Series

Oct 15 Dealing with stink bugs & other insect pests in Soybeans in 2023-24

Oct 29 Maximizing disease control AND return on investment for corn fungicides

Nov 12 Spray Application Parameters – The Offensive Line of Herbicide Applications

Nov 26 Management of important wheat diseases in Kentucky

2025

Kentucky Commodity all Crop Protection Webinar Series

January 16, 2025

Winter Wheat Meeting

February 4, 2025

2025 Kentucky Crop Health Conference

February 6, 2025

Wheat Field Day

May 13, 2025

Pest Management Field Day

June 26, 2025

Corn, Soybean & Tobacco Field Day

July 22 or July 29, 2025

Cooperative Extension Service

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

MARTIN-GATTON COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

Lexington, KY 40506