2024 Faulkner County Agriculture Demonstration Summary

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

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Introduction and Acknowledgments

The 2024 Faulkner County Demonstration summary is a collection of on-site demonstration results conducted in Faulkner County by local County Agents. Demonstrations are the cornerstone of the University of Arkansas System Division of Agriculture Cooperative Extension Service's mission which is:

> **"We strengthen agriculture, communities, and families by connecting trusted research to the adoption of best practices.**"

On-site demonstrations allow producers and homeowners to see firsthand how Extension recommended varieties and best management practices work in their counties and surrounding area.

Conducted by:

Krista Quinn, County Extension Agent – Agriculture
Kevin Lawson, County Extension Agent – Agriculture

Acknowledgements:

We would all like to express our sincere gratitude to those who offered their land, resources, and time to help conduct demonstrations. Thank you for supporting Extension educational programs.

Cooperating Producers

Horticulture	Livestock and Forages	Row Crop
Mindy Beard	Flying C Ranch	Schaefers Brothers
Arkansas Interfaith Power & Light	Brandon Harris	Joe and Austin Thrash
Wayne Hudson, Hudson Orchard	Pete Moss	Jill Edwards
Faulkner County Master Gardeners	Jill Edwards	Frank Harrell
	Kevin Sanson	Schaefers Collins Farm

Faulkner County Horticulture Demonstrations

- **Greater Peach Tree Borer Trapping**
  - A peach orchard was monitored weekly during the main growing season for greater peach tree borers using recommended Extension scouting techniques.

- **Multi-County Arkansas Diamonds Plant Trial**
  - A partnership of the Arkansas Green Industry Association, the University of Arkansas Cooperative Extension Service, local growers and independent garden centers. Five potential new plant selections were trialed statewide and evaluated monthly for size, quality of bloom, and plant health. Two annual flowers, "Tattoo Black Cherry" vinca and "Ruby Slipper" coleus, and two perennial flowers, "Blazing Star" liatris and "Homestead Purple" verbena were trialed in Faulkner County.

- **Mycorrhizal Inoculation of Peppers**
  - Mycorrhizal inoculation is promoted as a way to promote plant growth and accelerate root growth. Two popular brands of mycorrhizal inoculum were applied to two varieties of pepper plants at planting to determine if they increased plant growth.

- **Soil Temperature Under Different Types of Mulch**

  Gravel and rock mulches have gained popularity in recent years, but there are some concerns that they may cause increases in soil temperatures which negatively affect plant growth. A gravel mulch and a traditional shredded wood mulch were applied around trees and soil temperatures were measured weekly to determine if there were significant differences.

Greater Peach Tree Borer Trapping

Local Cooperator: Wayne Hudson, Hudson Orchard
Location: 190 Cotton Hill Rd., Greenbrier, AR
Established: April 26, 2024

Scouting for insect pests, diseases, and weed problems is the cornerstone for successful integrated pest management (IPM) in commercial horticultural production. It provides critical information about the presence of pests, enabling growers to determine when and how to manage them. This monitoring and identification reduces the likelihood that pesticides will be used when they are not really needed or that the wrong kind of pesticide will be used.

A peach orchard was monitored weekly during the main growing season for greater peach tree borers using recommended Extension scouting techniques.

Results:

	# Greater Peach Tree Borers Trapped				
Date	**Trap #1**	**Trap #2**	**Trap #3**	**Trap #4**	**Actions Taken**
5/13/2024	27	19	8	18	Insecticide recommended and applied to the trunks of trees
5/20/2024	0	0	0	0	None
5/28/2024	0	0	3	4	None
6/4/2024	0	1	2	2	None
6/11/2024	0	0	0	0	None
6/19/2024	37	30	33	30	Insecticide recommended and applied to the trunks of trees
6/27/2024	4	4	9	8	None
7/3/2024	5	2	8	3	None
7/11/2024	1	1	4	0	None
7/22/2024	1	0	1	1	None
7/29/2024	2	3	0	0	None
8/5/2024	1	0	0	0	None

Summary:

Weekly scouting helped the producer detect the presence of greater peach tree borers and make decisions about the most timely and effective insecticide applications.

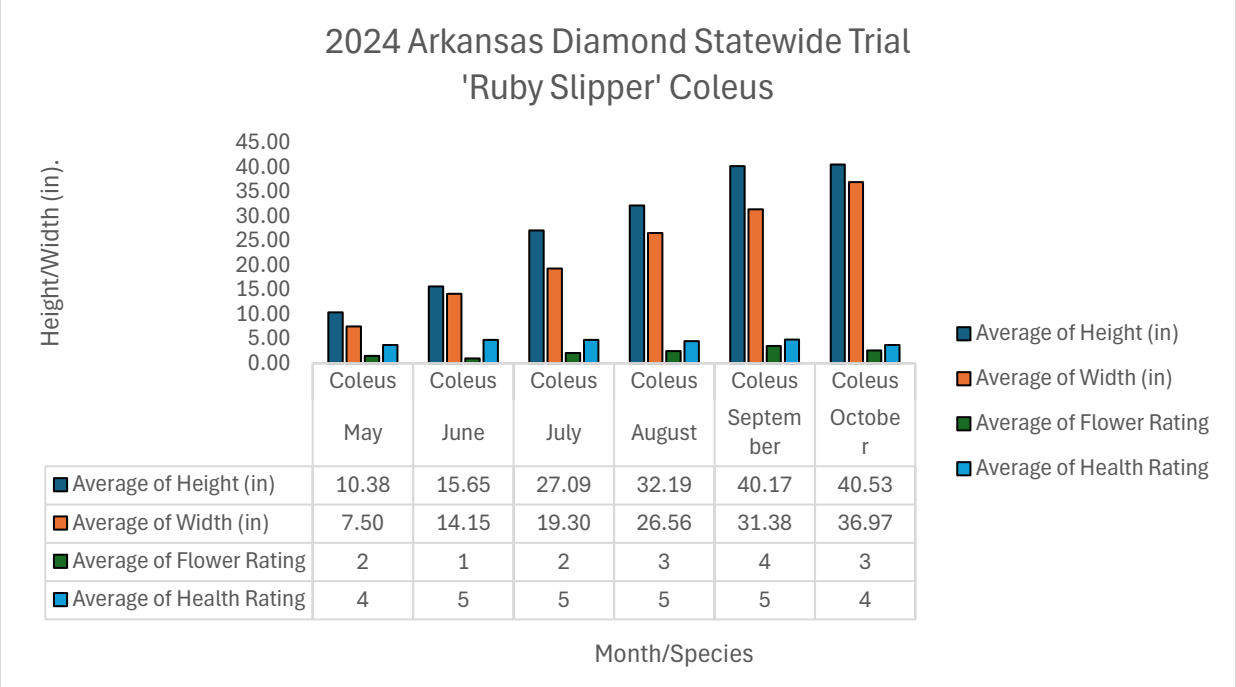
The presence of greater peach tree borers was monitored using pheromone lures and sticky traps placed throughout the orchard.

Multi-County Arkansas Diamonds Plant Trial (20 Sites Statewide)

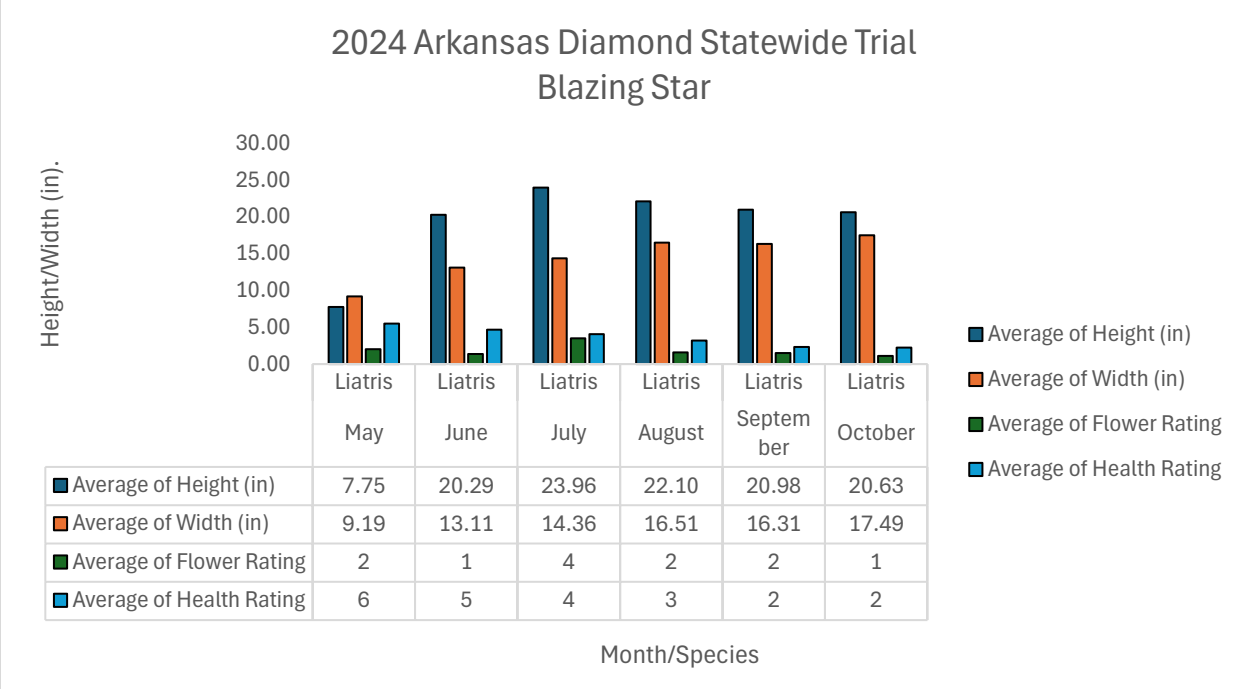
Project Leaders: Randy Forst and Anthony Bowden
Local Cooperator: Faulkner County Master Gardeners
Location: Faulkner County Museum, 801 Locust St., Conway
Established: May 20, 2024

Arkansas Diamonds plants are chosen by plant professionals to highlight outstanding plants that consistently perform well in Arkansas. New plant selections are chosen each year. The goal is to educate Arkansas gardeners about ornamental plants that consistently perform well in our state so they can be more successful gardeners. The Arkansas Diamonds program also serves to promote local growers and local independent garden centers. This program is a partnership of the Arkansas Green Industry Association, the University of Arkansas Cooperative Extension Service, local growers and independent garden centers. Five potential new plant selections were trialed statewide and evaluated monthly for size, quality of bloom, and plant health. Two annual flowers, "Tattoo Black Cherry" vinca and "Ruby Slipper" coleus, and two perennial flowers, "Blazing Star" liatris and "Homestead Purple" verbena were trialed in Faulkner County.

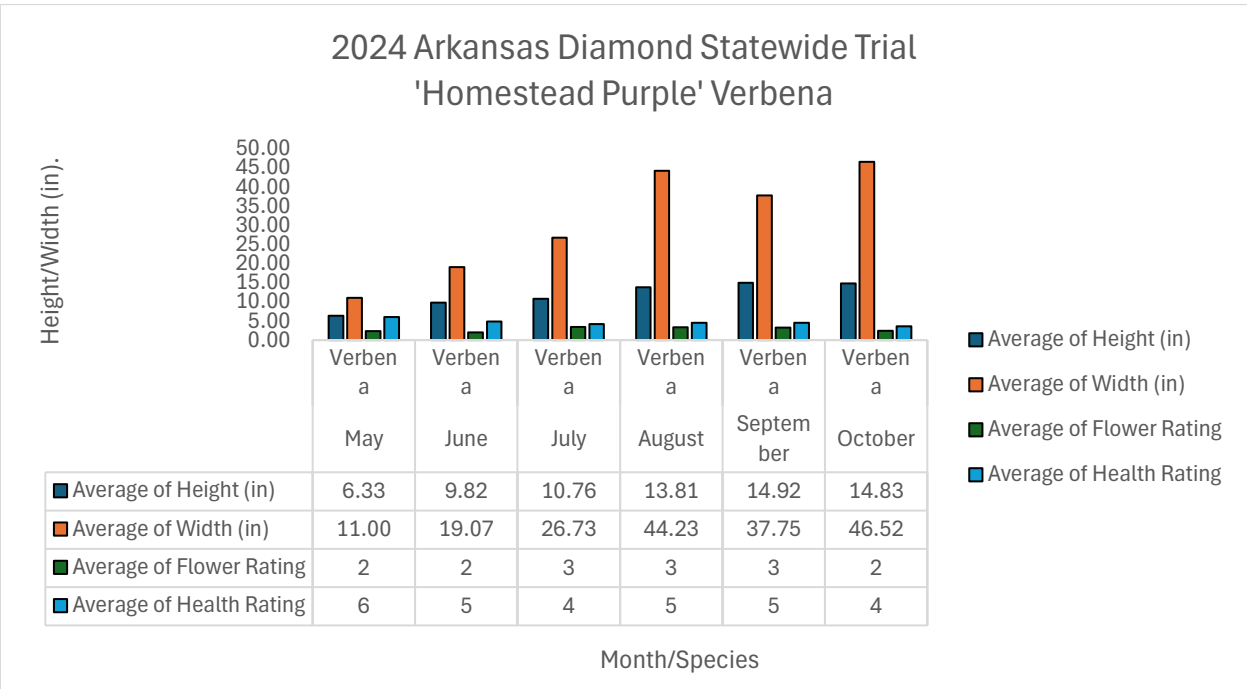
Results:



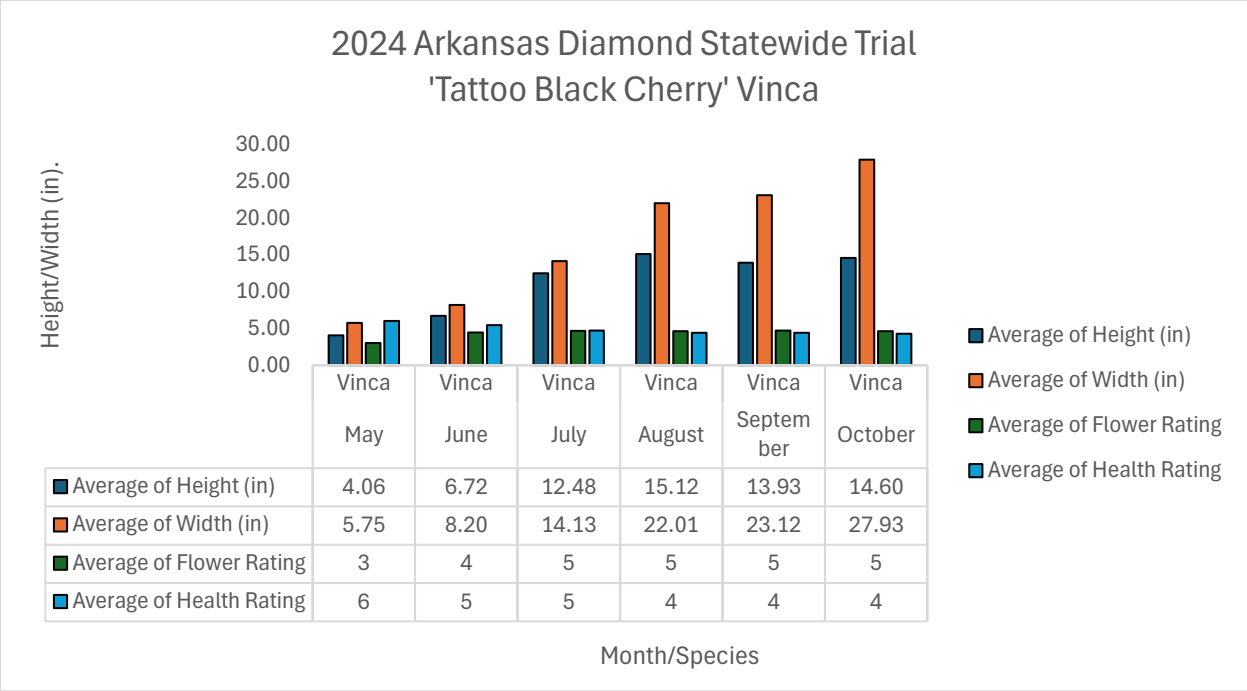
	Coleus May	Coleus June	Coleus July	Coleus August	Coleus September	Coleus October
Average of Height (in)	10.38	15.65	27.09	32.19	40.17	40.53
Average of Width (in)	7.50	14.15	19.30	26.56	31.38	36.97
Average of Flower Rating	2	1	2	3	4	3
Average of Health Rating	4	5	5	5	5	4

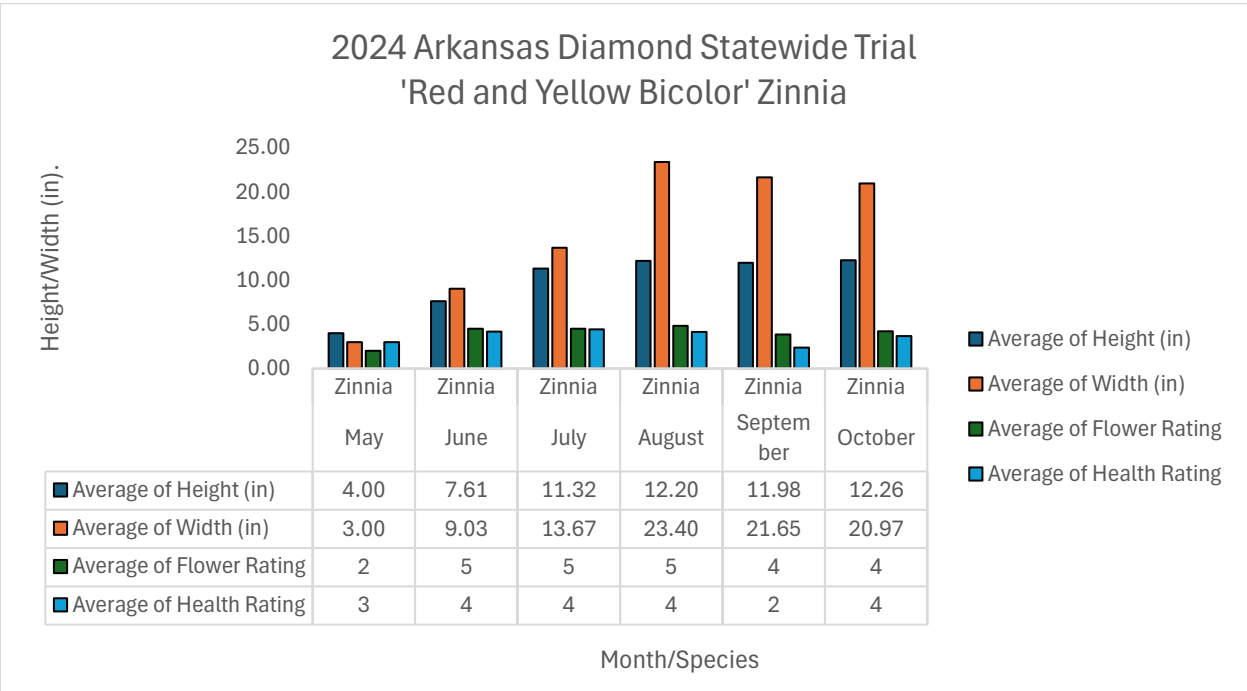


	Liatris May	Liatris June	Liatris July	Liatris August	Liatris September	Liatris October
Average of Height (in)	7.75	20.29	23.96	22.10	20.98	20.63
Average of Width (in)	9.19	13.11	14.36	16.51	16.31	17.49
Average of Flower Rating	2	1	4	2	2	1
Average of Health Rating	6	5	4	3	2	2



	Verbena May	Verbena June	Verbena July	Verbena August	Verbena September	Verbena October
Average of Height (in)	6.33	9.82	10.76	13.81	14.92	14.83
Average of Width (in)	11.00	19.07	26.73	44.23	37.75	46.52
Average of Flower Rating	2	2	3	3	3	2
Average of Health Rating	6	5	4	5	5	4





Summary:

All of the selections performed well across the state and will likely be chosen as Arkansas Diamonds plants.

The coleus (left) and vinca (right) provided good color even in August when the weather turned hot and dry.

The liatris (left) and the verbena (right) stopped blooming in late summer, but the plants remained healthy and attractive.

Mycorrhizal Inoculation of Peppers

Local Cooperators: Arkansas Interfaith Power & Light
Location: First Presbyterian Church, 2400 Prince St., Conway
Established: July 2, 2024

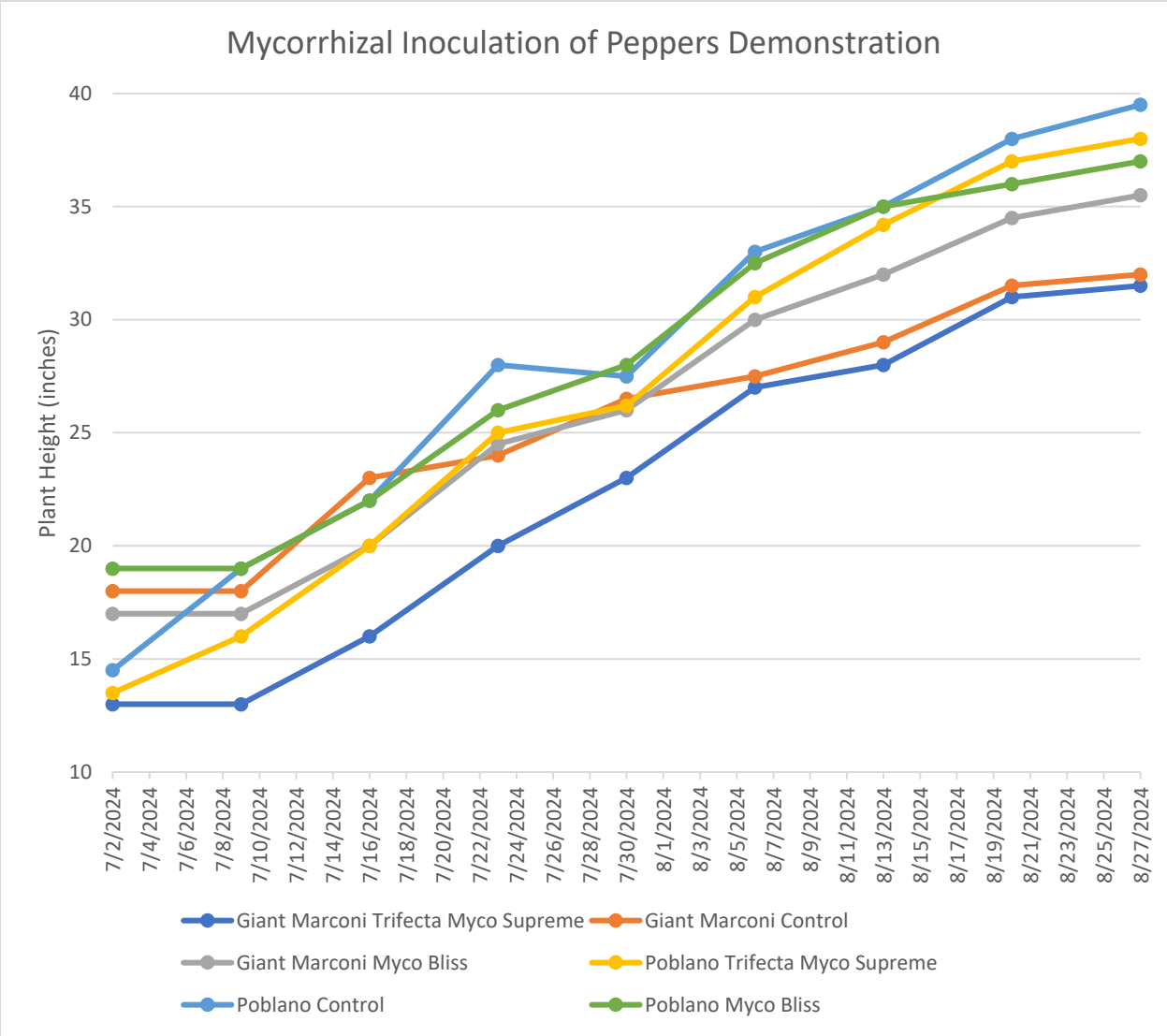
Mycorrhizal fungi form a symbiotic relationship with plant roots, increasing the absorptive area of the roots and helping plants absorb more water and nutrients. Mycorrhizal inoculation is the application of mycorrhizal fungi to the root zone of plants. Mycorrhizal inoculation is promoted as a way to promote plant growth and accelerate root growth. Two popular brands of mycorrhizal inoculum were applied to two varieties of pepper plants at planting to determine if they increased plant growth. For the inoculated treatments, one teaspoon of mycorrhizae product was added to soil at planting according to the package directions.

Treatments:

Plant #	Plant Variety	Treatment
1	Giant Marconi	Trifecta Myco Supreme
2	Giant Marconi	Control
3	Giant Marconi	Myco Bliss
4	Poblano	Trifecta Myco Supreme
5	Poblano	Control
6	Poblano	Myco Bliss

A garden intern measures a pepper plant for the demonstration.

Results:



Summary:

Mycorrhizal inoculation did not greatly increase plant growth compared to the untreated controls. All plants grew very well in the study and were very productive. While the mycorrhizae products were applied to individual plants, all of the plants were planted in a single bed. It is possible that the mycorrhizae may have affected a larger area than just the root zone of individual plants. We would like to repeat this demonstration in the future with more space between the treatments to see if we get different results.

Soil Temperature Under Different Types of Mulch

Local Cooperator: Mindy Beard
Location: 171 Schultz Rd., Vilonia
Established: July 3, 2024

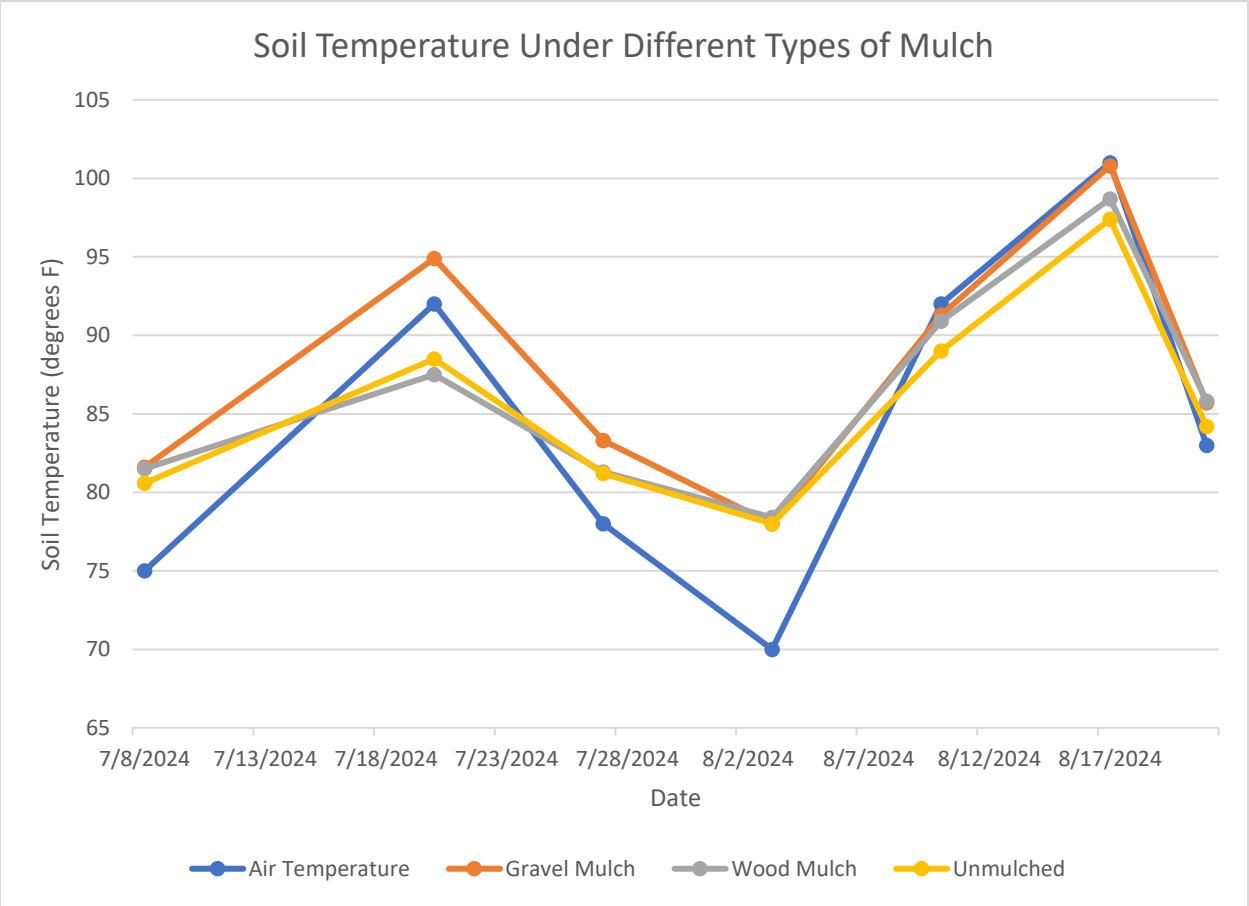
Gravel and rock mulches have gained popularity in recent years, but there are some concerns that they may cause increases in soil temperatures which negatively affect plant growth. A gravel mulch and a traditional shredded wood mulch were applied around trees and soil temperatures were measured weekly to determine if there were significant differences.

Treatments:

Gravel mulch	A two-inch deep layer of gravel was applied over the root zone of trees
Shredded wood mulch	A two-inch deep layer of wood mulch was applied over the root zone of trees
Unmulched control	No mulch was applied

Gravel mulch (left) and shredded wood mulch (right) was applied to the base of young willow trees and soil temperature under the mulch was measured periodically throughout the summer.

Results:



Summary:

On average, the soil temperature under the gravel mulch was 1.6 degrees higher than under the wood mulch and 2.3 degrees higher than the unmulched treatment. Further study is needed to determine if that amount of increased temperature negatively impacts plant growth.

Faulkner County Livestock and Forage Meetings and Tours

- **River Valley Beef Conference**
  - The River Valley Beef Conference is an annual event to educate producers in the River Valley on the latest beef cattle research. The event was held in Ozark on February 20 and drew a crowd of 43 participants.

- **Tri County Beef and Forage Conference**
  - The Tri County Beef and Forage Conference was held in Damascus between Faulkner, Conway and Van Buren County. The meeting was held February 27. Producers were educated on the latest hay and livestock research with 32 producers participating.

- **River Valley Small Ruminant Meeting**
  - The River Valley Small Ruminant Meeting was held in Russellville on the campus of Arkansas Tech on April 13. 41 producers from all over the River Valley were educated in the latest small ruminant management procedures.

- **North Central Small Ruminant Meeting**
  - The North Central Small Ruminant Meeting was a collaboration between several counties in the north central part of Arkansas and was held on April 19. 43 producers came to Damascus to hear from agents and specialists on the latest small ruminant management procedures.

- **Faulkner/Perry County Grazing Field Day**
  - The Faulkner/Perry County Grazing Field Day was held in Enola with 41 participants on July 13. The field day gave producers an opportunity to see research-based practices being utilized on a farm in Faulkner County.

Faulkner County Livestock and Forage Demonstrations

- **Grazing Hay Fields at End of Season**
  - Cost of hay and feeding for winter is one of the largest expenses in a beef cattle farm. This demonstration looked at replacing the last cutting of hay with grazing of cattle.

- **Foxtail Control in Bermudagrass Hay**
  - A foxtail control in bermudagrass hay demonstration was established on the Brandon Harris farm in Vilonia. I applied 6 different treatments and rated them for foxtail control.

- **Sandbur Control in Bermudagrass Hay**
  - A sandbur control demonstration was established on the Pete Moss farm in Mayflower. I applied 5 different treatments and rated them for sandbur control.

- **Forage Fertility Demonstrations (3)**
  - I established 3 fertility trials on the Kevin Sanson farm in Vilonia, the Brandon Harris farm in Vilonia and the Jill Edwards farm in Lollie. These trials were part of a statewide trial established by Dr. Bronc Finch.

- **Buttercup Control in Extreme Cold Weather Demonstration**
  - Buttercup is one of the most asked about weeds for control in pastures in Faulkner County. I established a demonstration at the Flying "C" Ranch in Vilonia. I applied 4 different treatments and rated them for buttercup control after extreme cold conditions.

- **Integrated Pest Management (IPM) Hay Verification Field**
  - This was the 6th year of our hay verification field with Flying "C" Ranch. I scouted the field weekly, and the producers agreed to follow Extension recommendations on the field. Inputs were recorded and used to determine a hay enterprise budget for the field.

- **Bermudagrass Stem Maggot Trapping and Armyworm Monitoring**
  - Stem maggot and armyworms are both devastating insects on forages in Faulkner County. I used two locations to monitor bermudagrass stem maggot and armyworms to alert producers when the insects emerged in 2024.

Grazing Hay Fields at End of Season

Cooperator: Flying "C" Ranch
Coordinator: Kenny Simon, Department of Animal Science
Location: Vilonia **GPS:** 35.0526 -92.3113

Issue:

The cost of hay and feed for winter feeding is the largest expense of maintaining a beef cattle herd. All too often, producers finish harvesting hay in the fall and then begin feeding it soon afterward. Adopting pasture management practices that extend the grazing season avoids investing more cost into forage that could be grazed instead of being harvested for hay. Grazing the end of season growth of warm season grass is a pasture management practice that has the potential to reduce winter feed cost for beef producers.

Action:

The producer has a 100-acre Bermudagrass field that historically was managed for 4 cuttings per year. However, this year after the third cutting, he realized he had plenty of hay for the winter. If he took a late fourth cutting, he would need to start feeding it soon afterward, as forage in the pasture was becoming limited. After consultations with the Extension Forage Instructor Kenny Simon and the county agent, Kevin Lawson, he decided to graze the hay field instead of harvesting the forage as hay.

Impact:

Forty cow calf pairs grazed the end of season growth for 55 days. Warm-season grass hay is valued at $154/ton (https://www.uaex.uada.edu/publications/pdf/FSA3161.pdf). By grazing the forage instead of feeding hay, the producer was able to save $6,030. Farms participating in the 2022 Arkansas hay verification program had fixed costs averaging $47/acre. Therefore, the producer was able to save an additional $4,700 by grazing instead of harvesting hay. Total savings for grazing the end of season forage instead of harvesting and feeding hay was $107.30 per acre for a grand total of $10,730.

Foxtail Herbicide Demonstration

Cooperator: Brandon Harris
Location: Vilonia **GPS:** 35.1110 -92.2987
Treated: June 7, 2024

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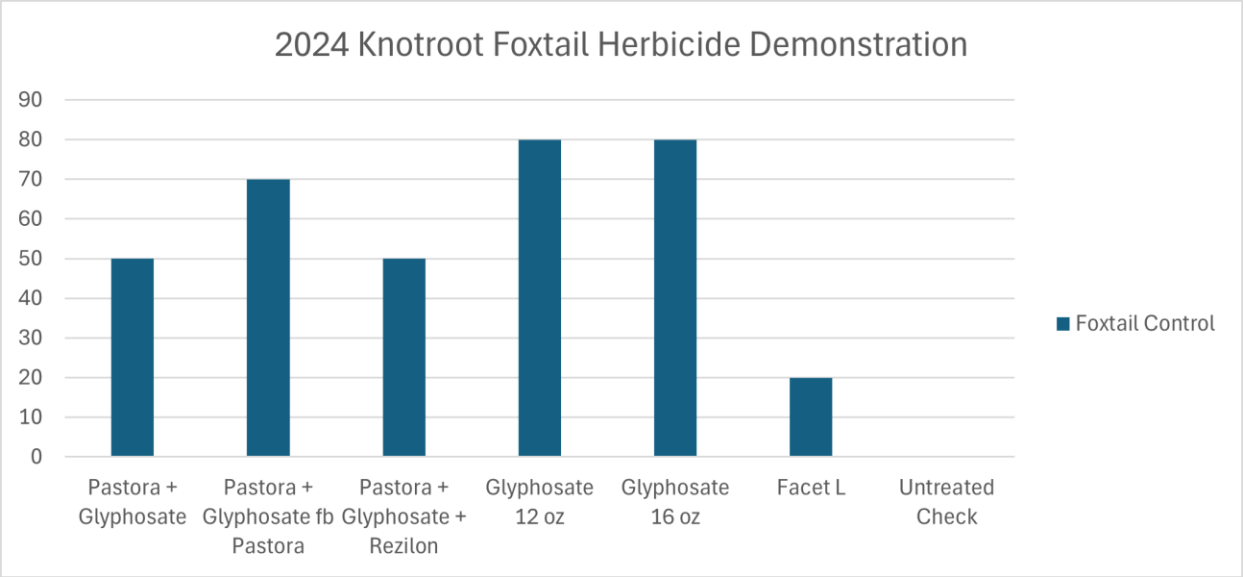
Summary: Knotroot Foxtail is the number one weed in Faulkner County forages that producers ask about control. It has taken over hayfields the last few years and there are not good options out there for producers. The purpose of this demonstration was to compare different treatments in a Faulkner County hayfield to determine effectiveness against foxtail.

Treatments: There were 7 treatments in this demonstration. Different combinations of Pastore, Glyphosate, Rezilon and Facet L were compared. Plots were 10 feet wide by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10-foot boom. The first applications were sprayed on June 7, 2024 which was approximately 10 days after a cutting of hay. Treatment 102 had a follow up application of Pastora and that was applied 14 days later.

Treatment Number	Treatment	Rate/Acre
101	Pastora + Glyphosate	1.5 oz 8 oz
102	Pastora + Glyphosate fb Pastora	1.5 oz 8 oz 1 oz
103	Pastora + Glyphosate + Rezilon	1.5 oz 8 oz 3 oz
104	Glyphosate	12 oz
105	Glyphosate	16 oz
106	Facet L + Crop Oil	1 qt 1 qt
107	Untreated Check	

Results: Each treatment was visually rated for percent control of foxtail. This plot received several rains after the treatments, and it was easy to see that the two glyphosate applications had the best control. With the rains that followed, there was not much bermudagrass injury in these treatments either. There was significant damage in treatment 102 which had the follow up application of Pastora.


2024 Knotroot Foxtail Herbicide Demonstration
90
80
70
60
50
40
30
20
10
0
Pastora + Glyphosate
Pastora + Glyphosate fb Pastora
Pastora + Glyphosate + Rezilon
Glyphosate 12 oz
Glyphosate 16 oz
Facet L
Untreated Check
Foxtail Control

Sandbur Herbicide Demonstration

Cooperator: Pete Moss
Location: Mayflower **GPS:** 34.8826 -92.4529
Treated: July 8, 2024

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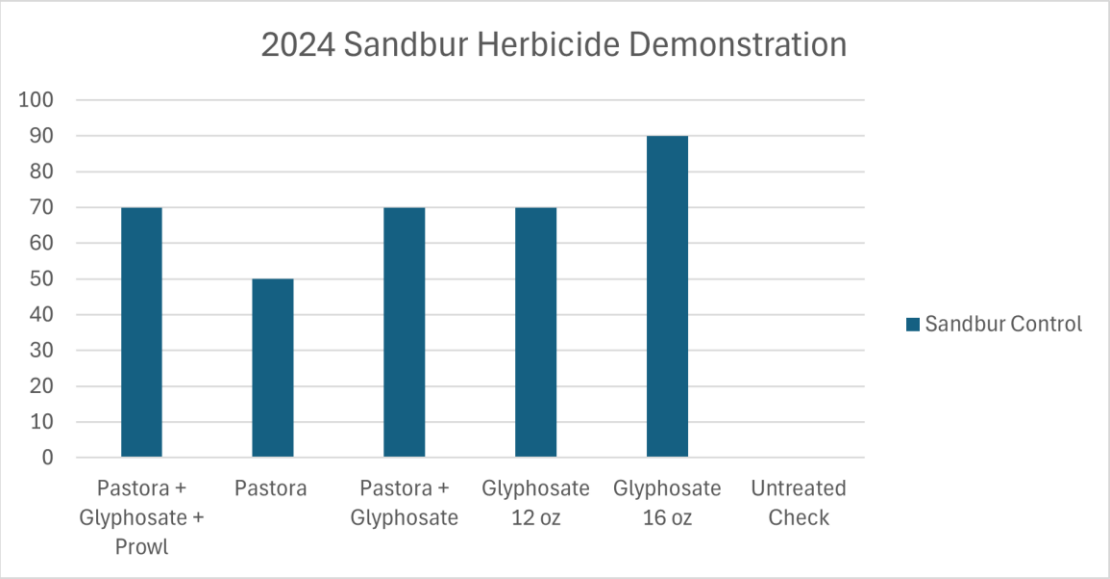
Summary: Hayfields in Faulkner County that are grown along the river in sandy soils have a problem with sandburs. This pesky weed makes a bur that makes the hay hard to handle and cattle don't like eating it. The purpose of this demonstration was to determine the effectiveness of herbicides after a hay cutting.

Treatments: There were 6 treatments in this demonstration. Different combinations of Pastore, Glyphosate, and Prowl were compared. Plots were 10 feet wide by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10-foot boom. The first applications were sprayed on July 8, 2024 which was approximately 10 days after a cutting of hay.

Treatment Number	Treatment	Rate/Acre
101	Pastora + Glyphosate + Prowl	1.5 oz 12 oz 2 qts
102	Pastora	1.5 oz
103	Pastora + Glyphosate	1.5 oz 8 oz
104	Glyphosate	12 oz
105	Glyphosate	16 oz
106	Untreated Check	

Results: Each treatment was visually rated for percent control of sandburs. This plot received several rains after the treatments, and the 16 oz of glyphosate had the best control. Plots with Pastora turned the burs purple but I am not sure it ever really killed them. There didn't seem to be any added control by adding Prowl as a pre-emerge. With the rains that followed, there was not much bermudagrass injury in any of the treatments.


2024 Sandbur Herbicide Demonstration
100
90
80
70
60
50
40
30
20
10
0
Pastora + Glyphosate + Prowl
Pastora
Pastora + Glyphosate
Glyphosate 12 oz
Glyphosate 16 oz
Untreated Check
Sandbur Control

Forage Fertility Trials

Coordinator: Dr. Bronc Finch

Nitrogen Application Rate Trial

Cooperator: Kevin Sanson
Location: Vilonia **GPS:** 35.1128 -92.2902
Treated: June 28, 2024

Sulfur Application Rate Trial

Cooperator: Jill Edwards
Location: Lollie **GPS:** 34.9595 -92.5492
Treated: July 19, 2024

Nitrogen Stabilizer Trial

Cooperator: Brandon Harrison
Location: Vilonia **GPS:** 35.0661 -92.2592
Treated: June 21, 2024

Summary: These trials were done in cooperation with Dr. Bronc Finch and were replicated in other counties across the state. I worked with Faulkner County producers and established, harvested and recorded data from each of the plots and sent that data back to Dr. Finch who evaluated the data and did a write up on each individual trial. The results from the state trials are included in the following pages.

Influence of Nitrogen Application Rate on Warm-Season Perennial Forages

Objective: Evaluate the impact of nitrogen application rate on warm-season perennial forage biomass production across Arkansas.

County Agents: Adam Willis, Newton Co.; Jerri Dew, Lafayette Co.; Micheal Paskewitz, Izard Co.; Kevin Lawson, Faulkner Co.; Katrina Boyd, Crittenden Co.; Scott Hayes, Drew Co; Jerry Clemons, Hot Spring Co.; Amy Simpson, Clark Co.

Specialist: Bronc Finch, Soil Fertility Extension Specialist UADA

Background:

Nitrogen (N) is typically one of the nutrients used in the highest quantities in the plant, and it is highly susceptible to environmental losses. Due to these facts and the understanding that yield, especially biomass yield, is largely dependent on it, N fertilization is often the main focus of nutrient management. Arkansas's current N fertilizer recommendations are based on a yield goal, where 50 lbs. of N per acre should be applied for each ton of biomass expected. This study aims to evaluate single harvest application rate influence on biomass production and to verify this recommendation.

Methods:

Research trials were established across Arkansas on producer-owned farms.

- 5 locations of predominantly Bermudagrass
- 2 locations of predominantly Bahia grass
- 4 locations of mixed warm-season grasses.

Micro-plot research trials were established with various rates of Urea (46-0-0) treated with a loss inhibitor (Table 1).

Table 1. Nitrogen application rate in pounds of N per acre

Treatment
Check (0 lb. N/ac)
25 lb. N/ac
50 lb. N/ac
75 lb. N/ac
100 lb. N/ac

Figure 1. Faulkner County N Rate Study

Fertilizer was applied after a hay-cutting or grazing event.

Plots were harvested at least 28 days after fertilization by collecting all biomass greater than 3 inches in a 1 sq. ft. area from each plot.

Biomass was air-dried for a minimum of 7 days to represent air-dried biomass yield.

Statistical analysis was conducted in SAS 9.4. Data was transformed due to non-normal distribution.

Results

Biomass yield results from each county were analyzed for response to N application rate. There was no interaction between location and treatment, meaning yield responded similarly to treatments across all locations. Biomass yield averages from each location and across the state are found in Table 2.

Table 2. Average biomass yields (tons acre^{-1}), for each nitrogen rate from each location and statewide.

	Nitrogen Application Rate (lb. N acre^{-1})				
Location	0	25	50	75	100
	(tons acre^{-1})				
Hot Springs 1	0.67	0.96	1.10	1.07	0.94
Hot Springs 2	0.57	0.51	0.47	0.54	0.59
Clark	0.67	0.87	1.32	1.52	1.08
Crittendon 1	0.67	0.94	1.02	1.10	0.86
Crittendon 2	1.25	1.70	1.38	1.91	1.67
Drew	1.02	1.28	1.24	1.52	1.46
Newton	0.57	0.66	0.81	0.64	0.76
Izard	2.68	2.85	2.79	3.66	3.74
Faulkner	0.62	1.01	1.44	1.57	1.60
Lafayette 1	2.35	2.62	2.51	2.31	2.94
Lafayette 2	1.39	1.77	2.11	2.11	1.95
Statewide	0.93	1.21	1.37	1.51	1.38

Forage biomass yield increased by the application of N by an average of 0.44 tons (887 lb.) per acre (Figure 2). However, there was no difference in average forage biomass production between rates with an average yield of 1.37 tons per acre.

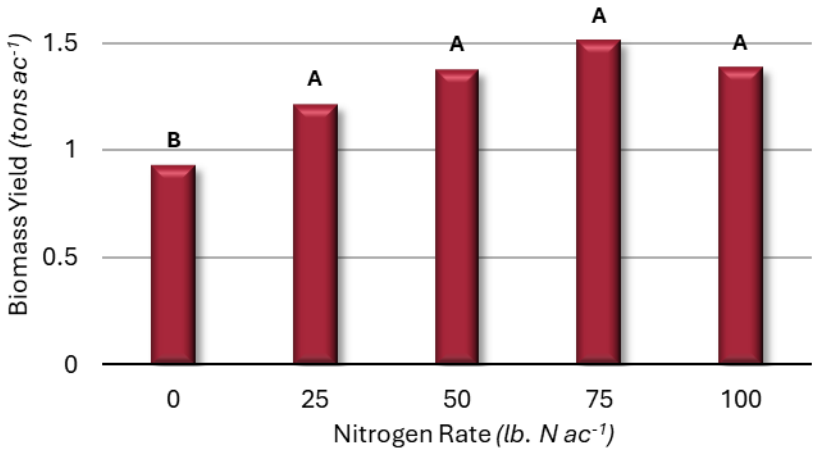


Figure 2. Average air-dry forage yield (tons ac^{-1}) by nitrogen application rate (lb. N ac^{-1}) across all locations. Letters represent statistical differences, where bars with the same letter are not different from one another.

Relative yield (Figure 3) is another way to compare yield response expectations to the maximum yield produced. The average yield of each treatment is converted to a percentage of the maximum yield achieved. A threshold of 95% maximum relative yield is used as it represents the lowest level of yield that is not statistically different from the maximum yield. Maximum relative average yield (100%) was achieved at 75 lb. N per acre, 95% maximum relative yield can be achieved with 57 lb. N acre and 90 % would be achieved with 42 lb. N acre. This means that while the highest yield was achieved at 75 lb. N per acre, applying 57 lb. N per acre would achieve at least 95% of that yield amount.

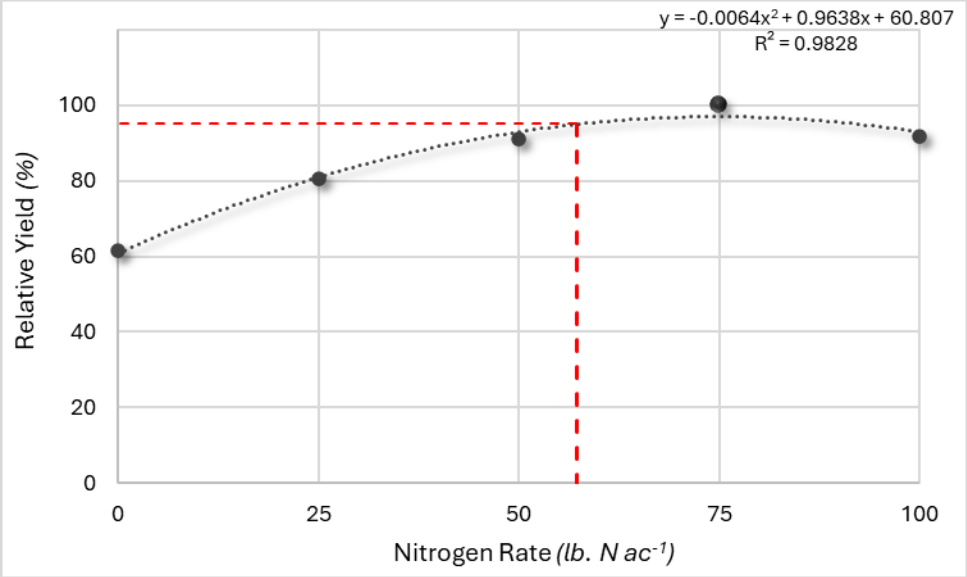


Figure 3. Relative average yield (%) by nitrogen application rate (lb. N ac^{-1}) across all locations. The red lines represent the point at which 95% of the maximum relative average yield is achieved (64 lb. N ac^{-1}).

Discussion

All 11 locations showed a response to the application of N, however, the lack of response to the application rate shows the application of N to be more important than the amount of N in a single, approximately, 30-day harvest window. Even though there is not a statistical response to the N rate knowing how much to apply is important. Relative yield, which normalizes and compares the response to N, supports Arkansas's recommendation of 50 lb. N per acre.

Although 50 lb. N per acre would be approximately 93% maximum relative yield, this data is based on a single year, whereas the current recommendation is based on a much larger data set. This data represents a single year of research across multiple locations, while the conclusions made here are specific to this data, the results are interesting and will lead to future work that will continue to investigate nitrogen recommendations such as rate and management.

Influence of Sulfur Application Rate on Warm-Season Perennial Forages

Objective: Evaluate the impact of sulfur application rate on warm-season perennial forage biomass production across Arkansas.

County Agents: Adam Willis, Newton Co.; Jerri Dew, Lafayette Co.; Kevin Lawson, Faulkner Co.; Jerry Clemons, Hot Spring Co.

Specialist: Bronc Finch, Soil Fertility Extension Specialist UADA

Background:

Sulfur (S) is not typically a nutrient of major consideration in nutrient management planning because it is a secondary nutrient and used in lower quantities than nitrogen, phosphorus, and potassium. Historically, little emphasis has been placed on S management due to atmospheric depositions of S. However, legislature passed in the early 1990's reducing S emissions has led to decrease deposition of S to the soil (Figure 1). This reduction in deposition of S has resulted in some crops, in some areas responding positively to applications of S. Arkansas' current recommendation is 20 pounds of SO_4 per acre when soil test S level falls below 12 ppm and/or deficiency has previously been identified. This study aims to evaluate single harvest application rate influence on biomass production and to verify this recommendation.

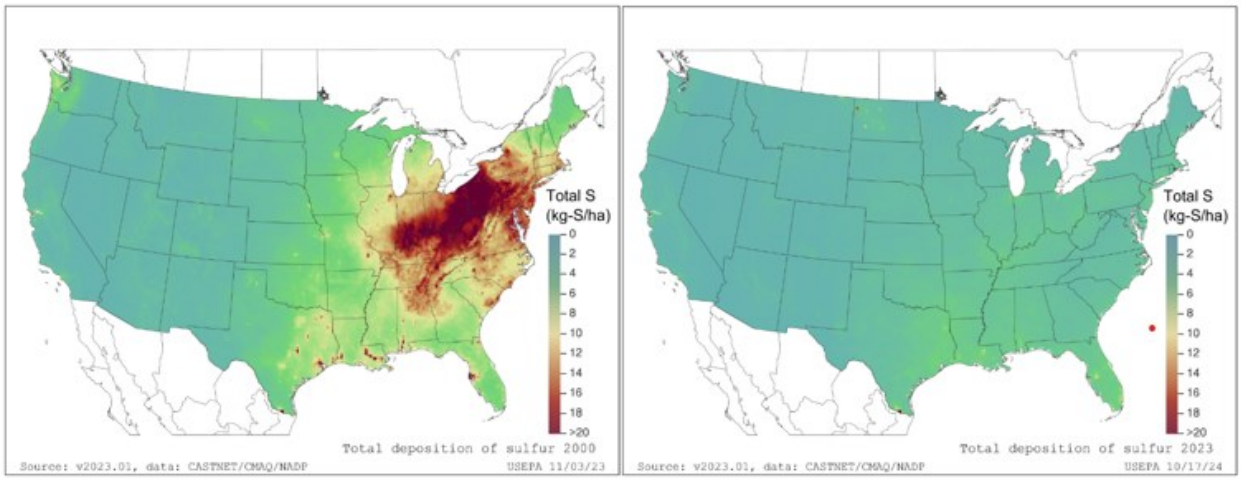


Figure 4. Sulfur deposition (kg S/ha) across the U.S. in 2000 (left) and 2023 (right). Source: www.epa.gov/castnet/total-deposition-maps

Methods:

Research trials were established across Arkansas on producer-owned farms.

- 2 locations of predominantly Bermudagrass
- 3 locations of mixed warm-season grasses

Micro-plot research trials were established with various rates of Elemental Sulfur (90%-S) on locations with less than 12 ppm S (Table 1).

Methods *(cont.)*:

Table 3. Sulfur application rate in pounds of SO_4 per acre.

Treatment
Check (0 lb. SO_4/ac)
10 lb. SO_4/ac
20 lb. SO_4/ac
40 lb. SO_4/ac

Fertilizer was applied after a hay-cutting or grazing event.

Plots were harvested at least 28 days after fertilization by collecting all biomass greater than 3 inches in a 1 sq. ft. area from each plot.

Biomass was air-dried for a minimum of 7 days to represent air-dried biomass yield.

Statistical analysis was conducted in SAS 9.4. Data was transformed due to non-normal distribution

Figure 5. Faulkner Co Sulfur Rate Study

Results

Biomass yield results from each county were analyzed for response to S application rate. There was no interaction between location and treatment, meaning yield responded similarly to treatments across all locations. Biomass yield averages from each location and across the state are found in Table 2.

Table 4. Average biomass yields (tons acre^{-1}), for each sulfur rate from each location and statewide.

	Sulfur Application Rate (lb. SO_4 acre^{-1})			
Location	0	10	20	40
	(tons acre^{-1})			
Newton	1.32	1.32	1.36	1.41
Faulkner	1.30	0.97	0.77	1.09
Hot Springs 1	1.02	1.31	0.93	1.05
Hot Springs 2	1.03	1.06	0.84	0.96
Lafayette	0.82	0.70	0.65	0.70
Statewide	1.10	1.07	0.91	1.04

The application of S did not increase forage biomass yield on average, the trial yielded 1.03 tons (2060 lb.) per acre (Figure 3). Small numerical decreases in biomass yield were observed when S was applied at most locations.

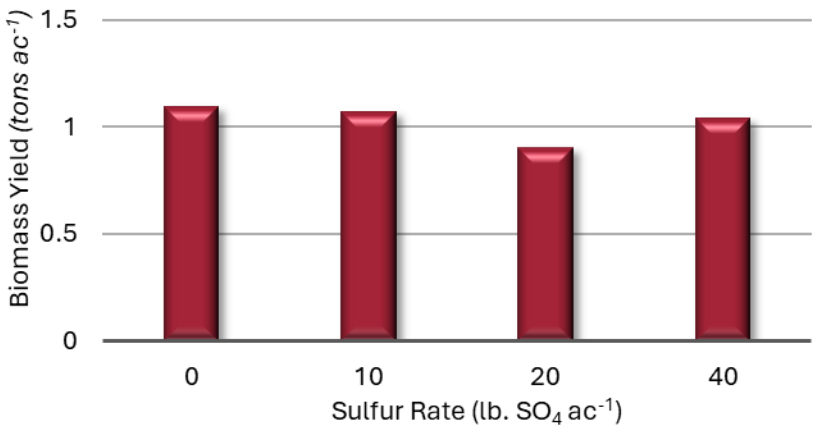


Figure 6. Average air-dry forage yield (tons ac^{-1}) by sulfur application rate (lb. SO_4 ac^{-1}) across all locations.

Discussion

The lack of response to S application in this trial is interesting, given the conditions to trigger an application of S were met at all locations. This study represents only a single application response to sulfur and not total seasonal. More work is needed to determine the change in soil test, and potential seasonal response to S applications.

Although no response to S was reported in this study even when conditions were met this trial represents only a single cycle at a few locations in a single year, whereas current recommendation is based on much larger data sets. Therefore, this data does not lend to a change in the current recommendation, only to the need for continued work to monitor and verify recommendations. Future work will be aimed at smaller ranges of S rates, soil test levels, and management strategies.

Influence of Nitrogen Loss Inhibitors in Warm-Season Perennial Forages

Objective: Evaluate the need for nitrogen inhibitors in warm-season perennial forage biomass production across Arkansas.

County Agents: Adam Willis, Newton Co.; Jerri Dew, Lafayette Co.; Bryce Baldridge, Lawrence Co.; Kevin Lawson, Faulkner Co.; Gerald Hewitt, Montgomery Co.; Jerry Clemons, Hot Spring Co.; Amy Simpson, Clark Co.

Specialist: Bronc Finch, Soil Fertility Extension Specialist UADA

Background:

Nitrogen (N) is typically one of the nutrients used in the highest quantities in the plant, and it is highly susceptible to environmental losses. Environmental nitrogen loss pathways are leaching, the downward movement through the soil, runoff, movement from the surface with the flow of water, or gaseous losses through volatilization or denitrification. In forage production, the typical loss concern is volatilization due to the conditions in which this occurs, and the use of Urea. Volatilization is a natural process where N in the gas form of Ammonia NH_3 is lost to the atmosphere and occurs when soil pH is ≥ 7.0 and the temperature is ≥ 50°F. For efficient use of urea-based fertilizers this is an important process to limit in order to prevent loss. As urea is broken down it undergoes a natural process called "Urea Hydrolysis" which is simply the transformation of urea to ammonia (Figure 1). This reaction is increased by an naturally occurring enzyme "urease", which can result in a saturation of NH_3 in the soil, which will then need to be transformed in the ammonium (NH_4) through ammonification, which is a much slower process.

Equation 1. Simplified urea hydrolysis equation.

$$\underset{\textit{(urea)}}{CO(NH_2)_2} + \underset{\textit{(water)}}{H_2O} \xrightarrow[\textit{(10 }^{14}\textit{ times Faster)}]{urease\ enzyme} \underset{\textit{(ammonia x2)}}{2NH_3} + \underset{\textit{(carbon dioxide)}}{CO_2}$$

During the ammonification process, the ammonia is susceptible to volatilization, which means the more ammonia there is the greater chance for losses there can be. By slowing the process of urea hydrolysis, there can be less ammonia in the soil available for volatilization at one time. Unfortunately, the process of transforming urea to ammonia and then to ammonium is necessary to provide the plant the nitrogen in a form that it can take up. Therefore, the target of most ammonia volatilization inhibitors is to reduce the activity of the urease enzyme. There are many different urease inhibitors available and testing all of them would be very time consuming and costly, therefore this study is looking to identify the impact of a few commonly available nitrogen loss inhibitors on warm-season forage production. This study will focus on evaluating a liquid additive containing a single urease inhibitor, a liquid additive containing two urease inhibitors, and a pre-coated urea fertilizer that has the same urease inhibitor as the liquid products, as well as a denitrification inhibitor.

Methods:

Research trials were established across Arkansas on producer-owned farms.

- 1 location of predominantly Bermudagrass
- 1 location of predominantly Crabgrass
- 1 location of predominantly Bahia grass
- 4 locations of mixed warm-season grasses.

Micro-plot research trials were established by applying the four Urea treatments at 100 lb. N per acre (table 1).

Table 5.Nitrogen stabilizer treatments, applied at 100 lb. N per acre.

Treatment
Urea + No inhibitor
Urea + NBPT†
Urea + NBPT† + Duromide
Urea + NBPT† + DCD‡

†N-butyl thiophosphoric triamide

‡Dicyandiamide

Figure 7. Faulkner Co N Stabilizer Trial

Fertilizer was applied after a hay-cutting or grazing event.

Plots were harvested at least 28 days after fertilization by collecting all biomass greater than 3 inches in a 1 sq. ft. area from each plot.

Biomass was air-dried for a minimum of 7 days to represent air-dried biomass yield.

Statistical analysis was conducted in SAS 9.4.

Results

Biomass yield results from each county were analyzed for responses to nitrogen stabilizers. There was no interaction between location and treatment, meaning yield responded similarly to treatments across all locations. Air-dry forage biomass yield averages from each location and across the state are found in Table 2.

Table 6. Average air-dry biomass yields (tons acre^{-1}), for each treatment from each location and statewide.

	Nitrogen Loss Inhibitor			
Location	None	NBPT	NBPT + Duromide	NBPT + DCD
	(tons acre^{-1})			
Montgomery†	0.14	0.08	0.10	0.16
Newton	2.58	2.64	2.47	2.42
Faulkner	3.01	3.07	2.36	3.28
Lawrence	1.46	1.38	1.44	1.51
Hot Spring 1	0.66	0.72	0.65	0.61
Hot Spring 2	0.90	0.97	1.16	1.04
Clark	1.29	1.41	1.82	1.43
Statewide	1.44	1.47	1.43	1.49

†Location was removed from statewide means.

Nitrogen stabilizers did not influence forage biomass yield, which was an average of 1.5 tons per acre (Figure 2). Air-dried biomass yields ranged by approximately 3 tons per acre (6000 lb.) between locations; however, this did not impact the response to the stabilizers.

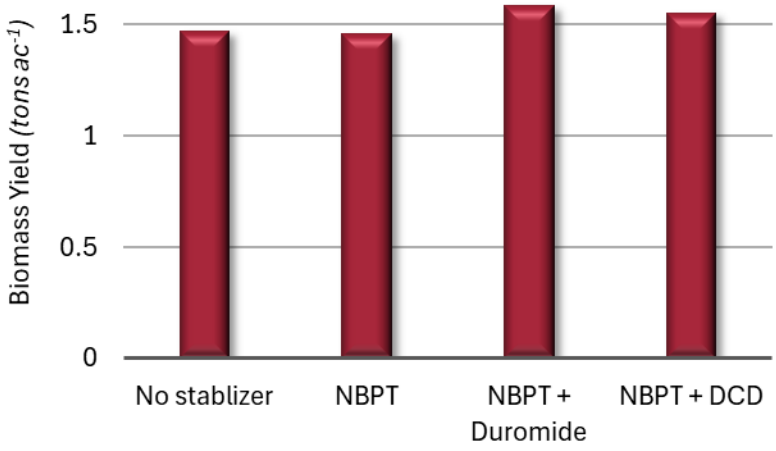


Figure 8. Average air-dry forage yield (tons ac^{-1}) by nitrogen stabilizer treatment across all locations.

Average precipitation 7 and 14 days after fertilization and the total received in the harvest cycle from weather stations in each respective county is shown in Table 3. Every location received at least 0.25 inches of rainfall during the first 14 days after fertilization, while only three locations received less than 0.1 inches of rainfall in the first 7 days after fertilization.

Table 7. Cumulative precipitation (inches) 7 and 10 days after fertilizer application, and the producton cycle for each location. Data was collected from NOAA weather stations located in respective counties.

	Average Precipitation		
Location	7 – Day	14 – Day	Total
	(inches)		
Montgomery†	0.66	0.68	0.85
Newton	0.00	0.35	4.35
Faulkner	0.59	0.89	11.78
Lawrence	0.02	1.48	2.32
Hot Spring 1	0.10	0.72	3.39
Hot Spring 2	2.47	2.65	2.70
Clark	0.00	3.10	3.65

Discussion

Incorporation of Nitrogen is the key to reducing the chances of ammonia volatilization losses. In many pastures precipitation is the only option for incorporating N fertilizer applied to the surface of the soil, all locations received at least 0.25 inches of precipitation by 14 days after application. Additionally, all but one location received 2 inches or more precipitation during the production cycle. These precipitation patterns observed in the early and mid-summer 2024 create favorable conditions for incorporating N fertilizer and reducing the chances of gaseous losses. Additionally, as observed from other N studies conducted across a similar timeframe, the rate of 100 pounds N per acre may have been sufficient enough to mask any yield reductions by nitrogen loss.

Although the single year results of this study show no need for nitrogen volatilization losses, this is a single year with favorable precipitation. Continued research over several varying conditions is required to identify the need or lack thereof for volatilization inhibitors. Future work will continue to research the need for nitrogen stabilizers, across rates and management strategies.

Applying Herbicides Prior to Extreme Cold Weather for Buttercup Control Demonstration

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Cooperator: Flying "C" Ranch
Coordinator: Kevin Lawson
Location: Saltillo **GPS:** 35.0530 -92.3102
Treated: January 11, 2024
Rated: February 21 (41 DAT)

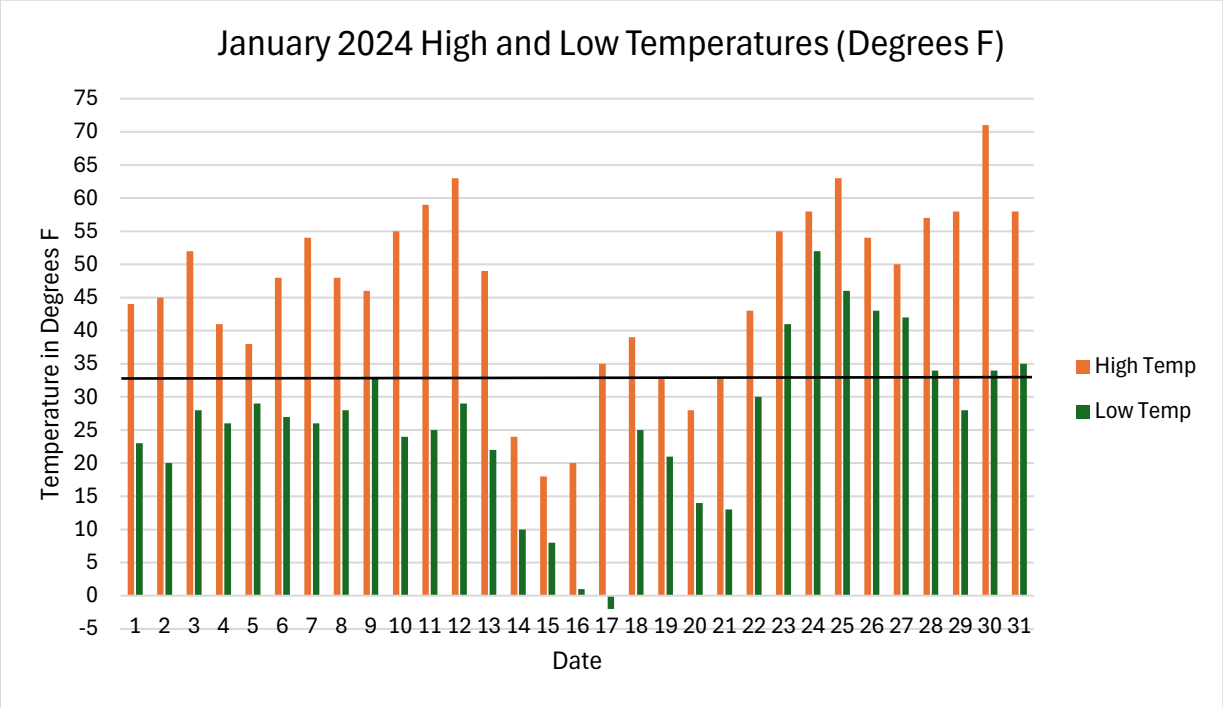
Summary: Winter weeds are a common problem in Faulkner County warm season pastures and hay fields every year. Winter weeds can grow very rapidly during the dormant season of the warm season grasses causing issues when green up starts in the early spring. If not controlled these weeds can shade and take up valuable space for warm season grasses to grow. There are many common winter weeds but the one most asked about by Faulkner County producers is buttercup. This weed starts out as a small plant but by spring the common yellow flower is seen all over the county. The plant is edible to most livestock, but once the flower blooms the animals will avoid it. As soon as buttercup emerges, they can be sprayed with a herbicide and controlled. Some producers will spray in the fall, but most of the applications go out in the late winter months of February, March, and April. Sometimes warm spells in January and February get producers out and ready to spray but these days are usually followed by more cold days.

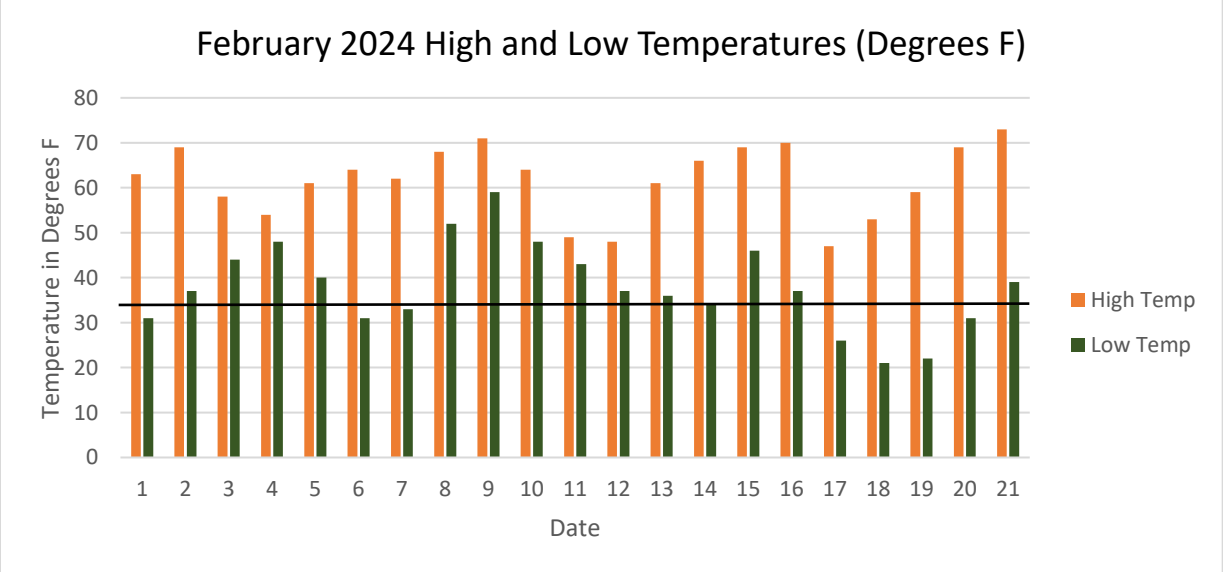
This demonstration was established to evaluate the effectiveness of buttercup and winter weed herbicides when applied during warm days when cold weather is predicted to follow. The herbicides were evaluated for control of buttercup, but observations were made on some other winter weeds such as little barley, fescue, and poa annua. The three most used herbicides by producers in Faulkner County for buttercup were chosen for this demonstration and are listed below in Table 1. Treatments included using each individual herbicide and then one treatment with a combination of all three. The herbicides were applied on January 11, 2024. Plots were 10 feet by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10-foot boom and TeeJet AIXR nozzles.

Table 1. Herbicide List Used in Demonstration

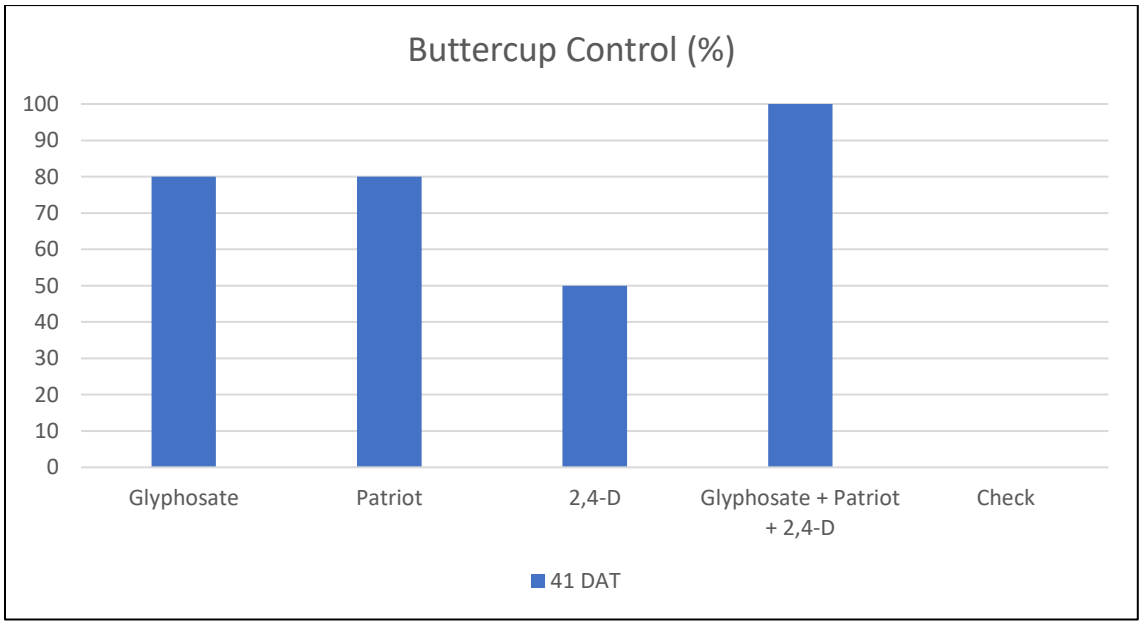
Plot Number	Treatment	Rate per acre	Active Ingredient
101	41% Generic Glyphosate	1 qt	Glyphosate
102	Patriot	0.5 ounces	Metsulfuron
103	2,4-D	1 pt	2,4-D Amine
104	41% Generic Glyphosate + Patriot + 2,4-D	1 qt 0.3 ounces 1 pt	Glyphosate Metsulfuron 2,4-D Amine
105	Untreated Check		

The temperatures from January 1 through January 11 were an average high of 48 degrees, average low of 26 degrees with an average of 38 degrees. The next 10 days after the herbicides were applied (January 12 – 21) were average high of 34 degrees, average low of 14 degrees with an average of 24 degrees. Between January 14 and 17 the temperature never got above freezing with lows of 10, 8, 0, and -2 respectively. Also, during this time there was some frozen precipitation. From January 22 – February 21 temperatures were an average high of 60 degrees, average low of 38 degrees with an average temperature of 49 degrees.





Results: Each plot was rated 41 days after treatment (DAT). The treatments were visually rated for buttercup control. The glyphosate plot and the combination plot were easy to see immediately. They stood out from the rest of the plots. Looking closely at the glyphosate alone plot there was 80% control of the buttercup. Patriot usually takes a little longer to work on weeds but there was good control of buttercup in that plot at 80%. The 2,4-D did not do as good as the other two treatments with only 50% control. Usually 2,4-D has better control than that and it is not known if the low amount of control was from only using a pint of herbicide or if it was from the extreme cold weather that the plot went through, but the control was not as good. The combination plot was by far the best. There was 100% control of buttercup in that plot.



Looking at the overall plots, the combination of all three herbicides gave more control of the other winter weeds that were also growing in the plot. This included weeds like little barley, poa anna, fescue and other broadleaf weeds. There was 100% control on all the weeds except fescue in the combination plot. Glyphosate alone gave some control on these other winter weeds, but 2,4-D and Patriot did not give control of any of the grasses.

Good weed control can be achieved by early herbicide applications even if extreme cold weather occurs soon after application. The lack of control from 2,4-D could have been attributed to cold weather, but it also could have been from only using a pint of product. A better test with different rates is needed to make that determination.

Untreated Check

Glyphosate

Patriot

2,4-D

Glyphosate + Patriot + 2,4-D

Faulkner County Hay Verification Field

Cooperator: Flying "C" Ranch
Location: Saltillo **GPS:** 35.0526 -92.3113
Year: 6th year

Summary: This was the 6th year working with the Flying "C" Ranch with the hay verification field project. A verification field is one where the producer agrees to work with the County Extension Agent and follow Extension recommendations. All the inputs were recorded on the field throughout 2024 and the State Economic Specialist James Mitchell put together an enterprise budget for the field. The field was soil sampled in February and a fertility program was worked out for the year. Scouting started in March and the weekly information was used to help the producer make production decisions, and the information was used in the agriculture update. After the first harvest bales were weighed to get an average weight to keep up with tons of forage harvested throughout the year.

Results: A herbicide application of glyphosate, 2,4-D and metsulfuron was applied in late February to control winter weeds and give the bermudagrass a chance to grow. The field started to grow with warm conditions, but a late freeze set the grass back a couple of weeks. The field finally started growing again and the first harvest was on June 6. That harvest yielded 201 round bales. A fertilize application of 70 lbs of Urea + 100 lbs of DAP + 100 lbs of Potash was applied after the harvest. At the beginning of July, the field was swept for armyworms and the field reached threshold. An insecticide application of Dimilin and Lambda Cy was applied by air to control the worms. The second harvest was on July 9 and yielded 366 round bales. Another application of 100 lbs of Urea + 100 lbs of Potash was applied after the harvest. Another round of armyworms was observed in the field and another insecticide application of Dimilin and Lambda Cy was applied. This time the armyworms were not totally controlled, so an application of Besiege was applied which did a great job on control. The third and last harvest was on August 25 and yielded 299 bales. The final yield was 3.17 tons of dry matter per acre.

Bermudagrass Stem Maggot Trapping and Armyworm Monitoring

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Cooperator: Flying "C" Ranch, Brandon Harris
Location: Vilonia **GPS:** 35.0526 -92.3113, 35.1110 -92.2987

Summary: Bermudagrass stem maggot is a pest that has increased in the last few years in bermudagrass hay fields in Faulkner County. Uncontrolled populations can lead to a 50% decrease in bermudagrass yield. On average Faulkner County hay producers grow 3 tons of hay an acre a year which is valued at ~$300 an acre. An infestation of maggots could lead to only $150 an acre of income with the same inputs, so it is important producers are aware of this pest. I put up sticky traps in 2 locations in Faulkner County and monitored those traps weekly. Once flies were noticed on the sticky traps, fields were swept to keep up with populations. There were a few fields that were sprayed just for stem maggot this year, but with the increase in armyworm control, not many fields were treated.

I checked these same two locations weekly for armyworms by using a sweep net. This was one of the worst years I have seen for armyworms in Faulkner County. Some fields in the Saltillo area were sprayed three to four times. We also saw a decrease in control from lambda cy and Dimilin. By scouting these fields, I was able to detect armyworms early and let producers know to start scouting their own fields.

Faulkner County Row Crop Meetings and Tours

- **River Valley Row Crop Production Meeting**
    - The River Valley Row Crop Production meeting was held in Morrilton on January 8. 59 participants were on hand to be educated on the latest soybean and corn information for the upcoming crop year.

- **River Valley Rice Production Meeting**
    - The River Valley Rice Meeting was held on February 28 and 25 participants learned more about rice varieties and new technology that would be available for the 2024 rice growing year.

- **Herbicide Demonstration Field Day**
    - The Herbicide Demonstration Field Day was held in Lollie Bottoms to visit weed control demonstrations that were being done in the field on May 10. 13 producers participated in the field day which included resistant ryegrass plots and soybean pre-emergence plots.

- **River Valley Row Crop Tour**
    - The River Valley Row Crop Tour was held in Faulkner County on August 13 with 45 producers in attendance. Producers participated in a tour that included rice, corn and soybean variety plots.

Faulkner County Row Crop Demonstrations

- **Resistant Ryegrass Burndown Demonstration**
    - This demonstration was established on the Frank Harrell Farm at Lollie Bottoms. I applied 9 treatments to demonstrate best control options for ryegrass burndown.

- **Corn Hybrid Demonstration**
    - This demonstration was established on the Austin and Joe Thrash Farm at Lollie Bottoms. We planted 12 hybrids and yields ranged from 207.8 to 144.5 bushels per acre.

- **Kernel Smut Fungicide Demonstration**
    - This demonstration was established on Schaefers Brothers Farm at Cadron. I compared 2 rates of propiconazole at 3 different timings to compare kernel smut control.

- **Enlist Group IV Soybean Variety Demonstrations**
    - This demonstration was established on the Schaefers Brothers Farm in Lollie Bottoms. We planted 8 varieties and yields ranged from 55.4 to 40.9 bushels per acre.

- **Soybean Pre-Emerge Herbicide Demonstration**
    - This demonstration was established with Jill Edwards in Lollie Bottoms. I established 10 treatments of pre-emergence herbicides to demonstrate effectiveness on weeds common to Faulkner County.

- **Arkansas Rice Performance Trial**
    - This trial was established on the Schaefers Brothers Farm at Cadron. This trial was established by Dr. Jarrod Hardke and is replicated in other farms in the state.

- **Corn Earworm Moth Trapping**
    - Three Corn Earworm Moth traps were established in the Lollie Bottoms and Cadron areas of the county. The purpose of the traps was to monitor moth numbers during the growing year to help producers predict worm outbreaks in soybeans.

Ryegrass Burndown in Row Crops Demonstration

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Cooperator: Frank Harrell
Coordinator: Dr. Bob Scott
Location: Lollie **GPS:** 35.0035 -92.5787
Treated: March 28, 2024

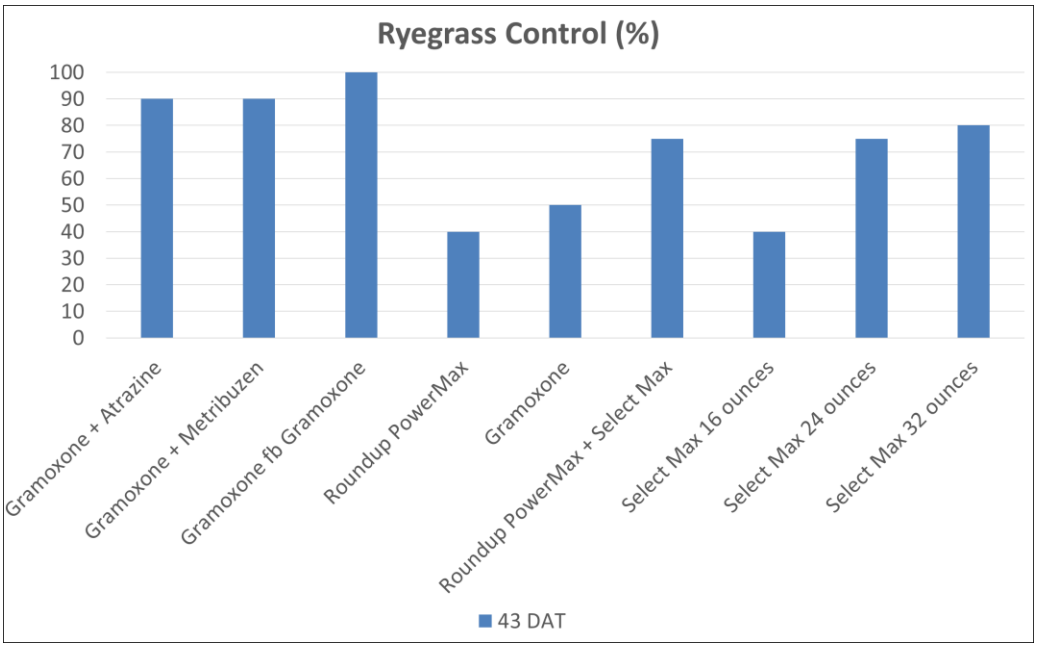
Summary: Ryegrass is one of the top three weeds in Faulkner County. Ryegrass is the number one weed of wheat in-season and hay producers growing bermudagrass are seeing more problems with controlling ryegrass before the first harvest of hay. Most recently we have seen an increased problem of controlling ryegrass before planting in corn, soybean and rice fields in burndown applications. One of the reasons for this issue is that ryegrass in Faulkner County is getting more resistant to the most used burndown herbicide glyphosate. The reason for this demonstration is to look at burndown options in the spring for row crop producers to control ryegrass before planting.

Treatments: There were 9 treatments, and the initial application was sprayed on March 28, 2024. Plots were 10 feet wide by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10-foot boom. The demonstration was set up to have 2-foot alleys between treatments to serve as an untreated check. Treatment number 103 had a follow up application, and that application was made on April 22, 2024, which was 25 days after the initial treatment. The final evaluation was done on May 10, 2024, which was 43 days after the initial treatment. Herbicides were evaluated for control of ryegrass only even though a few other weeds were present.

Treatment Number	Treatment	Rate/Acre
101	Gramoxone (2lb material) + Atrazine	64 ounces 1 pint
102	Gramoxone (2lb material) + Metribuzen	64 ounces 0.33 lbs per acre
103	Gramoxone (2lb material) fb Gramoxone (2lb material)	64 ounces 64 ounces
104	Roundup PowerMax	1 quart
105	Gramoxone (2lb material)	64 ounces
106	Roundup PowerMax + Select Max	1 quart 16 ounces
107	Select Max	16 ounces
108	Select Max	24 ounces
109	Select Max	32 ounces

Results: Each plot was rated 43 days after treatment (DAT). The treatments were visually rated for ryegrass control. The plots that had Gramoxone followed by Gramoxone stood out as the overall best plot. When a PSII Inhibitor (atrazine, metribuzin) was added to Gramoxone there was also an increased control of ryegrass. These three plots were by far the best control of anything else applied. Gramoxone alone provided control at first, but there was regrowth after about 3 weeks and the overall control was only about 50%. Roundup PowerMax alone is not a good option as the population continues to have more resistance, but when Select Max is added to the Roundup PowerMax there was an increase in control. Select Max alone has good control when used at higher rates.

There are still options for ryegrass control in row crop fields in Faulkner County, but the way that producers do their burndown applications will have to change. Other options for ryegrass control include the use of fall residuals.



Gramoxone + Atrazine

Gramoxone + Metribuzin

Gramoxone fb Gramoxone

Roundup PowerMax

Gramoxone

Roundup PowerMax + Select Max

Select Max 16 ounces

Select Max 24 ounces

Select Max 32 ounces

COUNTY VARIETY TRIAL

(Faulkner County)

Crop:	Corn	**Producer:**	Austin Thrash
Location:	Lollie Bottoms	**GPS:**	34.9986 -92.5613
Soil Type:	Moreland Silty Clay	**Row Width:**	30 inches
Previous Crop:	Corn	**Planting Rate:**	35,000 seeds per acre
Planting Date:	April 13, 2024	**Harvest Date:**	September 11, 2024

Fertilizer (N-P-K-S-Zn)	**Irrigation**
205-60-60-24-0	Pivot Irrigated 3 Times

Variety	Adjusted Yield (Bushels/Acre)[1]	% Moisture at Harvest	Plant Stand [2]	Lodging Score[3]	Test Weight
Revere 1839TC*	193.3	12.5%	35,000	1	60.5
DeKalb DKC68-35	167.4	12.0%	36,000	1	61.2
Progeny PGY 2118VT2P*	176.6	12.5%	35,500	1	63.2
DynaGro D58VC74	151.9	12.2%	34,500	1	61.6
Pioneer P1511YHR	144.5	11.9%	35,500	1	62.4
Gateway 2716VT2PRO	162.1	12.5%	35,500	1	59.7
Revere 1307TC	159.3	12.0%	35,000	1	58.6
DeKalb DKC66-06	157.8	12.5%	35,000	1	60.6
Progeny PGY 2215TRE	151.3	12.1%	35,000	1	60.9
DynaGro D56TC44	166.9	12.4%	36,000	1	60.1
Pioneer P17677YHR	173.4	12.1%	36,500	1	61.4
Gateway 3919TRE	207.8	12.8%	36,000	1	60.5

[1] Yield adjusted to 15.5% moisture

[2] Plant Stand – Plants per acre

[3] 1 is no lodging, 10 is completely lodged

***Note:**	Some of the variation of yields in this trial were attributed to the unevenness of the field. The hybrids are listed in the order they were planted. Some of the hybrids were planted in a lower area of the field which saw higher than normal precipitation early in the year. The outside two hybrids (Revere 1839TC and Gateway 3919TRE) were planted in a higher section of the field while the middle hybrids were in the lower area. This same yield variation was observed on the yield monitor in the rest of the field. All these hybrids should be compared with other demonstrations that were done in the River Valley and State. *Revere 1839TC and Progeny PGY 2118VT2P both had one row missing from a planter malfunction. This was adjusted at harvest in area harvested.

Kernel Smut Fungicide Demonstration

Cooperator: Schaefers Brothers
Location: Cadron Farm **GPS:** 35.1473 -92.4937
Treated: July 1, 2024

Summary: Kernel smut or black smut of rice became increasingly important during the 1990s. It has been considered an emerging disease since 2010 in Faulkner County. Yield losses of 10 to 30 percent have been measured on highly susceptible cultivars on occasion. Head rice yield losses of more than 6 points have been documented in severe cases. Smutted rice is undesirable for parboiling because it turns parboiled rice gray. Treatment using a propiconazole fungicide is effective but the timing is important. The purpose of this demonstration was to apply fungicide at two different rates at three different timings to determine kernel smut control.

Treatments: There were 7 treatments in this demonstration. A 6 ounce rate and a 10 ounce rate was used at each timing, and timings included mid boot, late boot and boot split. The last treatment was an untreated check. Plots were 10 feet wide by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10-foot boom.

Treatment Number	Treatment	Rate/Acre	Timing
101	Propiconazole	6 ounces	Mid boot
102	Propiconazole	10 ounces	Mid boot
103	Propiconazole	6 ounces	Late boot
104	Propiconazole	10 ounces	Late boot
105	Propiconazole	6 ounces	Boot split
106	Propiconazole	10 ounces	Late boot
107	Untreated Check		

Results: Each treatment was rated by throwing a 1 foot square randomly 5 times in the plot. There was no kernel smut found in any plot or the untreated check. This demonstration will be repeated next year on a more susceptible variety.

COUNTY VARIETY TRIAL
(Faulkner County)

Crop:	Enlist Soybeans	**Producer:**	Schaefers Brothers
Location:	Lollie	**GPS:**	34.9962 -92.5897
Soil Type:	Gallion Silt Loam	**Row Width:**	30 in
Previous Crop:	Wheat	**Planting Rate:**	148,000 seeds per acre
Planting Date:	June 25, 2024	**Harvest Date:**	October 22, 2024

Fertilizer (N-P-K-S-Zn)	**Irrigation**
	5 times with a pivot

Variety	Adjusted Yield (Bushels/Acre)[1]	% Moisture at Harvest	Plant Stand [2]	Lodging Score[3]	Test Weight
NK 49-U9E3S	55.4	8.5%	107,000	1	56.3
Gateway 499ES	53.4	8.7%	103,000	1	57.6
NK 47-G5E3S	55.4	8.0%	109,000	1	56.1
Delta Grow DG46E30	49.1	8.0%	109,000	1	57.8
NK 52-D6E3	53.0	8.1%	85,000	1	56.6
Delta Grow DG46E10	40.9	7.8%	87,000	1	57.3
NK 44-Q5E3S	48.7	8.1%	103,000	1	56.4
Delta Grow DG49E90RKN	47.6	8.5%	99,000	1	58.0

[1] Yield adjusted to 13% moisture | [2] Plant Stand – Plants per acre | [3] 1 is no lodging, 10 is completely lodged

Pre-emergence in Soybeans Demonstration

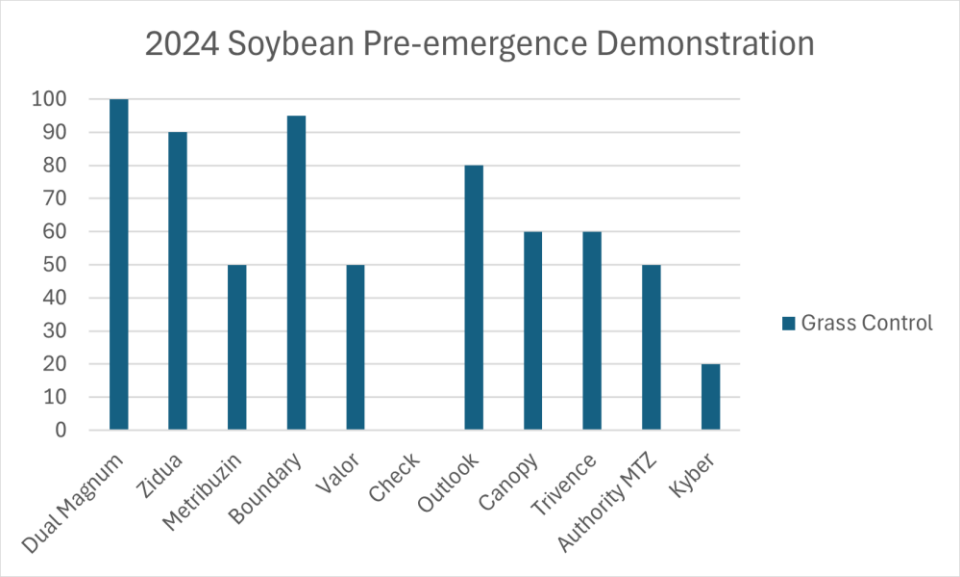
Cooperator: Jill Edwards
Coordinator: Dr. Bob Scott
Location: Lollie **GPS:** 35.0163 -92.5689
Treated: March 28, 2024

Summary: Soybean weed control in an important input for maximum yield potential. Any practice that promotes rapid soybean stand establishment, proper plant density and rapid canopy closure will increase the ability of soybeans to compete with weeds, thereby increasing the effectiveness of a given herbicide program. This demonstration was established to evaluate the effectiveness of pre-emergence herbicides of common weeds found in Faulkner County. The herbicides were evaluated for control of pigweed and grass.

Treatments: There were 11 treatments, and the initial application was sprayed on April 1, 2024. Plots were 10 feet wide by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10-foot boom.

Treatment Number	Treatment	Rate/Acre	Active Ingredient
101	Dual Magnum	1.5 pints	*S*-metolachlor
102	Zidua WG	2.5 ounces	pyroxasulfone
103	Metribuzin	0.33 pounds	metribuzin
104	Boundary	2 pints	S-metolachlor + metribuzin
105	Valor	2 ounces	flumioxazin
106	Untreated Check		
107	Outlook	16 fluid ounces	dimethenamid
108	Canopy	6 ounces	chlorimuron + metribuzin
109	Trivence	8 ounces	flumioxazin + chlorimuron + metribuzin
110	Authority MTZ	14 ounces	sulfentrazone + metribuzin
111	Kyber	1.25 pints	flumioxazin + metribuzin + pyroxasulfone

Results: Each plot was rated 40 days after treatment (DAT). The treatments were visually rated for grass control. In this year's demonstration, there didn't seem to be as much pigweed as in the years past so ratings weren't done. I still like Dual, Zidua or Boundary as a pre-emerge option in soybeans. Those three always do the best job and they stood out again this year in this demonstration.



Arkansas Rice Performance Trial Plot

Cooperator: Schaefers Brothers
Coordinator: Dr. Jarrod Hardke
Location: Cadron Farm **GPS:** 35.1473 -92.4937

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https://arkansascrops.uada.edu/posts/crops/rice/2024_Arkansas_Rice_Performance_Trials_Final.pdf

Arkansas Rice Performance Trials (ARPT)

2024 Grain Yield Summary – All Locations

University of Arkansas System Division of Agriculture

Cultivar	Grain Length[1]	RREC bu/ac	PTRS bu/ac	NEREC bu/ac	NERREC bu/ac	CLAY bu/ac	DESHA bu/ac	GRE bu/ac	JAC bu/ac	LAW bu/ac	FAU bu/ac	ARK bu/ac	Mean bu/ac
Diamond	L	204	184	160	176[19]	197	171	153	198[18]	181	171[29]	193[10]	**181**
Ozark	L	200	187	131	172[17]	205	165	184	191	194	168[13]	204	**182**
ProGold L4	L	201	170[5]	126	153[28]	199	171	186	190[25]	179[39]	161[10]	189	**175**
DG263L	L	210	198[48]	171	182[25]	191	197	192	222[10]	173[31]	195[23]	186	**193**
RTv7303	L	210	188[81]	199[13]	157	204	185	175	221	168[90]	188[6]	187	**189**
CLL16	L	217	176	122	196[75]	181	161	169	187[20]	169[20]	176[36]	183	**176**
CLL18	L	220	198	142	155[43]	217	175	175	205[15]	186	178[11]	191	**186**
CLL19	L	184	181[13]	146	152[40]	205	165	166	182	179	156	203	**175**
CLHA03	L	179	167	106	155[15]	182	161	177	182	164	163[3]	193	**166**
PVL03	L	170	144	104	131	162	156	144	161	142	152	163	**148**
PVL04	L	179	177	136	163	178	171	161	195[27]	156	180[8]	187	**171**
DG563PVL	L	212	198	150	209	176	180	165	197[23]	177[83]	174[25]	196	**185**
RTv7231MA	L	183	178[15]	128	182[20]	212	168	185	208	199[4]	154	217	**183**
RT7331MA	L	224	194[25]	151	191	230	194	194	227	195[55]	196[5]	219	**201**
RT7421FP	L	238	222[16]	139	216[27]	210	198	179	236	182[88]	187[25]	227	**203**
RT7521FP	L	238	200	139	200[20]	243	200	200	223	144[81]	170[66]	195	**196**
RT7302	L	243	197[73]	141	234[7]	232	213	201	240	173[95]	182[53]	198	**205**
RT7401	L	247	216[18]	144	213[10]	218	206	191	239	188[96]	197[13]	197	**205**
RTXP753	L	211	201[10]	171	205	238	196	190	234	182[54]	193	214	**203**
DG3H2004	L	256	200[48]	142	216[30]	226	218	186	235[15]	155[91]	163[98]	204	**200**
DG3H2007	L	234	198[65]	139	169[62]	232	210	214	246	119[96]	200[83]	211	**198**
Titan	M	188	206	170	170	219	152	183	212	198[28]	173[7]	194	**188**
Taurus	M	194	188	126	102[68]	222	179	189	204	181[25]	160[25]	191	**176**
DG353M	M	218	182	132	168[30]	185	161	175	179	181	178[43]	186	**177**
ProGold M3	M	201	187	170	189	208	176	192	191	185	159[16]	191	**186**
RT3202	M	247	196[24]	127	199[20]	225	202	210	221[23]	174[72]	181[4]	214	**200**
CLM04	M	210	183[23]	128	140[65]	184	176	182	178[63]	156[79]	167[26]	186	**172**
CLM05	M	209	192	113	198	195	174	190	190[23]	190[28]	182	189	**184**
Mean	--	**212**	**190**	**141**	**178**	**206**	**181**	**183**	**207**	**174**	**175**	**197**	**186**

[1] Grain Length: L=long grain, M=medium grain.

* Numbers in superscript beside yields represent percent lodging.

** **NEREC had significant bird damage; ARK had volunteer rice present throughout; NERREC, LAW, and FAU had notable lodging affect yields for some cultivars.**

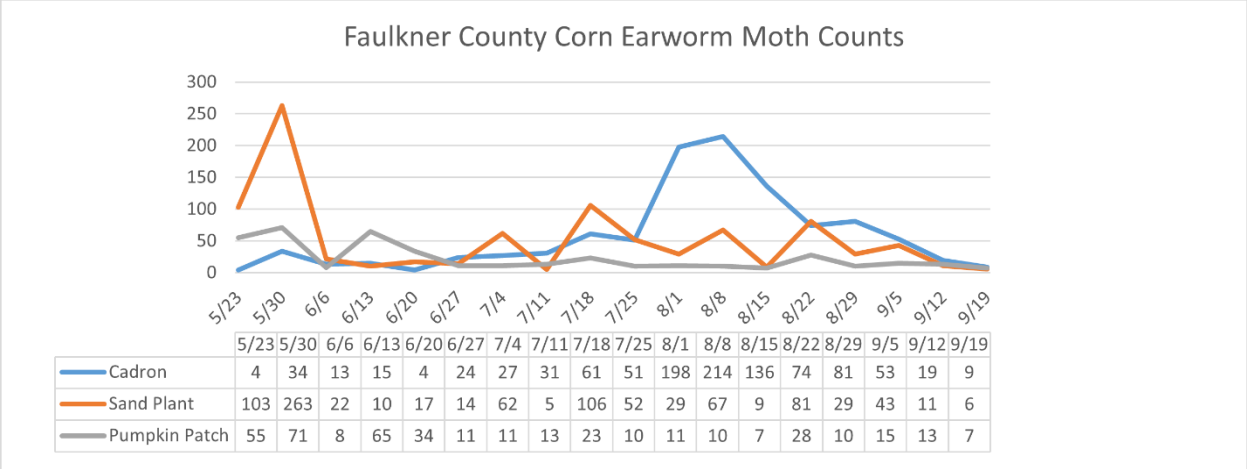
Corn Earworm Moth Trapping

Cooperator: Jill Edwards (Sand Plant), Schaefers Brothers (Cadron), Schaefers Collins Farm (Pumpkin Patch)
Location: Lollie and Cadron Farm
Corn Earworm Moth Traps GPS: 35.0500 -92.5307, 35.1474 -92.4882, 34.9955 -92.5814
Established: May 23, 2024

Summary: Trapping moths is one of the ways I monitor infestations of corn earworms in soybean fields. Trapping moths allows me to communicate with producers the peak times to scout for insects in the field. Numbers are distributed in the weekly agriculture update and scout alerts are sent out by text message when numbers get high in the traps.

The corn earworm is the most destructive pest we have in soybeans. Every year we must scout soybeans closely for worms that can eat pods and directly reduce yield. I have three traps that I put out annually to monitor moth numbers for corn earworm.

Results: This year started out with very high numbers, especially in the sand plant trap. After a couple of weeks, the numbers dropped and there was not another spike in numbers until July. Fields were scouted and alerts were sent out to start scouting, but few fields reached treatment levels. After two to three weeks numbers fell below 100 moths and did not spike again. Towards the end of the season there were reports of a few fields being treated, but 2024 was mainly a light year for insects.



	5/23	5/30	6/6	6/13	6/20	6/27	7/4	7/11	7/18	7/25	8/1	8/8	8/15	8/22	8/29	9/5	9/12	9/19
Cadron	4	34	13	15	4	24	27	31	61	51	198	214	136	74	81	53	19	9
Sand Plant	103	263	22	10	17	14	62	5	106	52	29	67	9	81	29	43	11	6
Pumpkin Patch	55	71	8	65	34	11	11	13	23	10	11	10	7	28	10	15	13	7