2023 Crop, Livestock, & Youth Demonstrations & Programs

Greene County Cooperative Extension Service

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DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

MASTER GARDENER

18 U.S.C. 707

2023 Crop, Livestock, & Youth Demonstrations and Programs

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2023 Top Notch Swine Judging Contest

Cooperating: Greene County Agriculture Instructors, Greene County Fair Association, Church of God, Greene County 4-H Foundation, Greene County 4-H Livestock Project Club members & volunteers, and participating collegiate livestock judging teams

Lead Agent: Blake Davis

Objective: To provide an educational swine judging contest to promote growth in knowledge of the livestock industry through livestock evaluation and enhance competitive judging skills including animal selection and reasoning skills. To provide the opportunity for youth 4-H members to observe a collegiate-level swine judging contest and to promote development of youth communication, decision-making, note taking, speaking, and teamwork skills. To provide hands-on opportunity for youth 4-H members to conduct and manage a judging contest with a large, diverse audience.

Greene County 4-H members drive hogs in the center of the show ring as collegiate livestock judging team members surround the outside of the show ring.

Educational Method:

The contest consisted of eight swine classes for the collegiate teams to evaluate. Of those eight classes, four classes of oral reasons were presented to professionally qualified reasons takers in the livestock industry. The youth 4-H members observed the course and management of the contest. The youth and 4-H volunteers were given show management responsibilities to allow the 4-H members to “learn by doing” in a controlled and safe manner. Following the contest, the collegiate and youth 4-H members observed livestock evaluation and reasoning by a professional for each of the contest classes.

Collegiate livestock judging participants prepare reasons to give to the official committee.

Results:

Eight collegiate livestock judging teams representing six different states made 132 contestants participating in this second-year event. The event took place at the Greene County Fairgrounds and the Church of God facilities. Greene County 4-H youth were provided with an astounding amount of hands-on learning in diverse areas of focus. Throughout the management of the contest, responsibilities and tasks varied. Some of the responsibilities and tasks led by 4-H members and volunteers included: management of registration, leading and assisting contestants, driving, and preparing (rinsing, watering, keeping animals cool) hogs to be judged, coordinating classes to and from the show ring, announcing and timekeeping, preparing the reasons rooms, keeping refreshment stations full, preparing boxed meals, and preparing the scantrons for scoring. These tasks varied in educational emphasis including animal science, health/ food safety, and communication.

Greene County 4-H member presenting plaques at the awards ceremony.

2023 Livestock Judging Team

Cooperating: Greene County 4-H Foundation, Arkansas 4-H Department, Arkansas Animal Science Departments, Greene County Agriculture Instructors, Greene County 4-H Livestock Project Club members & volunteers, and numerous livestock breeders across the country.

Lead Agent: Blake Davis

Objective: To train 4-H members in live animal evaluation of breeding and market animals. Teach youth the anatomy of the four species in which they are to evaluate: beef cattle, sheep, swine, and goats. Explain breed differences within the species. 4-H members will learn to make their own decisions based upon the best available information. Experience is given in developing their speaking ability by oral reasons and critical thinking skills.

Greene County 4-H team members sharpening their livestock judging skills at breeders' operations locally and across the country.

Educational Method:

Each contest and/or practice consists of placings, oral reasons, and questions classes. Youth are asked to rank four animals from best to worst using the knowledge gained from evaluation priorities. The oral reasons presentation justifies the contestant's placement of the class and can be the most beneficial part of the contest. They are to explain why they have placed animals in a certain order, which involves effective communication skills. Question classes help develop critical thinking skills as youth recall the animals previously evaluated. This helps youth to pay attention to key details that are relevant and accurate.

Results:

These 4-H'ers competed in several contests throughout the spring in preparation for the State 4-H Livestock Judging Contest. All their hard work paid off as they were named the State 4-H Champion Team. Team awards included: High Team in Cattle, Swine, Reasons, and Overall. Individual awards included: High Individual and 4th High Individual Overall; 3rd, 4th, 5th, and 7th High Individual in Reasons; 2nd, 4th, 6th, and 8th High Individual in Cattle; 2nd and 4th Individual in Swine; 4th Individual in Sheep; 1st and 4th Individual in Goats. This was a great honor that took these members countless hours of studying, practicing, traveling, and competing to grow in their knowledge and skills of this competitive event.

Greene County 4-H team members named State 4-H Champion Team.

8th High Individual Overall in Swine – National 4-H Livestock Judging Contest

This achievement qualified them to represent Arkansas at the National 4-H Livestock Judging Contest held in Louisville, KY. Just being able to attend this contest was a great learning experience and opportunity that these youth will remember for the rest of their lives. Although the competition at that level was extremely tough, these 4-H'ers represented their state very well and we are proud of their hard work.

Greene County 4-H Livestock Project Club

Cooperating: Greene County Fair Board, Greene County Community Fund, Greene County Farm Bureau, Local, State and National Businesses, Financial Supporters, Livestock Producers, and all 4-H Livestock Families.

Lead Agent: Blake Davis

Objective: Train youth in broiler and animal husbandry principles such as selection, nutrition, and preparation for show, parasite control, and herd/flock management. Assist youth in developing youth livestock projects tailored for competitive events in Arkansas and Nationally. Promote development of youth communication, record keeping, budgeting, and teamwork skills. Showmanship and sportsmanship are a major thrust of this educational program.

Livestock Show Events:

Greene County Fair, NEA Livestock Show, Arkansas Youth Expo, Arkansas State Fair, Buffalo Island Northeast District Jr. Livestock Show, Crowley's Ridge Classic Jr. Livestock Show, North American International Livestock Expo, National Western Stock Show, Mississippi Youth Expo, numerous jackpot shows in Arkansas, and numerous national breed shows and events.

Educational Trainings:

On farm visits with extensive one-on-one training, and Statewide Livestock Show Clinics conducted in Greene County every other year. (Sponsored by major feed companies)

Jackson Rogers exhibited the Grand Champion Meat Pen and Single Fryer Rabbit at the Arkansas State Fair.

Youth Statistics:

We had over 30 4-H youth in Greene County that exhibited over 100 livestock projects throughout 2023. Numerous youths participated in all available shows and livestock training events, but a few of the younger Cloverbud members exhibited only at local shows.

Avery Randleman exhibited the Reserve Champion Market Goat at the Arkansas Youth Expo.

Project Statistics:

4-H members exhibited numerous livestock entries in 2023. Projects included swine, goats, sheep, cattle, broilers, and rabbits. Greene County 4-Her's received numerous scholarships throughout the 2023 show season. Many youths use these funds to finance other projects and to fund their college education. Scholarship programs have become a new innovative way to reward the 4-H youth for their hard work. This was another outstanding year for Greene County 4-Her's!

Left: Millie Foster exhibited the Supreme Overall Gilt at the Arkansas State Fair.

Right: Millie Foster exhibited the Champion Light Cross and 4th Overall Market Hog at the Arkansas State Fair.

County 4-H Programming and Activities

County 4-H O'Rama:

For many, County 4-H O'Rama is one of the most important 4-H competitions of the year. This competition is a learning experience and steppingstone to other more advanced 4-H O'Rama competitions. In Greene County, the 4-H County O'Rama competition is broken up into an Indoor and Outdoor O'Rama event. The 4-H O'Rama contests include a wide variety of topics ranging from animal science to fashion review, gardening, safety, fishing and more.

County 4-H O'Rama- Horticulture Participants

This year, we had ten 4-H members participate in the Delta District O'Rama competition. Of those, five 4-H members won first place in their respective contests. Additionally, we had six State O'Rama participates.

State 4-H Orama Participants

4-H Week Proclamation:

To kick-off National 4-H promotion month, a few of our 4-H Club/Group officers and members were able to attend the signing of a proclamation that designated October 1st-7th as National 4-H Week in Greene County as well as the city of Paragould.

The members had the opportunity to hear from Greene County Judge, Rusty McMillon, and Mayor of Paragould, Josh Agee, who shared their words of wisdom about leadership and being a positive mentor.

Rusty McMillon, Greene County Judge and Josh Agee, Mayor of Paragould signing the 4-H Proclamation.

Beef Cooking Contest:

What a fun way to get spring kicked off! This was a new contest conducted with the local partnership and support of the Greene County Cattlemen's Association. Each contestant was judged on grilling skills/food safety techniques, the appearance/texture/taste of the finished product, and the presentation of their knowledge and understanding of these practices.

Greene County 4-H member answers questions from the judges.

Other 4-H Programs & Activities:

Additionally, we have had members participate in a wide range of contests and camps such as, various BB and shotgun shooting competitions, WHEP (Wildlife Habitat Education Program) State Contest, Beef Quiz Bowl Contest, Livestock Quiz Bowl Contest, State Horse Show, Food Challenge Contest, Campfire Cooking Contest, Poultry BBQ Contest, Beef Cooking Contest, Dairy Recipe Contest, Arkansas 4-H Giant Pumpkin & Watermelon Contest, Teen Leader Conference, and National 4-H Congress.

Arkansas 4-H Food Challenge Contest – Team Overall and Best Dressed

Greene County 4-H member with her Champion Giant Pumpkin at State Contest

Greene County 4-H Member prepares "Main Dish" for the Dairy Recipe Contest

Greene County 4-H members compete at the Arkansas BB Championship Contest

Arkansas Diamonds Trial – Greene County 2023

Investigators: Randy Forst / Julie Treat

Site Managers: Vicki Griggs/Brenda Hester /Dr. Colin Hester

Partners:
-Arkansas Diamonds Team
-Greene County Master Gardeners
-Greene County 4-H Leaders
-Arkansas Green Industry Association
-Greene County Fair Association
-Youth Teaching Garden Volunteers

Location: Paragould – Greene Co Fairgrounds

Soil Series: Loring silt loam

Objectives: Note: Arkansas Diamonds status - locally grown plants proven to be tough in Arkansas

-Monitor summer annuals, new on the market, at several Arkansas sites to evaluate their adaptability, growth rate & size, flower and foliage show, and potential pest issues.
-Spotlight new annuals that could be successful additions to Arkansas landscapes.
-Support local Master Gardeners in beautification project efforts.
-Teach local youth about planting & caring for annuals, along with research procedures.

Annuals Evaluated:

Angelonia - Angelmist Spreading Purple
Cuphea - FloriGlory Diana
Evolvulus - Beach Bum Blue
Evolvulus - Blue My Mind

Project Procedures & Set Up:

Trial plants were picked up at the State Extension Office May 17th after being dropped off by participating companies. The Greene County Trial was planted May 18th (warm, sunny).

The test site (Youth Teaching Garden at Greene County Fairgrounds) was one of the Greene County Master Gardeners (GCMG) sanctioned projects. Two raised beds were used at this site, with each bed planted to 2 of the 4 trial entries. The site received full sun and had good drainage. The silt loam soil also in good condition from recent years of receiving compost and organic mulching.

Adult volunteers worked with youth during our May YTG session to plant the trial plants. According to protocol, the plants were evenly placed a foot apart in the trial beds. The two Evolvulus entries were planted in our east bed, while the Angelonia and Cuphea entries were placed in the other bed.

Fertility:

Osmocote (18-6-12) was incorporated into the soil around each plant (1 Tbs/square foot) at planting time. The slow release fertilizer sustained the plants all season long, with good foliage color and flowering observed until the first fall freeze.

Irrigation:

The GCMG team working with the plant trial study, set up a regular watering schedule, to make sure trial plants maintained adequate soil moisture throughout the season. A nice layer of pine bark mulch also helped to stabilize soil moisture and temperature in the project beds.

Weed Control:

The beds were freshly tilled and weed free at planting time. They were also regularly hand weeded during YTG sessions, and continually by site project managers. The layer of mulch put out at planting also helped a lot to keep weeds from emerging.

Insect & Disease Observations:

We did not observe any pest problems at this trial site. No insect or disease issues were seen for any of the entries for each month that data was collected.

Results:

A big thanks to our Greene County Master Gardener team leaders (Vicki Griggs, Brenda Hester, and Colin Hester) at the Youth Teaching Garden who collected plant data for this trial. These adults worked patiently with youth attending monthly teaching sessions, to measure plants, assign flower and health ratings, and check for pest problems. Several youths were able to benefit from being involved in the scientific process!

Data collected included:

- Plant size (height & width)

-Percent flower rating- 1 = 0% 2 = 1% to 25%, 3 = 26% to 50%, 4 = 51% to 75 5 = 76% to100%)

-Plant health rating - (Rated 1 to 5 based on growth & color 1=Poor 3=Average 5=Excellent)

Following is a brief summary for each of the trial entries.

Angelonia - Angelmist Spreading Purple

Angelonia was the showiest entry when the trial transplants were planted. The plants were healthy and had an abundance of purple flowers. The flower show persisted and intensified up through August, then fell off sharply, to hardly any flowers during September and October. Plant growth and appearance also started to falter heading into the fall.

No insect or disease problems were seen on this entry or any entry in the trial. Angelmist would make a great addition to the landscape where one wants quick establishment and ground cover, with lots of nice sized showy purple flowers!

This Angelonia trial entry tied with the Evolvulus entries for their season average flower rating (3.3 for all).

Cuphea - FloriGlory Diana

The Cuphea (Mexican Heather) entry was the little engine that could! These attractive plants, with a glossy, organized leaf arrangement, stayed healthy from planting until the first killing frost! They were slower to reach full ground cover compared to the Angelmist planted next to them, but kept coming on all season!

Regarding flower show, although they ended up with the lowest flower rating (3.0) in this trial, they consistently had flower show from planting until frost! Their flower show was light early and late in the season, but was good (many tiny pink flowers) during July and August! This entry also held up best after the November freeze.

Evolvulus - Beach Bum Blue

The two Evolvulus entries were both good selections that would make great additions to a landscape, for someone needing a plant to serve as a low groundcover, with an abundance of blue flowers, especially from mid to late season!

The Beach Bum Blue plants were a little slow to grow at first, but soon took off and made a full ground cover that remained healthy all the way to frost! As with the other Evolvulus entry, it took the plants a few weeks to bust out into a blue sea of beauty!

Evolvulus - Blue My Mind

Blue My Mind also delivered a spectacular scene of beautiful blue flowers from July through October! As with the Beach Bum Blue entry, they took a few weeks to grow good and begin flowering, but the wait was well worth it!

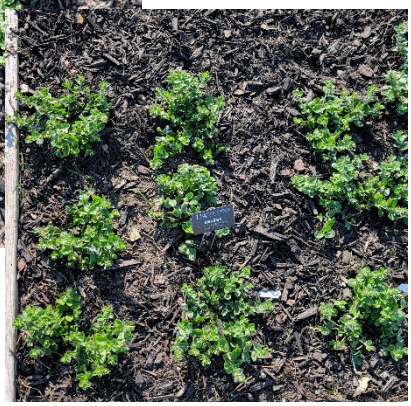
Both evolvulus entries ended up with the same average flower rating for the season (3.3), but Blue My Mind edged out Beach Bum Blue for plant growth, reaching full ground cover earlier in the season.

Summary & Time Lapse Photos:

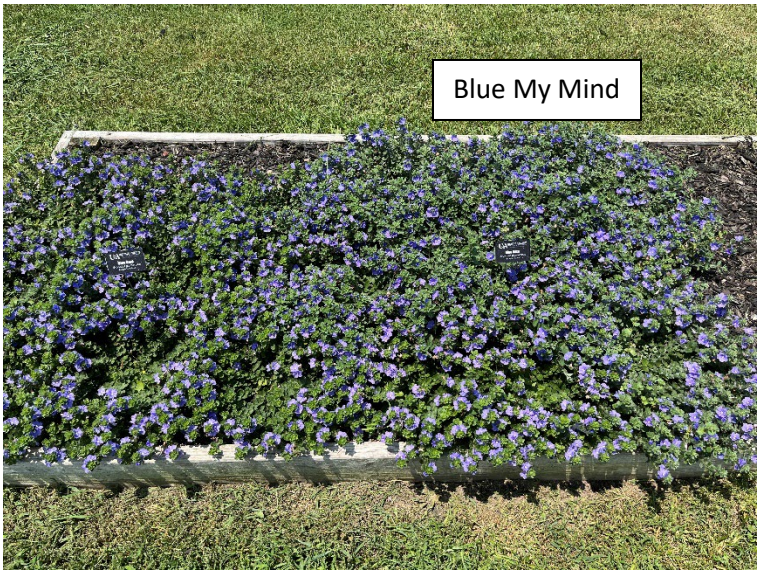
The summer annuals trial was a very beneficial project!
-It provided beautification to the local fairgrounds which receives regular public use.
-It helped promote the GCMG program.
-It introduced youth to plant research and data collection.
-It generated valuable information for each of the trial entries that participating companies and groups can use to help with future retail and landscape efforts.

May Trial Pictures - Planting Day

June Trial Pictures – Plants 1 month after planting



July Trial Pictures – Plants 2 months after planting



August Trial Pictures – Plants 3 months after planting

September Trial Pictures – Plants 4 months from planting

October Trial Pictures – Plants 5 months from planting

University of Arkansas System, Divison of Agriculture
Greene County Coopeative Extension Service, Master Gardener Program
2023 Arkansas Diamonds - Summer Annuals Research Trial

Site:	Greene County Fairgrounds	Partnering:	Greene County Fair Association
Investigators:	Randy Forst & Julie Treat	Master Gardener Contacts:	Vicki Griggs, Brenda Hester, Colin Hester
Planting Date:	May 18th	County Agent:	Dave Freeze

Plant Entry & Rating Dates - (monthly goal)	Height Inches	Width Inches	Flower Rating*	Health Rating**	Insect Issues	Disease Issues	Other observations
Angelonia - Angelmist Spreading Purple							
May 18th	4	16	4	5	None	None	
June 11th	8	20	4	5	None	None	
July 23rd	NA	NA	5	5	None	None	No YTG session this month
August 8th	16	18	5	5	None	None	
Septhember 20th	NA	NA	1	4	None	None	
October 10th	15	29	1	3	None	None	
Season Average			3.3	4.5			
Cuphea - FloriGlory Diana							
May 18th	3	8	2	5	None	None	
June 11th	11	14	3	5	None	None	
July 23rd	NA	NA	5	5	None	None	No YTG session this month
August 8th	12	15	4	5	None	None	
Septhember 20th	NA	NA	2	5	None	None	
October 10th	14	28	2	5	None	None	
Season Average			3.0	5.0			
Evolvulus - Beach Bum Blue							
May 18th	4	8	2	5	None	None	
June 11th	4	10	2	4	None	None	
July 23rd	NA	NA	5	4	None	None	No YTG session this month
August 8th	7	14	3	4	None	None	
Septhember 20th	NA	NA	4	4	None	None	
October 10th	10	25	4	4	None	None	Solid mat of growth
Season Average			3.3	4.2			
Evolvulus - Blue My Mind							
May 18th	4	10	2	5	None	None	
June 11th	5	14	2	5	None	None	
July 23rd	NA	NA	5	5	None	None	No YTG session this month
August 8th	8	14	3	5	None	None	
Septhember 20th	NA	NA	4	5	None	None	
October 10th	10	26	4	4	None	None	Solid mat of growth
Season Average			3.3	4.8			

*Flower Rating - Estimate percent flowering - 1 = 0%, 2 = 1% to 25%, 3 = 26% to 50%, 4 = 51% to 75, 5 = 76% to 100%
**Plant Health Rating - Use a scale of 1 to 5 based on health of foliage, and plant growth - 1=Poor, 3=Average, 5=Excellent

2023 Turfgrass Weed Control Demonstration

Investigator: Lance Blythe ***Location:*** Paragould

Situation & Objective: Our office gets many calls throughout the year from homeowners who need help identifying and controlling weeds. We decided to put out some weed control plots in the back yard of the "new to us" office that we had recently moved to. We applied both preemergence and postemergence herbicides. The yard consisted of a mostly bermudagrass turf. Products used were a variety of commonly available products to homeowners. Our intention was to not only advise them on what products to use, but also show them how these different products performed.

Demonstration Setup: During the month of February, herbicides were purchased, and application equipment was serviced. Additionally, a plot treatment plan was laid out that contained sixteen (16) 10'x23' plots. Rain was in the forecast and due to arrive the evening of March 1st. So, the first treatments applied were pendimethalin (granular) on plots 10 & 15 using a Scotts battery powered spreader.

On March 10th, the remaining treatments were applied using a CO2 backpack sprayer with a handheld boom using XR TEEJET 11002 sprayer tips. The sprayer was calibrated to apply 15 GPA. A 0.25% non-ionic surfactant was used with all treatments except plot #11 Specticle Flo (indaziflam).

Plot Treatments:

Plot #	Product Name	Active Ingredient(s)
1	Fertilome Weedout & Crabgrass Killer	2,4-D Amine + Quinclorac + Dicamba
2	Gordon's Trimec Speed	2,4-D Ester + Mecoprop + Dicamba
3	Metsulfuron*	Metsulfuron
4	2,4-D Amine*	2,4-D Amine
5	Metsulfuron* + 2,4-D Amine*	Metsulfuron + 2,4-D Amine
6	2,4-D Amine*	2,4-D Amine
7	Metsulfuron*	Metsulfuron
8	Metsulfuron* + 2,4-D Amine*	Metsulfuron + 2,4-D Amine
9	Hi-Yield Atrazine Weed Killer	Atrazine
10	Pendimethalin	Pendimethalin
11	Specticle Flo	Indaziflam
12	Fertilome Weedout & Crabgrass Killer	2,4-D Amine + Quinclorac + Dicamba
13	Metsulfuron* + Specticle Flo	Metsulfuron + Indaziflam
14	Metsulfuron* + Hi-Yield Atrazine Weed Killer	Metsulfuron + Atrazine
15	Metsulfuron* + Pendimethalin	Metsulfuron + Pendimethalin
16	Gordon's Trimec Speed	2,4-D Ester + Mecoprop + Dicamba

*Note: Metsulfuron and 2,4-D are both sold under numerous brand names

Weeds present at time of application: white clover, fescue, spring beauty, cudweed, curly dock, Broomsedge, Carolina geranium, dandelion, wild garlic, henbit, chickweed, plantain species, mustard species, annual bluegrass, buttercup, purple deadnettle, little barely, and ryegrass.

General Weed Control Ratings: **Scale**: **0**= no control **10**= excellent control **S**= suppression **NA**= not present

Plot #	Product Name	Rate	Broadleaf 4/14/23	Garlic 4/14/23	Broadleaf 6/13/23
1	Fertilome Weedout & Crabgrass Killer	3.2 ounces/1000 sq. ft.	S	0	6
2	Gordon's Trimec Speed	3.0 ounces/1000 sq. ft.	S	0	5
3	Metsulfuron*	0.5 ounces/acre	9	S	9
4	2,4-D Amine*	2 pints/acre	1	0	8
5	Metsulfuron* + 2,4-D Amine*	0.5 ounces + 2 pints/acre	9	S	9
6	2,4-D Amine*	4 pints/acre	S	0	7
7	Metsulfuron*	1.0 ounces/acre	9+	9	9
8	Metsulfuron* + 2,4-D Amine*	1.0 ounces + 4 pints/acre	9+	NA	9
9	Hi-Yield Atrazine Weed Killer	8.6 ounces/1000 sq. ft.	7	0	8
10	Pendimethalin (granular preemergence)	74 ounces/1000 sq. ft.	0	0	8
11	Specticle Flo (preemergence)	10 ounces/acre	0	0	8
12	Fertilome Weedout & Crabgrass Killer	6.4 ounces/1000 sq. ft.	2	0	7
13	Metsulfuron* + Specticle Flo(preemergence)	0.5 ounces + 10 ounces/acre	9	S	9
14	Metsulfuron* + Hi-Yield Atrazine Weed Killer	0.5 ounces + 8.6 ounces/1000 sq. ft.	10	8	10
15	Metsulfuron* + Pendimethalin (granular)	0.5 ounces + 74 ounces/1000 sq. ft.	S	S	4
16	Gordon's Trimec Speed	6.0 ounces/1000 sq. ft.	2	S	8

Discussion & Results:

Combination products (plots 1, 2, 12, & 16) were used at a half-rate and at full rates. The half rate was to show what happens when the label isn't followed. Neither product nor rate seemed to work very well when observed in April. This is likely due to active ingredient per pound of materiel being lower in these type products. Both rates did have at least 50% control of broadleaf weeds by the June 13th rating, likely because many winter annuals broadleaf weeds have died by this time in the summer, whether they are treated with a herbicide or not.

Metsulfuron and tank mixes of Metsulfuron and 2,4-D amine consistently controlled over 90% of broadleaf weeds. Atrazine alone (plot #9) controlled over 70% of broadleaf weeds, but when combined with Metsulfuron (plot #14), broadleaf weed control was 100%. Plot #14 also stayed surprisingly free of broadleaf weeds well into summer. Also, Metsulfuron at the 1 ounce/acre rate reduced wild garlic/onion by 90%.

Both Indaziflam and Pendimethalin seemed to work equally well as a preemergent herbicide in terms of summer weeds controled. However, the combination of Specticle Flo (indaziflam) tank mixed with Metsulfuron (Plot #13) controlled 90% of the broadleaf weeds and maintained a cleaner plot well into the late summer, than did Pendimethalin combined with Metsulfuron.

Pictures taken of all plots in this demonstration can be found here:
https://app.box.com/s/st27s117jhdpl838yblm8ccs3sxxhvjb

Pictures taken of all plots in this demonstration can be found here:
https://app.box.com/s/st27s117jhdpl838yblm8ccs3sxxhvjb

3/29/23

6/13/23

Plot #14- Metsulfuron + Atrazine

3/29/23

6/13/23

Plot #13- Metsulfuron + Indaziflam

Pictures taken of all plots in this demonstration can be found here:
https://app.box.com/s/st27s117jhdpl838yblm8ccs3sxxhvjb

Pictures taken of all plots in this demonstration can be found here:
https://app.box.com/s/st27s117jhdpl838yblm8ccs3sxxhvjb

3/29/23

6/13/23

Plot #15: Metsulfuron + Pendimethalin

3/29/23

6/13/23

Plot #2: 2,4-D ester + Mecoprop + Dicamba (1/2 rate)

Pictures taken of all plots in this demonstration can be found here:
https://app.box.com/s/st27s117jhdpl838yblm8ccs3sxxhvjb

2023 Pumpkin Variety Trial

Investigators: Dr. Aaron Cato, Dr. Amanda McWhirt

Partnering: Scatter Creek Berries & Produce
Jimmy, Frank, & Jackie Williams & crew

Objectives:

Evaluate pumpkin variety performance and yield potential. Monitor variety pest tolerance, particularly for powdery mildew and melonworm. Observe marketability differences for various colors and sizes of pumpkins.

Site:

-Scatter Creek Berries is in the northern part of Greene County, near the western edge of Crowley's Ridge. The test field was located next to the Farm Store, providing great publicity, and viewing by patrons to the store / farm.
-The soil type was a Loring silt loam, with a slight, natural drop from the top to the bottom of the field.

Plant Pickup:

-Dr. Aaron Cato provided pumpkin transplants that were started in the UADA greenhouse at the SWREC.
-Transplants were picked up at the UADA State Extension Office in early June.

Production System – Plasticulture Raised Bed:

-Conventional tillage was used to prepare the test site in early June.
-A 40 inch raised bed was formed with a commercial bedder at planting time.
-Drip tape, and white plastic (48") mulch, were installed with the bedder.

Planting Day & Experimental Design:

-The test pumpkins were planted on June 13th
-4 cultivars were in the trial (Dynasty, Justify, Spicy Mocha, and Moonshine).
-Five plants of each cultivar were planted in the same row, 40 inches apart.
-Rows were 9 feet apart

Fertilizer:

-Fertigation was used to spoon feed the vines.
-At planting 10 units of N (nitrogen) was applied. In week 2, 20 units of N was used. For week 3, 40 units of N was put out with the drip irrigation system. The vines continued to receive regular fertigation applications.

Irrigation:

-Raised beds provided good internal drainage.
-Drip irrigation was used most weeks, which was much needed during the dryer parts of the season.

Weed Control:

-Plastic mulch was very effective in suppressing weed germination in the plant rows/ beds.
-An application of metolachlor made between row middles at planting, along with an early season hooded application of paraquat on the plastic edges, kept the field clean for several weeks.
-Late in the season, some weeds (crabgrass, carpetweed, pricky sida) broke through in the row middles.
-These late weeds may have resulted in some minor competition with the vines for nutrients and water, however, they were somewhat beneficial, helping shade the growing fruit late in the season.

Insect Control:

-No insects problems were seen in the Greene County trial.
-No melonworms were found in the test.
-At planting, imidacloprid was used to control spotted cucumber beetles. They need to be managed since they serve as a vector for cucurbit bacterial wilt.
-In early July, a shot of Coragen was applied to help prevent problems with squash vine borer and melonworm.

Disease Control:

-Disease pressure was very light.
-Plasticulture and drip irrigation were very helpful in combating development of foliar diseases.
-A preventative fungicide spray program was also a key factor in slowing down development of foliar diseases.
-A couple of Quadris applications went out in July, followed by a Luna application in early August.
-At harvest time, just a trace of powdery mildew was noticed in the Dynasty test row.

Production Observations:

-During the first couple of weeks of development, the farmer's check variety transplants (he started them in his hoop house) were much more vigorous than the UADA transplants.
-The UADA transplants may have been stressed from moving them from the greenhouse where they were started in SW Arkansas, all the way to NE Arkansas test site.
-The UADA transplants did finally take off and grew well after a few days of being acclimated.

-Within a month (July 11) of planting, the trial plants were beginning to bloom.
-By early August all the vines had small pumpkins.
-By early September the pumpkins were beginning to turn color and mature.
-From transplant date to harvest date was 80 days for this trial site

Harvest Notes:

-All trial pumpkins were hand harvested on September 13th.
-Fruit was divided into ripe (marketable) and unripe.
-Each ripe pumpkin was weighed with a digital scale, checked for melonworm damage, and evaluated for marketability.
-For each variety in the trial, total ripe fruit, average number of ripe fruit per plant, total unripe fruit, and average number of unripe fruit per plant were recorded.
-We also documented total pounds of ripe fruit, total pounds of ripe fruit per plant, and average ripe fruit size (pounds), for each variety in the trial.
-Crop value for each variety was also estimated based on number of ripe fruit to sell, and market price for each type (jack, unique, kiddie) of pumpkin grown.

Summary & Results:

-All the plants in the trial at Scatter Creek Berries & Produce did excellent, due in large part to timely management by the producer with irrigation, fertilizer applications, and following a timely pesticide treatment schedule.

-No significant insect or disease problems were seen, including melonworm. Controlling late season weeds between row middles might have improved crop yields, but would be difficult to do with a vining crop.

-Dynasty, the jack-type test variety, performed better than the other jack entry (Justify) at this test site. Dynasty produced more ripe fruit per vine than Justify (2.2 versus 1.8 pumpkins per plant, respectively), as well as larger pumpkins (17 versus 14 pound average fruit size, respectively). Both jack varieties had a traditional orange color and were about basketball size.

-Spicy Mocha did very well in the trial! It was a smaller, volleyball size variety, that had a creamed coffee color, and was more round in shape compared to the Jack entries.
-Spicy Mocha averaged 2.6 ripe fruit per plant and averaged 11 pounds per pumpkin. The producer considered this a unique type pumpkin, and sold it for a premium compared to the jacks.

-Moonshine was a tiny white pumpkin that averaged 6 pounds per pumpkin, and 2.4 pumpkins per plant, for this trial. The producer already grows another kiddie type white pumpkin that does well for him.

-Considering gross economic returns per acre, Dynasty penciled out to be the most profitable jack in the trial, but was edged out for the top spot on returns by Spicy mocha (averaged more pumpkins per plant and sold for a premium as a unique type).

-Moonshine showed the lowest gross returns, mostly due to its lower sales price ($4/pumpkin), coupled with a similar number of pumpkins grown per plant, as Dynasty and Spicy Mocha.

-Note, the differences discussed in this summary are just observations, and not statistically significant, since this was not a replicated trial.

-Also note that gross returns in table 1 do not take into account the large amount of fixed and variable costs it takes to grow a specialty crop. Net returns per acre would be a small fraction of the gross returns listed in this summary.

University of Arkansas, Division of Agriculture
Greene County Cooperative Extension Service

2023 Pumpkin Variety Trial
Scatter Creek Berries & Produce

Table 1: Fruit Yields & Estimated Crop Value

Planting Date: June 23rd Harvest Date: September 13th

Variety	Total Plants	Total Ripe Fruit	Average Number Ripe Fruit Per Plant	Total Unripe Fruit	Average Number Unripe Fruit Per Plant	Total Pounds Ripe Fruit	Total Pounds Ripe Fruit Per Plant	Average Ripe Fruit Size Pounds	$ Value Per Ripe Fruit	$ Value Per Plant	$ Value Per Acre
*Dynasty	5	11	2.2	4	0.8	184	36.8	16.7	$6.00	$13.20	$19,130
Justify	5	9	1.8	4	0.8	130	26	14.4	$6.00	$10.80	$15,652
Spicy Mocha	5	13	2.6	0	0	148	29.6	11.4	$6.00	$15.60	$22,609
Moonshine	5	12	2.4	0	0	67	13.4	5.6	$4.00	$9.60	$13,913
Average	5	11.3	2.3	2	0.4	132	26.5	12.0	$5.50	$12.30	$17,826

*Dynasty was the the producer's check variety. We compared yields and market value of it to the other 3 UADA varieties in the test.

Greene County Master Gardeners Celebrate 25 Years in 2023

Celebration Program Chair: Kathy Graber ***GCMG President:*** Vicki Griggs

Celebration Program – Key Contributors:

Josh Agee, Randy Forst, Colin Hester, Kathy Graber, Angela Loveless, Rusty McMillon, Stephannie Rodrigues, Katie West, and several current GCMG members, including 9 Lifetime members.

Objective: Reflect on the people, projects, programs, and accomplishments for the Greene County Master Gardeners (GCMG) since they began in 1999. The effort also helped to promote the current GCMG program, to aid in recruiting more members.

Plant Sale – Celebration Main Event:

The opening day of the Paragould Farmers Market was May 13th at the new Paragould Community Pavilion. The GCMGs partnered with local leaders to conduct their annual plant sale at the market. They also took advantage of the opportunity to conduct their main GCMG 25 Year Celebration Event.

Kathy Graber, the GCMG Celebration committee chair, was able to schedule several key leaders to speak at the Celebration Event at the market. They included Paragould Mayor, Josh Agee, Arkansas Extension Educator-Consumer Horticulture & State Master Gardener Advisor, Randy Forst, & Greene County Judge, Rusty McMillon.

After the key address, the program continued with Kathy Graber giving a workshop on making hypertufa planters, followed by Colin Hester with an update about the GCMG Youth Teaching Garden.

While the main celebration program was going on, some 20 GCMG members helped serve over 1000 residents attending the opening day of the farmers market. They were able to visit with shoppers about plant selection and care, while raising funds to support the GCMG program.

Social Media Efforts:

The GCMG 25 year celebration was spotlighted several times using social media. Posts were made on the Greene County Master Gardeners Facebook page and Greene County Extension Facebook page. Stephannie Rodrigues and Katie West lead this charge! Several other members contributed with posts, comments, and pictures.

Awards Show Quality GCMG Program Over the Years:

Each year Master Gardeners throughout Arkansas turn in applications to compete for key awards like Master Gardener of the Year, Rookie of the Year (new members), Project of the Year, Friends of Master Gardener, and Newsletter of the Year.

In each of these categories Greene County has been very competitive, winning at the state level several times! This documents the quality of local GCMG programs, along with strong support & partnership from local businesses, organizations, and individuals!

*Greene County Master Gardener Award Records**

Year	Master Gardener	Rookie	Project	Friend-Business	Friend-Individual	Other
2023	Julia Wyss	NA	Greene County Library	Scatter Creek Berris & Produce	Jim Kashak	Excellence in Education-Fall Garden Seminar
2022	**Richard Yeazel	**Colin Hester	Teaching Garden	Rogers Greenhouse	Mindy Tritch	Excellence in Education-BBL
2021	Vicki Griggs	**Stephannie Rodrigues	Plant Sale	Paragould Chamber of Commerce	John Clark	**Agent - Lance Blythe
2020	Richard Yeazel	Channon Kelley	Old Herb Garden	Hedgers Brothers	**Jim Howard	**Excellence in Education-Teaching Garden
2019	Pauletta Tobey	Angela Loveless	Caboose	**Lowes #2847	**Sue McGowan	
2018	Linda Glickert	Vicki Griggs	Caboose	**Main Street Paragould	Dusty Kennemore	**Greene Garden News
2017	Joy Gatlin	Sue Gilmartin	**Rainbow Garden	NA	NA	
2016	Donna Jones	Libby Christie	South Sign	First Natl Bank	Dusty Kennemore	**Greene Garden News
2015	**Kathy Graber	**Bonnie Hamilton	**Greene Co Fairgrounds	Greene Co Fair Board	Diana Brummett	
2014	**Connie Whitman	Pauletta Tobey	Garden Explosion	Dennis's Treasure Chest	**Bob Branch	
2013	NA	NA	NA	NA	NA	**Greene Garden News
2012	NA	NA	NA	NA	NA	
2011	NA	**Tabitha McFadden	NA	NA	NA	Agent-Chris Elkins, Greene Garden News
2010	NA	NA	NA	NA	NA	
2009	Dr. James Laird	Kenneth Fletcher	Veterans War Memorial		Larry Vickers	
2001			Habitat for Humanity			

*Thanks to current and past members who helped apply for, and compile, the Greene County Master Gardener award records.

**State Winners

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

MASTER GARDENER

Greene County Master Gardeners - Member Records**

1999*
Donna Jones
Jack Howe-2017
Lissa Tabor
Jennifer Bouldin
Rex Bouldin-2012
Frankie Gilliam
Dee Lindsey
Karen Ryan
Paul Smith
Catherne Eubanks-2008

2000
Holly Fletcher
Patti Roberts
Sandra Swanner
Bob Branch
Tori Borne
Kaye Brewer
Mickey Brewer
Patty Camp
James Cole
Judy Cole
George Cook
Edith English
Betty Hays-2018
Frieda Kelly
Bill Pettit

2001
Susan Youngblood
Marilyn White
Gina Jarrett
Charlotte Morey
Hollie Blair

2002
Martha Chiles
Joy Gatlin-2022
Sue Carver
Judy McGrath
David Mason
Tracy Mason
Frankie Jetton
Sharon Gilbert
Gary Copeland

2003
Cora Flanery
Mary Weidman-2022
Fionnuala Anderson
Carol Moseley
Kim Horner
James Brown
Sharon George
Tammie Gilmore
Sherry Dodds
Gary McClure
Bonnie Wyatt-2015

2004
None trained

2005
Connie Whitman
Kim Shaver
Neva Shewmaker

2006
Kathryn Pecan
Sharon Dachs
Jeremy Dachs
Peggy Trail

2007
James Laird-2019
Phillip Garland
Larry Burton

2008
Kathy Graber
Jean Crossno
Kenneth Fletcher-2020
Alice Barron
Marc Reeves
Cheryl Bryant

2009
Wayne Bryant
Mary Justice
Carolyn Palmer-2022

2010
Wanda Howerton

2011
David Jones
Betty Crawford-2023
Tabitha Trowbridge
Judy Whitworth-2019
Winfred Roach

2012
None trained

2013
Ann Bowers
Eric Alexander
Andrew Miller

2014
Tacie Huffman
Becky Kerby
Sally Mugford
Sybil Stratton
Pauletta Tobey
Katherin Wright

2015
Brenda Barr
Linda Glickert
Bonnie Hamilton
Richard Yeazel

2016
Libby Christie
Sue Gilmartin
Nancy Rogers

2017
Hannah Allen
Debbie Walters

2018
Vicki Griggs
Z-Sue Rowton
Z-Bonnie White

2019
OL-Jessica Beaird
OL-Angela Lovelace
OL-Desiree Peters

2020
OL-Stephannie Rodrigues
Channon Blagg
OL-Margaret Eckhout
OL-Julia Wyss
OL-Robbie Wells

2021-All OL
Colin Hester
Brenda Hester

2022
None trained-Class not offered

2023-Year 25-All OL
Alyssa Blakeney
Kenneth Edman
Danielle Farmers
James Fraser
Leach Freeze
Kristie Glass
Sarwat Khan
Reesie Tritch
Shaylee Smith

Over 120 local Master Gardeners have been trained since 1999 to serve as UADA Greene County Extension volunteers, providing horticulture beautification and educational programs.

Active member

Lifetime member

*1999 - Greene County Master Gardener Program Started with By-Laws.

**Pre-By-Laws Greene County Residents trained as Master Gardeners 1997-Marilyn Burke, Garry Johnson
1996-Norma Addison, Connie Field, Hannah Freeman, Greta Jerrigan, Donna Singleton

So Many Wonderful Volunteers from 1999 – 2023!

Congrats on 25 Years Greene County Master Gardeners!

Lifetime Members Recognized:

Currently the GCMG program has 9 Lifetime members. These individuals have contributed their time, talents, resources, and input for over 15 years as Greene County Master Gardeners! Some have even passed the 20 year mark as Master Gardener Volunteers!

Our Lifetime members include Martha Chiles, Jean Crossno, Cora Flanery, Sue Gilmartin, Kathy Graber, Donna Jones, Patti Roberts, Marilyn White, and Susan Youngblood. A special thank you goes out to these dedicated folks!

2023 Small Ruminant Workshops

Contributors: Dr. Eva Wray, Bruce Carr, Josh Carr, Dr. Dan Quadros, Dr. Jerica Rich, Steven Copeland DVM, Dr. Donald "Bud" Kennedy, Dale McClelland, ASU Farm Staff, Greene County Fair Board

Sponsors: Sugar Creek Ranch, SMART Reproduction, ASU Jonesboro, Delta Livestock Diagnostics

Situation: Small ruminant production is increasing in our area due to growing market opportunities and potential profits. This has led to a rise in interest in small ruminant production.

Objective: In response to producer requests we conducted two workshops during the 2023 program year to help them learn more about small ruminant production.

Trainings: The first workshop was held at the Greene County Fairgrounds on Saturday, October 8th, 2022. The following topics were covered: Parasites & Parasite Control Options; Proper Fecal Sampling and Sample Handling; FAMACHA; and Body Condition Scoring. Over 20 producers were in attendance and received both lecture and hands-on learning opportunities. Producers were very engaged, and their interest led to requests for more programs. So, an additional event was held in May of 2023.

On Saturday, May 20th, 2023. the Northeast Arkansas (NEA) Small Ruminant Workshop was conducted at the Arkansas State University Farm Complex in Jonesboro. This event was initially slated to be held in Greene County, but due to scheduling conflicts had to be moved. This worked well as extension had just hired a new small ruminant specialist, Dr. Dan Quadros, and he had plans to start some programming in NEA. So, we worked together and met with the Arkansas State University (ASU) Animal Science Department to propose working together to host a workshop. ASU was very receptive and great to work with through the whole process. They provided the animals, equipment, classrooms, and lab facilities for the day.

Topics covered at this day-long training included:

- Animal Selection
- Hoof Care
- General Animal Health & Nutrition
- Forage Options
- New FDA Regulations
- Fecal Egg Count Demonstration
- FAMACHA Soring
- Parasite Management
- Fencing Considerations
- Body Condition Scoring
- Breeding Soundness Exam
- Fecal Sampling & Handling
- Diseases and Vaccinations
- and more…

Forty-six (46) people pre-registered for the workshop and we ended up with thirty-two (32) people in attendance the day of the event. Attendees were split into two groups that rotated between two separate morning sessions conducted by Dr. Dan Quadros- UADA Small Ruminant Specialist and Dr. Eva Wray- Livestock Parasitologist- U of A Department of Animal Science. After lunch two additional sessions were covered by Dr. Jerica Rich- Reproductive Physiologist- Assistant Professor ASU Department of Animal Science, and Health Management was covered by Steve Copeland- DVM- Veterinary Healthcare Clinic. Participants were provided take-home educational materials from each presentation and were able to participate in some hands-on learning sessions.

Results:

Attendees were asked to fill out a digital survey and the results are below.

1) Please rank the following:

Presentations:	Poor (0%)	Good (15%)	Very Good (42.5%)	Excellent (42.5%)
Facilities:	Poor (0%)	Good (0%)	Very Good (50%)	Excellent (50%)
Lunch:	Poor (0%)	Good (20%)	Very Good (50%)	Excellent (30%)

2) Strongest aspect of the workshop?

29% Deworming options; Barber Pole worm info.; parasites; fecal sampling process

21% Amount of information and research shared

21% Great information; enjoyed it all; Was good for beginners and experienced

29% Other: Networking; info. on reproduction; the cooperation; session layout

3) How could we improve the workshop?

33% More on vaccination timing; worm prevention; more about FAMACHA; a vaccination schedule

25% More in-depth; more advanced field day; separate training for beginner and advanced

16% More hands-on activities

25% Other: More handouts; better directions; more time; have more field days

4) Please share any other comments about the workshop.

Good food selection; Good program; A copy of all presentations would be great; Thanks for putting this together; Thanks for putting on; Great day! loved it!!

Summary:

Numerous networking opportunities have resulted from bringing these producers together and providing this educational program. Several producers have started raising small ruminants since these programs, while others have expanded their enterprise and are doing well. We look forward to the opportunity to support small ruminant producers in NEA in the years to come.

2023 Hay Show & Contest

Cooperators: Greene County Hay Producers

Investigators: Dr. Shane Gadberry, Kenny Simon, & Lance Blythe

Partners/Sponsors: Legacy Equipment, GreenPoint Ag, Greene County Fair Board, UADA Agriculture Diagnostic Lab

Objective: Provide an opportunity for producers to know the quality of their hay, understand what factors influence that quality, and to set hay quality production goals based on animal nutrient requirements &/or customer requests.

Testing Method: Hay samples were pulled on August 18th using a Star Quality brand, push-type forage sampler. Twenty-five to thirty sample cores were pulled from each lot of hay entered. Samples were bagged, labeled, then sent to the UADA Agriculture Diagnostic Lab in Fayetteville. Only warm season grass hay was accepted for the contest.

Ranking Method & Results: Samples results were ranked using a composite calculation utilizing crude protein (CP) percent and total digestible nutrients (TDN) percent. The total composite score was weighted at 30% for CP and 70% for TDN. See table below for results.

SAMPLE	PRODUCER	CP%	ADF%	NDF %	TDN%
30913	Allen Davis	15.5%	31.2	61.9	62.3
30915	Skylar Rowe	17.6%	33.5	65.5	61.9
30907	Denny Harbison	15.9%	33.1	67.7	61.4
30918	Producer #4	15.5%	36.0	64.9	59.5
30917	Producer #5	12.3%	34.3	61.0	59.0
30919	Producer #6	12.6%	36.0	64.2	58.1
30910	Producer #7	10.1%	33.8	65.1	58.3
30916	Producer #8	10.6%	36.3	69.2	57.0
30906	Producer #9	6.6%	32.5	61.8	57.4
30914	Producer #10	11.7%	37.6	69.4	56.7
30912	Producer #11	7.6%	33.8	61.3	57.1
30911	Producer #12	8.5%	34.9	63.5	56.9
30908	Producer #13	8.5%	37.9	71.9	55.1
30909	Producer #14	10.5%	40.1	71.0	54.7
30920	Producer #15	8.4%	39.4	64.2	54.1

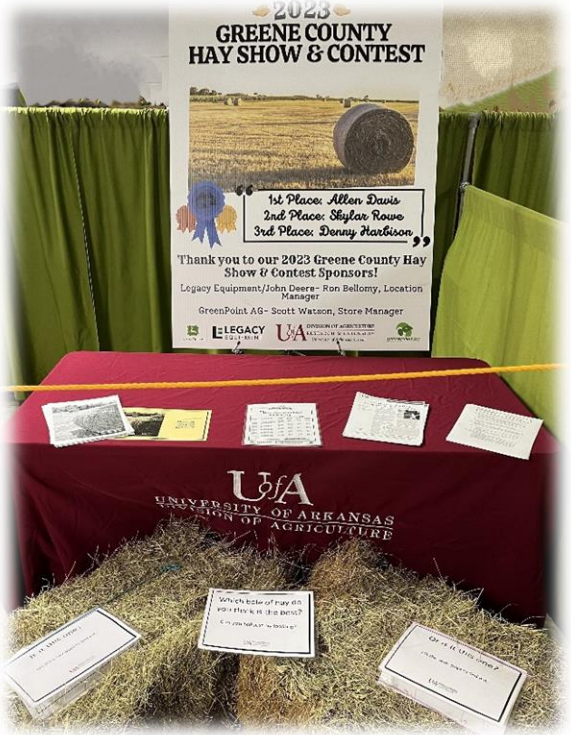
Results & Discussion: There was a relatively wide variation in test results. Crude Protein ranged from 6.6% - 17.6% and TDN from 54.1% – 62.3%. The variation in nutrient content of these samples was influenced by several factors such as drought, fertilizer rate, conditions at harvest, forage pests, etc. However, no factor influenced the nutrient quality of hay more than stage of plant maturity at harvest.

All samples with TDN over 60% would meet the TDN requirements for a 1,100-pound cow with 18-pound peak milk production at any stage of production throughout the year. With this hay, no supplemental energy should be needed to maintain cow body condition. Additionally, samples over 11.5% CP would meet crude protein requirements in this scenario. The range of results from this year's samples are a great example of why forage testing is important.

If you would like to see how your hay would meet cattle, sheep/goats, or horse nutritional requirements, check out this link: https://forageadvisor.uada.edu

To learn more about how your hay would meet the nutritional needs of cattle at other production stages, check out this publication: https://www.uaex.uada.edu/publications/pdf/MP391.pdf

Educational Component: During the Greene County Fair, the top three contest winners were announced and test results were posted at an educational display. Attendees of the County Fair could also try their hand at visually picking the best bale of hay.



We were pleased that this program continues to keep the conversation going related to the factors that can affect hay production and hay quality. Most producers seemed pleased with yields this year, but struggled a bit with quality due to drought, then heavy rainfall, and ultimately the maturity of forages at harvest.

Congratulations to this year's winners and a special thanks to our sponsors! The sponsors made this contest possible at no cost to producers and some nice prizes were handed out as well!

2023 Poultry Litter Study – Greene County – Year 3 Results, & 3 YR Summary

Investigator: Dr. Mike Daniels, Jace Clark, Clint Mangrum, Eric Simon, Lance Blythe

Producer: Distretti Farm (Johnny, Nathan, Ryan) ***Consultant:*** Mike Simmons

Location: Walcott, AR ***Soil Series:*** See Table 1

Background:

Poultry litter (PL) is a byproduct of broiler production. It is in high demand for row crop producers and ranchers in Northeast Arkansas (NEA). They use it on their crop and hay fields, and pastures.

There is a strong demand for PL due in part to its nutrient value. For prices currently being paid for PL in NEA, the cost per unit of NPK is often comparable (depending on litter quality) to what producers pay for an equivalent amount of nutrients from commercial fertilizer.

Nutrient runoff from using poultry litter as a soil amendment should be monitored to avoid detrimental environmental impacts. Protection of ground and surface waters from excess nutrient (nitrate, phosphate) runoff is of utmost importance to maintain a safe water supply.

Objective:

Study environmental & production impacts of using poultry litter as a soil amendment to supply nutrients for row crop production in Northeast Arkansas. Evaluate yield impact, crop nutrient use, and soil chemical and physical status when poultry litter is substituted for commercial fertilizer.

Demo Setup:

The project was conducted for 3 years (2021-2023). Nearby fields with similar soil type, crop rotation, and management, received different rates of poultry litter annually. Litter rates evaluated were 1.0, 1.5, 2.0, and 2.5 tons per acre (TPA).

Project fields were monitored for changes in organic matter (OM), nutrient levels, and crop yields.

Grid soil samples (1 per acre) were taken each spring with an automated sampling machine, to determine OM and nutrient levels. The samples were analyzed at the UADA diagnostic lab.

Samples of each lot of poultry litter used on project fields were collected each year. They were sent to the UADA diagnostic lab for nutrient analysis.

Crop yields for each field were determined using farm records each year of the study. Combine yield monitor data was used to generate yields maps.

Planting & Production Practices:

The 4 fields at the Distretti Farm study site are near each other and generally follow a corn-soybean crop rotation. Cover crops (mostly wheat & crimson clover) were used on the project fields the last few years, including from 2021-2023. The main soil series varies by field, but they all have a silt loam soil texture.

In 2023, the Brown32 and Potter fields were planted notill to RR2LL corn in mid April. The Massey field was planted notill to XF soybeans in early May. The West field was double cropped with wheat. It was planted notill to XF soybeans after wheat harvest in early June. This was the third year for the project fields to receive litter applications.

Soil Test Results:

Grid soil samples were taken in the Spring before planting. Lab results (field averages) for OM were similar (1.7-2.2 %) for all 4 fields.

Soil test P levels were optimum-above optimum for the Brown, West, and Massey fields (41, 81, and 34 PPM (parts per million per acre)) respectively. Phosphorus fertilizer was not recommended for these fields. The Potter field tested at a medium level for P, and 70 units of P fertilizer was recommended for corn production.

Soil test K levels were generally in the low range for all 4 fields (range from 59-95 PPM). For the corn fields, 120 units of K fertilizer was recommended for the Potter field, and 160 units for the Brown32 field. For the soybean fields, 80 units of K fertilizer was recommended for the West field, and 120 units for the Massey field.

Poultry Litter Results:

Composite litter samples were collected in early April from litter piles being stored for each of the project fields. The litter was custom broadcasted in mid April. It did not get incorporated since the producer was using a notill system. Note that the West field did not receive its litter application until June, after wheat harvest.

The Brown32 and Potter corn fields received 1.0, and 2.0 tons of litter per acre (TPA), respectively. Litter analysis (average for piles used on each field) for these two fields came back at 18-29-21 (N-P2O5-K20), and 24-33-26 per ton, respectively.

The West and Massey soybean fields received 1.5, and 2.5 TPA litter, respectively. Litter analysis for these two fields came back at 24-44-18, and 25-41-23 per ton, respectively.

The litter samples for all 4 project fields had very low analysis results for N (range from 18-25 #/ton). These N levels were much lower than we generally see for litter samples that are sent to the lab from the Greene County Extension office (55-55-60 average for N-P2O5-K2O from 2019-21).

P2O5 levels for litter samples this year were also all very low, in the 30-40 #/ton range. K20 litter levels also had very low analysis averages for the litter used on all 4 projects fields (range from 18-26 #/ton).

Commercial Fertilizer Used:

Variable rate application was used to put out commercial K fertilizer on all 4 project fields before planting.

Considering commercial P fertilizer, the Potter field received 80 units of P, the Brown and Massey fields in the 25 unit range, and the West field, none. Looking at K fertilizer applied, The West field got 60 units of K, while the 3 other project fields were in the 120 unit range for K fertilizer received.

Split applications were used to supply corn with N fertilizer. Both the Brown and Potter fields received a season total of 225 units of N from commercial fertilizer. For the West field being doublecropped, 150 units of N was used the wheat crop.

Yield Results & Nutrient Removal:

Yields were determined using yield monitor data for each field.

Checking corn yields, surprisingly, the Brown32 field which received a 1 TPA litter rate made 217 bushels per acre (BPA), while the Potter field with 2 TPA litter cut 196.

Similar yields were seen on the 2 soybean fields this year. The West field which received a 1.5 TPA litter rate made 54 bushels per acre (BPA), while the Massey field with 2.5 TPA litter cut 57.

Nutrient removal from the field in the form of the grain harvested, was calculated using grain content estimates in UADA Fact Sheet (FSA2176), Estimating Nutrient Removal for Row Crops Grown in Arkansas.

Grain in a 200 BPA corn crop removes an estimated 134, 70, and 50 pounds of N-P2O5-K2O per acre. Oilseed in a 55 BPA soybean crop removes an estimated 182, 40, and 66 pounds of N-P2O5-K2O per acre.

Nutrient Balance Chart

In Table 1. Nutrient Balance Chart (NBC), we have attempted to show the amount of nutrients put into the soil bank each year (litter & fertilizer), the amount of nutrients leaving the soil bank with grain harvest, and the net balance at the end of the year. This should help us determine whether we are raising or lowering the soil test level for a nutrient, depending on whether there was a net positive or negative balance for that nutrient for the year.

At the Distretti Farm site, the NBC shows for P2O5, we ended up with a net gain (range of 27-86 #/A) for 3 fields (West, Potter, & Massey) at the end of year. Enough P was supplied to meet the needs to grow the crop, and extra was available to help build the soil P level on these 3 fields. The Brown field with the lowest litter rate in the test, showed a 24 pound deficit for P in the NBC at the end of the season.

University Soil Scientists estimate (note there can be a wide range) it takes 15 pounds of net P2O5 at the end of the crop season to build up 1 PPM soil test P. The extra P2O5 on the Distretti fields should help slightly build the soil test P (a range of -2 to 6 PPM for the 4 fields).

Looking at K2O, the NBC shows we also had a net increase for this nutrient (ranging from 22-118 #/A) at the end of year. We would expect soil K levels to see some building. University Soil Scientists estimate (note there can be a wide range) it takes 8 pounds of net K2O at the end of the crop season to build up 1 PPM soil test K. Soil test K building for the 4 fields ranged from 3-15 PPM.

Discussion:

The Distretti Farm test site saw good corn yields and soybean yields for the third year of our study. Adequate nutrient (N-P-K) levels are a key factor for these top yields.

The farmer was able to meet the P and K nutrient needs of his corn and soybean crops, and potentially build soil test P and K levels by applying poultry litter on all 4 project fields, while using lower rates of commercial K2O fertilizer on all 4 fields.

From an environmental standpoint, one should pay close attention when using higher rates of P & K (litter plus commercial fertilizer). The higher rates could be beneficial to build soil test nutrient levels, but they could also lead to excess nutrient runoff from a field.

Soil sample results showed all 4 fields testing at a medium range or higher for P205, and generally low for K2O. Therefore, only a 70 unit shot of P2O5 fertilizer was needed on the Potter field in 2023. Considering K nutrition, applying K2O fertilizer (80-160 units/A range) was recommended for all project fields.

Considering the use of poultry litter, from an economic standpoint, using litter to supply some of the crop's P and K needs is likely a good move compared to using all commercial fertilizer. Both litter and commercial fertilizer work fine to provide a crops P and K needs, so using the source that costs the least (per combined nutrient value) makes good sense.

Checking with local retailers in April 2022, the cost per unit of N, P2O5, and K2O for commercial fertilizer (includes custom application) was estimated to be $1.08, $1.06, and $0.72, respectively. At that same time, an estimated average (factoring in a wide range) cost of poultry litter (including delivery to the farm and custom application) was in the $55 per ton ballpark.

Using the above figures, and considering the litter used at the Distretti test site had a ballpark 22-37-22/ton analysis, we can pencil out that the nutrient value (just P & K) of this litter was worth around $55 per ton.

University soil scientists suggest we can estimate 30-50% of the N in poultry litter to be available for a corn crop. The rest of the N can be lost via natural processes (leaching, volatilization, de-nitrification). If we use this estimate, to put a value on the N in this litter to our corn crop, it comes out to $10 per ton. The combined N-P-K nutrient value in this litter was in the $65 per ton range for corn production. Once again this was just an estimate for 2023.

Do note that most poultry litter samples that go to the lab for analysis through the Greene County Extension office come back in the 50-55-55 ballpark (there is a wide range). At these nutrient levels, the litter nutrient value ($125/ton) for corn is significantly higher than the estimated $55/ton cost for litter.

Another positive attribute to using poultry litter is its organic nature lending to slow release and the potential to add some organic matter and tilth to the soil. It has for many years been recommended to help build back precision leveled fields.

Summary:

This project helped show the importance of getting an analysis of the poultry litter you plan to use on your farm to know what level of nutrients it contains. One can then estimate the current economic value of his litter compared to commercial fertilizer.

Poultry litter can be used to substitute for some of the commercial fertilizer (P and K sources) used to grow row crops in NEA. In addition, one needs to be cautious on the amount of N their crop will get from using litter. With natural loss mechanisms for N, when using poultry litter in the spring, expect only 25-30% of the N to be available for a rice crop, and 30-50% to be available for upland crops (corn, cotton).

A Nutrient Balance Chart may be a good way to gauge if you are putting out way too much or too little of a particular nutrient. The chart could help a farmer make a better economic decision on how much combined fertilizer and litter to use for the season. The chart could also provide insight if way too much of a particular nutrient (N or P) is being applied for the season and potentially at risk for runoff which could lead to environmental concerns years down the road.

The project fields at this sight generally have medium-high levels of soil test P, resulting in no, to low rates of P2O5 fertilizer needed. However, for K, soil test levels are low-medium, and additional K2O fertilizer could help build soil K back up to an optimum level. One should also be careful not to use too much potash which might lead to salt problems in rice rotation or chloride toxicity for soybean production.

Trends Over Three-Year Project Period

Comparing organic matter levels at the beginning of the project (year 1) to the end of the project (year 3), there appears to be a trend for a slight increase in the OM levels for the Brown, West, and Potter project fields. In addition, the increase in OM for these fields was proportional to the PL rate used. The increase in OM levels for these three fields was .3, .4, and 1.1 for the 1, 1.5, and 2.0 ton PL rates, respectively.

The Massey field with the highest PL rate (2.5 TPA) held constant (1.7%) for its OM level each year. This field has a little lighter soil texture which could be a part of its slower response to build up of OM from the PL applications.

Observable differences to build up of OM in soils of the MidSouth will be subtle and slow. Higher temperatures and rainfall in this region speed up breakdown of OM compared to cooler soils in the Midwest.

We also evaluated the nutrient level changes over the life of the project. Considering P, soil test numbers stayed fairly consistent for each of the project fields and litter rates, hanging near an optimum level. Only the Potter and Massey fields were recommended a low rate of P fertilizer, in their rotation years to grow corn.

When considering K levels, we were surprised to see K soil test levels drop for each of the project fields from year 1 to year 3. No matter which litter rate was used the soil test K levels trended lower, generally falling in the low soil test range (60-90 ppm). Consequently, K fertilizer was recommended on each of the project fields each year of the study.

When one studies the nutrient balance chart (NBC) for this test, it shows that both P and K soil test levels should be building slightly. Each year there was extra P and K from the combined PL and commercial fertilizer applications for the project fields.

In addition, the NBC shows larger P and K residual numbers when the higher rates of PL are used on a field. For example, table 2 shows on the Brown32 field receiving a 1 TPA litter rate, the average rate of soil test P and K building should be 1 and 8 ppm, respectively. For the Potter field with a 2 ton litter rate, the P and K soil test building rate should be 6 and 14 ppm, respectively. We did not see these increases in yearly soil test results.

We also checked to see if higher crop yields were being seen with the higher litter rates, and as we got into the last year of the study. No definite trend was observed for corn or soybean yields. The soybeans generally produced in the 55 BPA range, while corn was around 200 BPA.

Considering yield, one exception was seen in a low corn yield (160 BPA) on the Massey field in 2022. Ironically this field had the highest litter rates (2.5 TPA), and potentially more P and K available.

We will end with a final comment about PL. N-P-K levels were all over the board depending on which lot of litter was being evaluated. In years one and two of the study, the nutrient value of the litter was pretty good. However, for year three, each of the 10 lots of litter analyzed by the UADA diagnostic lab, came back with low levels for all the primary nutrients (N-K-P). Make sure you test litter you intend to use each year!

U of A System, Division of AG, Cooperative Extension Service
2023 Poultry Litter Study - Greene County - Distretti Farm
Table 1: Nutrient Balance Chart

	"----------Field & Poultry Litter Rate - Tons/Acre----------"			
Soil Sample Results (SSR) - Field Average	**Brown32-1.0 ton/A** 32 acres	**West-1.5 ton/A** 28 acres	**Potter-2.0 ton/A** 18 acres	**Massey-2.5 ton/A** 37 acres
Primary soil series	Calloway SL	Calhoun SL	Hilleman SL	Oaklimeter SL
N #/A (Nitrate)	NA	NA	NA	NA
P PPM	41	81	31	34
K PPM	59	95	79	69
OM %	1.8	2.0	2.2	1.7
CEC	8	8	8	7
pH	6.8	6.4	6.0	6.1
UADA Fertilizer Recommendation				
Corn 200 bpa+ - N #/A	220		220	
Corn 200 bpa+ -P2O5 #/A	0		70	
Corn 200 bpa+ - K2O #/A	160	120	120	
Soybean - P2O5 #/A		0		0
Soybean - K2O #/A		80		120
Poultry Litter (PL) Applied (tons/acre)	1	1.5	2	2.5
Litter analysis - UADA lab - N-P2O5-K2O/ton	18-29-21	24-44-18	24-33-26	25-41-23
N # applied/A	18	36	48	63
P2O5 # applied/A	29	66	66	103
K2O # applied/A	21	27	52	58
Commercial Fertilizer (CF) Applied				
N # applied/A	225	150	225	0
P2O5 # applied/A - Field Ave variable rate	23	0	80	25
K2O # applied/A - Field Ave variable rate	115	60	115	120
Total Nutrients Applied (PL + CF)				
*N Total #s	243	186	273	63
P2O5 Total #s/A	52	66	146	128
K2O Total #s/A	136	87	167	178
****Yield & Grain Nutrient Removal**		Wheat 85 bpa		
Crop & herbicide trait group	Corn - RR2Y-LL	DC Soybeans - XF	Corn - RR2Y-LL	Soybeans - XF
Yield Bu./A	217	54	196	57
N # Grain removal	145	178	131	188
P2O5 # Grain removal	76	39	69	42
K2O # Grain removal	54	65	49	68
*****Net Nutriet Gain/Loss for Season**				
P2O5 # Net gain or loss	-24	27	77	86
K2O # Net gain or loss	82	22	118	110
******Soil Test P & K Build or Loss Estimate**				
P PPM	-2	2	5	6
K PPM	10	3	15	14

***Seasonal loss of N from leaching, denitrification, and volatilization, is highly variable, depending on crop, soil, weather, etc.**
**** Nutriet removal detemined using values listed in UADA Fact Sheet (FSA2176)**
*****Net gain/loss from soil amentments is much less than one expects due to nutrient dynamics (buffering, tie up) in the soil**
******UADA soil test guide suggests estimating 15#s of P2O5 fertilizer to build one PPM soil test P, and 8#s K2O fertilizer to build one PPM soil test K. These estimates come after subatracting grain nutrient removal first.**

U of A System, Division of AG, Cooperative Extension Service
2012-2023 Poultry Litter Study - Greene County - Distretti Farm
Table 2: Trends for Organic Matter, Soil Test P & K Levels, and Crop Yields

	Brown32-1.0 ton/A alloway SL - 32 acres				West-1.5 ton/A Caloun SL - 28 acres				Potter-2.0 ton/A Hilleman SL - 18 acres				Massey-2.5 ton/A Oaklimeter SL - 37 acres			
UADA Soil Test Lab Results	**3 YR Ave**	**2023**	**2022**	**2021**	**3 YR Ave**	**2023**	**2022**	**2021**	**3 YR Ave**	**2023**	**2022**	**2021**	**3 YR Ave**	**2023**	**2022**	**2021**
P PPM	42	41	46	40	68	81	52	72	43	31	54	44	35	34	32	40
K PPM	67	59	59	83	98	95	92	106	102	79	112	115	87	69	92	99
OM %	1.8	1.8	2.0	1.5	1.8	2.0	1.7	1.6	1.9	2.2	2.4	1.1	1.7	1.7	1.7	1.8
CEC	8.4	8.3	9.0	8.0	7.9	7.7	8.0	8.0	8.1	8.4	8.0	8.0	7.0	6.9	7.0	7.0
pH	7.0	6.8	7.3	6.8	6.6	6.4	7.0	6.5	6.0	6.0	6.1	6.0	6.2	6.1	6.2	6.3
UADA Fertilizer Recommendation																
Corn 200 bpa+ - N #/A		220		220			220			220		220			220	
Corn 200 bpa+ -P2O5 #/A		0		0			0			70		0			70	
Corn 200 bpa+ - K2O #/A		160		115		120	70			120		80			70	
Soybean - P205 #/A			0			0		0			0			0		0
Soybean - K2O #/A			160			80		75			75			120		75
Poultry Litter (PL) Applied (tons/acre)		"----- 1 ton PL / acre -----"				"----- 1.5 ton PL / acre -----"				"----- 2 ton PL / acre -----"				"----- 2.5 ton PL / acre -----"		
Litter analysis - UADA lab - N-P2O5-K2O/ton		18-29-21	49-59-71	15-71-24		24-44-18	30-60-48	55-55-61		24-33-26	37-52-73	46-72-43		25-41-23	48-58-67	47-52-54
N # applied/A	27	18	49	15	55	36	45	83	71	48	74	92	100	63	120	118
P2O5 # applied/A	53	29	59	71	80	66	90	83	105	66	104	144	126	103	145	130
K2O # applied/A	39	21	71	24	64	27	72	92	95	52	146	86	120	58	168	135
Commercial Fertilizer (CF) Applied																
N # applied/A	158	225	0	250	133	150	250	0	158	225	0	250	83	0	250	0
P2O5 # applied/A - Field Ave variable rate	28	23	0	62	15	0	0	46	50	80	0	70	28	25	0	59
K2O # applied/A - Field Ave variable rate	86	115	35	109	68	60	30	115	72	115	0	100	80	120	0	119
Total Nutrients Applied (PL + CF)																
*N Total #s	186	243	49	265	188	186	295	83	230	273	74	342	184	63	370	118
P2O5 Total #s/A	81	52	59	133	95	66	90	129	155	146	104	214	154	128	145	189
K2O Total #s/A	125	136	106	133	132	87	102	207	166	167	146	186	200	178	168	254
****Yield & Grain Nutrient Removal**						Wheat 85 bpa										
Crop & herbicide trait group		Corn	Soybean	Corn		Soybean	Corn	Soybean		Corn	Soybean	Corn		Soybean	Corn	Soybean
Yield Bu./A		217	59	239		54	190	57		196	52	219		57	160	57
N # Grain removal	167	145	195	160	165	178	127	188	150	131	172	147	161	188	107	188
P2O5 # Grain removal	68	76	43	84	49	39	67	42	61	69	38	77	46	42	56	42
K2O # Grain removal	62	54	71	60	60	65	48	68	55	49	62	55	59	68	40	68
*****Net Nutriet Gain/Loss for Season**																
P2O5 # Net gain or loss	14	-24	16	49	46	27	24	87	94	77	66	138	108	86	89	147
K2O # Net gain or loss	63	82	35	73	72	22	55	139	111	118	84	131	141	110	128	185
******Soil Test P & K Build or Loss Estimate**																
P PPM	1	-2	1	3	3	2	2	6	6	5	4	9	7	6	6	10
K PPM	8	10	4	9	9	3	7	17	14	15	10	16	18	14	16	23

***Seasonal loss of N from leaching, denitrification, and volatilization, is highly variable, depending on crop, soil, weather, etc.**
**** Nutriet removal detemined using values listed in UADA Fact Sheet (FSA2176)**
*****Net gain/loss from soil amentments is much less than one expects due to nutrient dynamics (buffering, tie up) in the soil**
******UADA soil test guide suggests estimating 15#s of P2O5 fertilizer to build one PPM soil test P, and 8#s K2O fertilizer to build one PPM soil test K. These estimates come after subatracting grain nutrient removal first.**

2023 Corn Hybrid Demonstration

Partnering: Derek & Royce Boling

Consultant: Shane Frost

Investigator: Dr. Jason Kelley

Ext. Agent: Lance Blythe / Dave Freeze

Location: Paragould

Soil Series: Calhoun Silt Loam

Objective: Accumulate yield, agronomic, and disease tolerance support data of corn hybrids entered in the U of A System, Division of Agriculture, county performance trials. Determine local yield potential and adaptability of commercially available hybrids.

Previous Crop: Cotton

Tillage, Planting, & Demo Setup:

Conventional seedbed prepared and planted on 30-inch beds on April 3rd. Included 18 hybrids - 8 rows of each planted.

Crop Development, Irrigation, & Weather:

Planting conditions were perfect this year and field was planted on April 3rd. There was a mild mid-summer drought, but was followed by some timely rainfall events in July & August. Pivot irrigation was used on this field.

Fertility & Pest Control:

At planting, a 60-46-80-12 was applied. Sidedress fertilizer (161-0-39-12) followed around the 5-leaf growth stage. At pretassel, 46-0-0 was applied. Total units of fertilizer for the season were 267-46-119-24.

Atrazine and Outlook were applied for weed control. Trivapro and Karate were used for disease and insect control.

Discussion & Results:

The plots were harvested on Aug. 30th. Yield data was collected using a weigh wagon and a moisture/test-weight meter provided by Adam Rawls with AgriGold. Yields were adjusted to 15.5% moisture (Table 1). Yields ranged from 233 to 269 bushels/acre. The average yield was 260 bushels.

Table 1: 2023 Corn Hybrid Demonstraion

Greene County Cooperative Extension Service

Grower:	Derek Boling, Royce Boling	**Investigator:**	Dr. Jason Kelley
Location:	Paragould/Greene County	**County Agent:**	Lance Blythe & Dave Freeze
Farm Manager:		**Consultant:**	Shane Frost
Planting Date:	April 3, 2023	**Soil Type:**	Calhoun silt loam
Harvest Date:	30-Aug-23	**Previous Crop:**	Cotton
Number Rows:	8	**Row Length x Width**	1200 ft. x 30 in.

Fertility: (lb/ac)	**N**	**P**	**K**	**S**	**Zn**
--- Preplant	60	46	80	12	0
--- Sidedress	161	0	39	12	0
--- Pretassel	46	0	0	0	0
Total Fertility:	267	46	119	24	0

Pesticides:
Atrizine
Outlook
Trivapro
Karate

Irrigation Type: Pivot **Number of Times:** Multiple

Hybrid	Adj. Yield[1] Bu/Acre	Acres	Weight	Yield	% Moisture	Test Weight	Plant Stand[2]	Lodging Score[3]
AgriGold 645-16	269.4	*0.550*	8,478	275.3	17.3	60.7	36,000	1
Progeny 2118	267.9	*0.550*	8,512	276.4	18.1	63.7	35,000	1
Pioneer 1718	267.4	*0.550*	8,644	280.6	19.5	61.0	36,000	1
Dekalb 70-25	266.7	*0.550*	8,476	275.2	18.1	60.9	34,000	1
Dyna-Gro 57VC53	266.5	*0.550*	8,522	276.7	18.6	62.9	35,000	2
AgriGold 646-30	265.6	*0.550*	8,400	272.7	17.7	62.3	36,000	1
Dekalb 66-06	265.4	*0.550*	8,474	275.1	18.5	61.8	35,000	2
Dyna-Gro 57VC29	265.0	*0.550*	8,514	276.4	19.0	62.2	35,000	1
Dekalb 65-99	264.7	*0.550*	8,310	269.8	17.1	62.0	36,000	1
Dekalb 68-35	263.5	*0.550*	8,284	269.0	17.2	61.9	35,000	1
Dyna-Gro 52VC63	262.7	*0.550*	8,238	267.5	17.0	59.5	35,000	1
AgriGold 647-79	260.9	*0.550*	8,252	267.9	17.7	63.4	34,000	1
Dyna-Gro 58VC65	256.6	*0.550*	8,134	264.1	17.9	63.1	35,000	1
Dekalb 65-92	253.3	*0.550*	8,000	259.7	17.6	61.6	36,000	1
Pioneer 1511	252.8	*0.550*	8,112	263.4	18.9	61.5	34,000	1
AgriGold 6572	250.9	*0.550*	7,906	256.7	17.4	64.4	35,000	1
Dyna-Gro 55VC80	241.5	*0.550*	7,554	245.3	16.8	61.9	34,000	1
Progeny 2215	232.6	*0.550*	7,312	237.4	17.2	63.4	34,000	1
Average	**260**							

[1] Yield is adjusted to 15.5% moisture.

[2] Plant Stand is given as thousands of plants per acre.

[3] Lodging score - 1 is no lodging, 10 is completely lodged.

Special thanks to Stewart Runsick assisting with planting.

Special thanks to Adam Rawls and Danny Graham for weigh wagon & harvest help.

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

2023 Xtend Flex Soybean Variety Demonstration

Partnering: Speer Farm (Aaron, Stacey, Zach) ***Consultant:*** Zach McCormick

Investigators: Andy Vangilder /Chad Norton/Jeremy Ross/Chris Elkins/Lance Blythe/Dave Freeze

Companies:

Beck's	Joshua Stidman
Corteva (Pioneer)	Blake McClelland
Delta Grow	Lee Hughes, Chad Stone
DONMARIO	Jason Pieroni
Helena Agri	Chet Crook, Zach McCormick
Progeny	Brian Murray, Damon Watlington
Nutrien (DynaGro)	Nick Crouch, Andy Swindle

Location: Greene County – Marmaduke ***Soil Series:*** Fountain silt loam

Objective: Accumulate yield, agronomic, and disease tolerance support data of Xtend Flex Soybean varieties entered in the U of A System, Division of Ag, performance trails. Determine local yield potential and adaptability of commercially available varieties.

Tillage and Planting:

-The field was planted to corn in 2022.
-Preplant tillage included disking, running the field cultivator 2 times, then the bedder-roller.
-On May 2nd the field (good moisture) was planted on 30-inch beds, using a 128,000 seed/acre seeding rate.

Demo Setup, Irrigation, & Weather:

-The demo included 11 varieties (12 rows of each).
-A strip (12 rows) of the farmer check variety (Asgrow A47XF2) alternated across the field with the test varieties.
-Averaged across all varieties, the final plant population was 114,000. All entries had good stands.

-The field was furrow irrigated, and received its first irrigation the last week of June.

Fertility & Pest Control:

-The field was zone sampled by Zach McCormick to determine fertilizer needs.
-Soil sample results showed a medium level of P (phosphorus), and a very low K (potassium) level.
-The UADA recommendation was for 160 units of K per acre.
-During seedbed preparation, 0-41-120, plus 15 units boron, was applied & incorporated.

-Antares Complete (contains S-metolachlor, sulfentrazone and metribuzin) was the only herbicide applied on the test field. It did a good job controlling weeds the first few weeks after planting.
-We did see a few escape weeds (pigweed & volunteer corn) break through the crop canopy late in the season.
-No disease or insect problems were seen on the project field. We did find a few scattered stinkbugs and earworms.
-We also noticed target spot at mid-canopy, on some of the varieties, late in the season.
-No foliar fungicide or insecticide was used.

Harvest

The demo field was harvested on October 11th. Yields were determined using a weigh wagon provided by Helena Agri-Enterprises. Grain moisture was determined for each plot using a Dickey-John moisture tester. Final yields were adjusted to 13% grain moisture.

U of A System, Division of AG, Greene County Extension
Xtend Flex Soybean Variety Demonstraion*
2023 Location: Speer Farm, Marmaduke

Variety (12 rows each)	Adj. Yield Bu./Acre*	Weigh Wagon Pounds	Dickey-John %H2O**	Plot Area Acres***	Lodging Rating****
A 47XF2 - Asgrow	75.7	4680	12.2	1.04	2
S47XF23S - DynaGro	74.2	4600	12.4	1.04	1
4887XF - Beck's	73.9	4596	12.7	1.04	2
P45A70LX - Pioneer	73.5	4566	12.6	1.04	5
S49XF43S - DynaGro	73.1	4564	13.0	1.04	3
P4798XF - Progeny	72.6	4468	11.8	1.04	3
DG 48XF33STS - Delta Grow	72.3	4530	13.4	1.04	2
4777XF - Beck's	70.4	4380	12.7	1.04	1
P4604XFS - Progeny	70.0	4310	11.8	1.04	5
P46A90L - Pioneer	68.9	4298	13.0	1.04	2
49XF29STS - Delta Grow	65.6	4030	11.6	1.04	5
Average All Plots	71.8	4457	12.5		2.8

* Yields determined using Helena weigh wagon weights , then adjusted to 13 % moisture.
** A Dickey-John moisture tester was used to determine grain moisture for each plot.
*** Harvested area for each plot was 1.04 acres (30' x 1509').
**** Lodging ratings were scored 1-10, with 1 being no lodging, and 10 completely flat.
Planted May 2nd, Harvested October 11th

2023 Arkansas Rice Performance Trials (ARPT)

Partnering: Pigue Farm (Ron, Clint & crew)

Investigator: Dr. Jarrod Hardke

Crop Advisor: Charles Wood

Program Associates: Lauren Amos/Donna Frizzell

Location: Paragould (Greene County)

Soil Series: Jackport silty clay loam

Objective: Evaluate rice hybrids/varieties entered in the UADA Performance Trials, under farm level management. Determine local yield potential and pest (disease & insect) reaction of commercially available hybrids/varieties.

Tillage and Planting:

Soybeans were planted on the trial field in 2022. It has been precision leveled, and furrow-flood irrigation used. Conventional tillage was used to prepare the field. The ARPT small plots were planted April 13th.

Demo Setup & Weather:

The test included 27 Cultivars (8 drill rows of each), replicated 4 times. The plots came up to a good DD50 stand May 4th. The test was harvested with a small plot combine on September 13th. The farmer field was planted to RiceTec 7401.

Fertility:

A custom application of preplant fertilizer (0-60-90) was used. Preflood N included 260 #s of urea (120 units N) and 50#s ammonium sulfate (10-0-0-12). A final boot application included 70 # of urea (32 units) and 30 # of potash. A total of 162 units of N and 108 units of K were applied to the test plot field.

Pest Control:

For weed control, Command (16 oz) plus glyphosate was applied at planting. It was followed by an overlapping residual application of Bolero (3 pint/acre). A final preflood herbicide application included propanil, plus Prowl, plus Permit Plus, to help with barnyardgrass and yellow nutsedge. Overall, weed control was pretty good. There were a few small escape patches of barnyardgrass.

No significant disease problems were seen. A fungicide (Quilt XL) application was made for protection from smuts. Regarding insects, stink bug numbers were very low this year, so no insecticide was used.

Results:

At this ARPT site, the average yield of all entries was 196 bushels per acre (bpa).

RiceTec had the highest yielding long grain hybrids, including RiceTec 7521 FP (229 bpa) , RT XP753 (220 bpa), RT 7302 (219 bpa), and RT 7421 FP (219 bpa). They were followed not too far behind by a couple of top performing pure line entries, DG263L and Ozark– 2022 UADA release (both with 202 bpa).

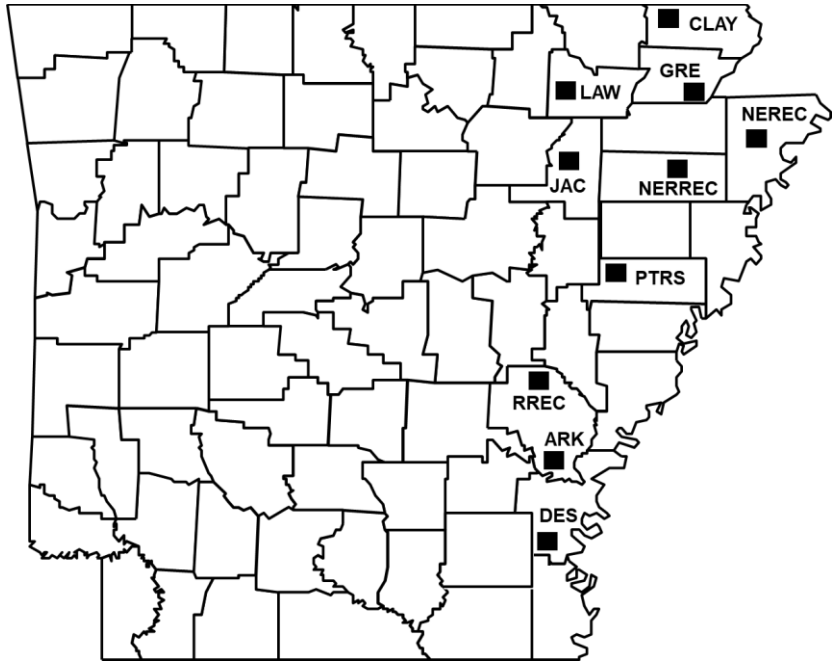
Looking at the medium grain entries, RiceTec RT 3202 (224 bpa), ProGold M3 (204 bpa), and Taurus (200 bpa – 2022 UADA release) will be cultivars to give a closer look. Review the tables that follow for more planting, yield, & milling results, for all entries in this trial and at other locations.

Arkansas Rice Performance Trials (ARPT)

Summary of Arkansas Rice Performance Trial Locations, 2023

University of Arkansas System Division of Agriculture

Site	Planting Date	Emergence Date	Harvest Date	Soil Type	Location Type
RREC, Arkansas Co., Stuttgart, Ark.	April 10	April 23	September 11	Dewitt silt loam	Research Station
PTRS, St. Francis Co., Colt, Ark.	May 3	May 10	September 15	Calhoun-Henry silt loam	Research Station
NEREC, Mississippi Co., Keiser, Ark.	May 4	May 12	September 27	Sharkey silty clay	Research Station
NERREC, Poinsett Co., Harrisburg, Ark.	April 11	April 30	September 19	Henry-Calloway silt loam	Research Station
CLAY, Clay Co., McDougal, Ark.	April 4	April 20	September 6	Jackport silty clay	On-Farm
DESHA, Desha Co., McGehee, Ark.	April 19	May 1	August 31	Perry clay	On-Farm
LAW, Lawrence Co., Walnut Ridge, Ark.	April 12	May 5	September 5	Foley-Calhoun silt loam	On-Farm
JAC, Jackson, Co., Newport, Ark.	April 18	May 14	September 26	Sharkey silty clay loam	On-Farm
GRE, Greene Co., Paragould, Ark.	April 13	May 5	September 5	Jackport silty clay loam	On-Farm
ARK, Arkansas Co., Gillette, Ark.	March 30	April 12	August 24	LaGrue silty clay loam	On-Farm



Arkansas Rice Performance Trials (ARPT)

2023 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	ARK bu/ac	Mean bu/ac
Diamond	L	156	178	162	174	170	176	182	166	193	175	**173**
Ozark	L	168	188	174	178	177	172	202	187	208	189	**184**
DG263L	L	170	198	165	203[23]	215	187	202	181	210	178	**191**
CLL16	L	163	174	156	165	177	184	198	172	186	188	**176**
CLL18	L	170	185	169	184	188	190	197	186	196	201	**187**
CLL19	L	164	184	161	162	186	187	196	163	207	207	**182**
PVL03	L	146	163	126	161	155	176	167	151	158	200	**160**
PVL04	L	135	174	153	162	157	151	192	144	180[20]	176	**162**
RTv7231 MA	L	170	185	171	170[15]	196	191	178	180	197	175	**181**
RT 7331 MA	L	210	212	197	200[10]	215	204	213	191	235	226	**210**
RT 7431 MA	L	207	216	190	207[8]	201	202	200[20]	209	201	207	**204**
RT 7321 FP	L	211	209	194	219	223	213	211[23]	210	237	223	**215**
RT 7421 FP	L	219	229	210	217	205	203	219	215	223	204	**214**
RT 7521 FP	L	215	226	171	209	241	230	229[29]	187[36]	211[50]	228	**215**
RT 7523 FP	L	208	212	190[13]	210	195	204	188[21]	219	231	201	**206**
RT 7302	L	232	222	221	230	231	229	219	225	236	228	**227**
RT 7401	L	206	218	203	214	194	201	201[10]	211	218	213	**208**
RT XP753	L	215	209	200	217	208	211	220	213	231	218	**214**
Jupiter	M	118	146	149	150	147	159	166	175	167	146	**152**
Titan	M	130	167	132[10]	155[19]	171[7]	155	173	169	195	159	**161**
Taurus	M	169	180	153[15]	178	187	197	200	185	206	207	**186**
DG353M	M	118	160	128	151	132	163	173	184	172	149	**153**
ProGold M3	M	158	173	193	172	172	190	204	186	181	196	**183**
RT 3202	M	211	220	207	229	218	201	224	204	230	225	**217**
CLM04	M	128	169	135	163[25]	167	177	169	181	165	165	**162**
CLM05	M	151	173	146	179	204	175	183	168	199	201	**178**
ARoma22	LA	121	151	131	145	--	--	--	--	--	--	**137**
MEAN	**--**	**172**	**189**	**168**	**184**	**189**	**189**	**196**	**186**	**202**	**195**	**186**

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

* Numbers in superscript beside yields represent percent lodging.

Arkansas Rice Performance Trials (ARPT)

2023 Milling Yield Summary – All Locations

University of Arkansas System Division of Agriculture

Cultivar	Grain	RREC	PTRS	NEREC	NERREC	CLAY	DESHA	GRE	JAC	LAW	ARK	Mean
	Length[1]	HR-TR[2]	HR-TR	HR-TR	HR-TR	HR-TR	HR-TR	HR-TR	HR-TR	HR-TR	HR-TR	HR-TR
Diamond	L	59-71	54-72	60-72	57-71	51-69	50-69	58-72	51-71	59-71	60-72	**56-71**
Ozark	L	63-72	54-71	57-71	61-72	55-70	51-68	61-73	57-72	61-71	58-72	**58-71**
DG263L	L	61-70	55-69	56-69	59-70	49-67	54-68	61-70	49-70	53-68	64-71	**56-69**
CLL16	L	62-71	52-70	61-71	57-70	47-68	47-68	59-71	49-71	55-70	61-71	**55-70**
CLL18	L	61-70	55-70	58-70	61-72	54-69	44-68	59-72	52-71	56-69	55-71	**55-70**
CLL19	L	64-71	56-71	53-69	60-71	58-70	53-69	62-72	46-70	59-70	66-73	**58-71**
PVL03	L	65-72	60-72	58-71	63-72	57-72	48-71	63-73	51-72	59-71	62-73	**59-72**
PVL04	L	61-71	58-71	60-71	59-69	55-70	51-69	62-72	58-71	58-70	63-72	**59-71**
RTv7231 MA	L	60-72	42-71	54-71	59-72	48-70	52-70	55-71	29-71	52-72	61-72	**51-71**
RT 7331 MA	L	63-72	44-71	54-71	60-72	44-71	54-71	60-73	38-72	56-71	64-73	**54-72**
RT 7431 MA	L	62-72	48-71	52-71	61-72	52-71	55-70	57-73	43-72	57-71	63-73	**55-72**
RT 7321 FP	L	56-71	40-70	55-71	55-71	38-70	50-70	53-72	34-72	52-71	57-72	**49-71**
RT 7421 FP	L	59-72	48-70	55-71	61-72	50-70	51-69	59-72	45-72	52-71	63-72	**54-71**
RT 7521 FP	L	63-71	56-69	52-69	60-71	52-69	49-69	59-72	49-71	55-69	64-72	**56-70**
RT 7523 FP	L	62-71	49-70	55-70	59-72	40-70	51-70	55-71	43-71	47-71	63-73	**52-71**
RT 7302	L	63-72	49-70	54-71	58-72	41-69	51-70	55-72	39-72	50-70	66-73	**53-71**
RT 7401	L	59-71	49-70	56-71	57-72	49-70	50-69	53-72	44-72	59-71	57-73	**53-71**
RT XP753	L	61-72	52-71	51-70	54-72	42-71	53-71	54-73	34-72	51-72	62-74	**51-72**
Jupiter	M	67-70	64-69	60-67	65-70	58-66	58-66	68-71	63-70	61-69	68-71	**63-69**
Titan	M	63-70	47-70	60-70	62-71	59-69	57-69	65-72	43-71	58-71	67-72	**58-70**
Taurus	M	62-72	55-72	61-70	63-71	62-69	59-70	66-73	48-72	62-71	66-73	**60-71**
DG353M	M	67-71	59-72	58-70	65-71	61-69	54-68	68-72	59-72	60-70	68-73	**62-71**
ProGold M3	M	67-71	65-71	62-69	67-71	61-67	62-70	69-72	61-71	61-69	69-72	**65-70**
RT 3202	M	67-71	52-70	46-70	61-71	49-70	59-70	63-72	40-71	58-71	67-72	**56-71**
CLM04	M	68-71	65-71	58-69	64-69	63-68	61-69	68-72	61-72	64-70	69-72	**64-70**
CLM05	M	64-69	60-69	54-67	65-70	57-66	51-68	66-70	55-70	56-68	68-71	**60-69**
ARoma22	LA	63-70	52-69	56-69	61-70	--	--	--	--	--	--	**58-70**
MEAN	**--**	**63-71**	**54-71**	**56-70**	**61-71**	**52-69**	**53-69**	**61-72**	**48-71**	**57-70**	**64-72**	**57-71**

[1] Grain Length: L=long grain, M=medium grain, LA = long grain aromatic; [2] HR-TR = % Head Rice (whole kernel) and % Total Rice (total milled rice).

2023 Greene County Soybean Research Verification Program

Cooperator: Distretti Farms
Location: Walcott
Consultant: Mike Simmons
Extension Staff: Chris Elkins, Lance Blythe, & Dave Freeze

Field Summary:

The 65 acre field, Hillemann silt loam, was located west of Walcott and followed the previous year corn crop. Following spring burndown of 40 ounces/acre glyphosate and fertilizer application of 0-0-60, the field was planted on May 8 with Innvictis B4814E, Crusier Maxx treated seed, at 140,000 seed/acre on 30" row seed spacing.

The field emerged on May 15 to a plant population of 109,000 seed/acre. Initial post emerge herbicide application was made on May 27 of 2 pints/acre Enlist One plus 1 quart/acre glyphosate plus 2.5 pints/acre Warrant. A second herbicide application was made on June 23 of 1 quart/acre glyphosate plus 2 pints/acre Enlist One plus 1.25 pints/acre s-metolachlor. Disease and insect pressure remained below threshold and no treatment was recommended. The field was furrow irrigated 3 times and harvested on October 17, yielding 63.7 bushels/acre adjusted to 13% moisture.

2023 Potassium Management Project

Investigators: Dr. Trent Roberts/Dr. Michael Popp ***Extension Agent:*** Dave Freeze

Partnering: Cleveland (Alice, Garrett, Ginger, Shaun), Finch (Braden, Shaun), Howe (Grant, Zach), Justice (Terry, Tommy), Pigue (Ashton, David, Clint, Ron), Speer (Aaron, Stacey, Zach), Randleman (Dustin, Kory), Dwight Brannon, Jack Cox, Zach McCormick, Lance Ramthun, Charles Wood

Location: Greene County, AR

Background:

In row crop production in Northeast Arkansas, potassium (K) is the primary nutrient needed for soybean production. For other crops (corn, cotton, rice, etc.), it comes in a close second behind nitrogen (N). A vast amount of research in the public and private sector has shown when soil test K levels become deficient, crops yields will be reduced accordingly.

Potassium fertilizer makes up a large part of a row crop farmer's budget. Checking University of Arkansas, Division of Agriculture (UADA) planning budgets for 2023, K fertilizer expense was listed at $41,$41 , and $72/acre , for soybeans, rice, and corn, respectively. These figures pencil out to 7, 4, and 8 % of the total budget for soybeans, rice, and corn, respectively.

The good news is that UADA scientists and economists have worked together to develop tools to help farmers, and others in the row crop industry, fine tune K nutrient management. Along with routine soil sampling regularly used to determine crop nutrient needs, University officials have recently developed the Potash Rate Calculator (PRC) computer program to help refine the units of potassium (K2O) fertilizer needed at planting, based upon a profitable response.

Researchers have also further developed the procedures for collecting and analyzing plant tissue samples (corn, cotton, rice, soybeans) later in the season for K deficiency. They continue to refine computer models which help predict whether tissue sample K levels are adequate to meet the crops needs, or if corrective late season potash is needed.

Objectives:

Evaluate the use of UADA K management tools to help farmers and consultants adjust early season K fertilizer rates to a profitable level.

Monitor the need for late season K fertilizer based on plant tissue sampling and UADA predictive computer models.

Determine if logistics and timing to collect plant tissues samples, submit them to the diagnostic lab, and receive results and recommendations, will work for farmers and their crop advisors.

Project Setup:

Farmers and their crop advisors were enrolled in the K management project the winter/spring of 2023. A total of 7 soybean and 8 rice fields were included. Local project partners included 7 farms and 5 consultants. Key UADA K management tool developers (Dr. Michael Popp, Dr. Trent Roberts) were also involved in the planning, implementation, and evaluation of the project.

Step 1 was to get soil sample results for each field in the program. Local consultants graciously provided some of the results of the fields they had recently sampled. The County Extension Agent collected soil samples on most of the project fields.

Step 2 was to generate PRC printouts for each field to provide the producer with a K fertilizer rate expected to be profitable. Soil test K levels were keyed into the PRC program along with other input data provided by the farmer (expected yield level, expected crop price, current K fertilizer price), to fine tune the units of K2O (k fertilizer) needed at planting.

Step 3 was to collect plant (new leaf) tissue samples later in the season, soon after the crops shifted from vegetative to reproductive growth, and submit them to the UADA diagnostic lab for analysis. The date was recorded the crop on each field reached the beginning of reproductive development (R1 or first flower for soybeans, and PI or green ring for rice).

The first tissue sample for each field was taken 5-10 days after the project field reached reproductive development. A second leaf sample followed 14 days after the first sample was collected, to help monitor plant K levels, and to confirm whether late season corrective K fertilizer was needed or not.

Step 4 was to record the yield for each project field. Yields were then studied and compared to early season soil test K levels, K fertilizer application at planting and late in the season, plant tissue results, and field notes.

SOYBEANS (Results in Tables 1 & 1a)

Soil Test Results:

Based on soil test results, all 7 fields in the program would have required a K fertilizer application at planting using current UADA standard recommendations. The average soil test K level for all project fields was 80 parts per million (ppm), which falls into the UADA low category, with a recommendation for 120 units (K2O) of K fertilizer.

Checking individual fields, three fell in the medium range (90-130 ppm), one in the low range (60-90 ppm), and three in the very low (<60 ppm) range. The UADA lab recommendation for fields testing medium and very low in soil test K, is 75 and 160 units K2O, respectively.

Potash Rate Calculator (PRC) Results:

When the PRC program was used (based on a profitable K fertilizer recommendation) only 5 of 7 fields in the project called for K fertilizer at planting. Furthermore, the average K fertilizer suggested for all project fields was 118 units K2O using the UADA standard recommendation, and only 80 units using the PRC program.

The range for PRC recommendations of project fields was from 0 to 129 units K2O. While the farmer estimated yield (40-65 bpa) plugged into the PRC for each farm was quite variable, the estimated price for potash ($524/ton) and crop price ($12.93/bu) were fairly consistent for each field.

Plant Tissue Results & K Monitoring Tool:

The first leaf tissue sample was collected 5-10 days after the soybeans reached first flower (R1). Averaged across all project fields, the 1st leaf tissue sample K level (1.71 % K) fell slightly below the UADA model trigger to recommend corrective late season potash.

The range of K tissue levels for the first samples was from 1.22 to 2.22% K. In addition, 3 of the 7 project fields had low enough K tissue levels that late season K fertilizer was recommended. Fields receiving a recommendation were all suggested 60 units K2O (100 # potash).

Checking results of the second tissue samples taken on project fields (from 20-25 days after R1), 1.89% K was the average K level. The range of K levels was from 1.42 to 2.37% K. In addition, by this time, only two project fields were calling for late season corrective K fertilizer.

UADA officials developed a computer program (Soybean Tissue K Monitoring Tool) we were able to use to key in first flower date, and leaf tissue sample dates and results. The program then generated predictive yield curves (75, 85, and 95%).

A line graph was shown giving relative yield potential of a field plotted by the K tissue levels. The monitoring tool suggested late season corrective K fertilizer any time plotted tissue levels (dynamic critical K levels) fell under the predicted 95% yield curve (researchers note that below this level, K is deficient & yield limiting).

Looking at 1st tissue samples for our project fields, the average dynamic critical K level was 91%, with a range for the 7 fields from 82-96%. Checking results for 2nd tissue samples for our project fields, the average dynamic critical K level edged up to 95%, and ranged from 88 to 100%.

Yield Results:

Yields for the project fields ranged from 40 to 75 bushels per acre (bpa), with an overall 61 average.

Discussion & Summary:

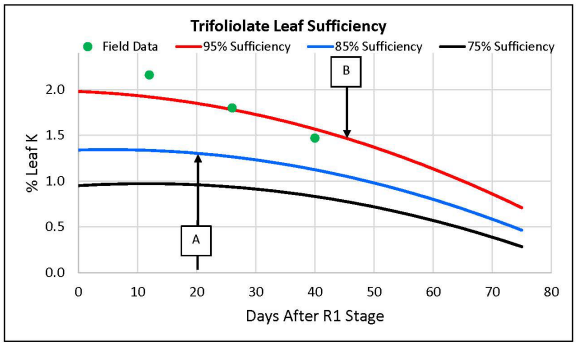
At planting time 5 of 7 of the project soybean fields called for K fertilizer according to the PRC, while all 7 fields ended up receiving K fertilizer at this time. An average of 79 units K20 was applied per acre, with a range from 18-120 units. In addition, 1 of the fields used poultry litter (very low analysis) as part of its K fertilizer at planting.

Checking plant tissue results, four of the project fields did not need late season K fertilizer. None of them received a late K fertilizer application.

Soybean Tissue K Monitoring Tool

Grower Name	Nick Fox	Field Name	Mangrum North
Variety Name	Extend Flex	Maturity Group	IV
County	Greene	State	AR
Planting Date	10-May	R1 (Flowering) Date	10-Jun

Sample	Sample Date (Enter data)	Leaf % K (Enter data)
1	22-Jun	2.16
2	6-Jul	1.8
3	20-Jul	1.47
4		
5		
6		
7		
8		
9		
10		



Three of the project soybean fields had tissue results that called for a late seasson corrective K fertilizer application. All three of these fields did receive late K fertilizer.

Two of these fields received a foliar K application (< 10 units K2O) and made in the 40-50 bushel yield range. The one with the lowest yield was also slim on preplant K used (60 units K2O). Both these fields had a late May planting date.

The third field receiving late season potash (30 units of K fertilizer) was able to hit 60 bpa. It was also some 30 units shy compared to the UADA recommended K rate based on plant tissue K results.

Leaf tissue sampling soybeans is a somewhat simple procedure. A consultant can collect 15-25 newly developed, fully expanded, trifoliate leaves (without the petiole) to represent the field, as he is making his pest scouting circle. Trifoliate leaves are small and can easily be put in a pocket when scouting the field. They also dry out fairly quickly on the truck dash in a paper bag. Samples are not too bulky to package up and mail to the diagnostic lab. From sample submission until receiving UADA lab results was generally 7 days, sometimes up to 10-14 days. Use of a private lab will likely speed up a client/consultant getting sample results.

RICE (Results in Tables 2 & 2a)

Soil Test Results:

Based on soil test results, 7 out of 8 fields in the program would have required a K fertilizer application at planting using current UADA standard recommendations. The average soil test K level for all project fields was 89 parts per million (ppm), which falls into the UADA low category, with a recommendation for 90 units (K2O) of K fertilizer per acre.

Checking individual fields, one had a soil test K level of optimum (131-175 ppm), two fields fell in the medium range (90-130 ppm), four were in the low range ((60-90 ppm), and 1 tested in the very low range (<60 ppm). The UADA lab recommendation for fields testing at optimum, medium, and very low levels for soil test K, is 0, 60, and 120 units K2O, respectively.

Potash Rate Calculator (PRC) Results:

When the PRC program was used (based on a profitable K fertilizer recommendation) 6 of 8 fields in the project called for K fertilizer at planting. Furthermore, the average K fertilizer suggested for all project fields was 75 units K2O using the UADA standard recommendation, and 69 units using the PRC program.

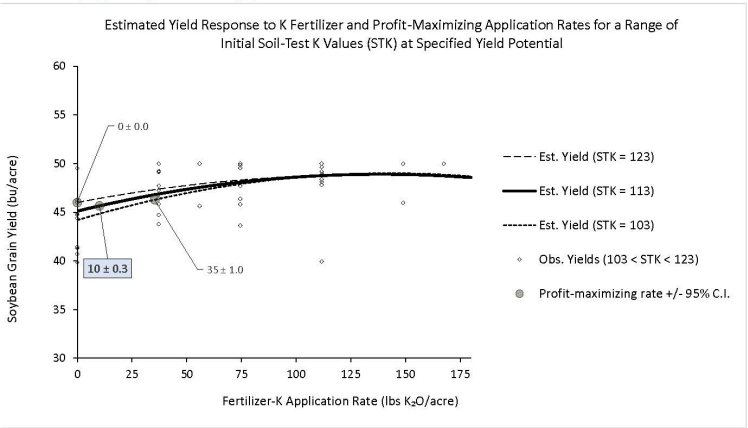
The range for PRC recommendations of project fields was from 0 to 114 units K2O. While the farmer estimated yield plugged into the PRC for each farm was quite variable, the estimated price for potash ($523/ton) and crop price ($16.00/cwt) were fairly consistent for each field.

Profit-Maximizing K Rate Calculator for Irrigated Soybeans
as developed by Dr. M. Popp, Dr. N. Slaton, and Dr. T. Roberts

PRC POTASH RATE CALCULATORS

What is your expected soybean price?	14.80 $/bu	☐ Metric	
What do you expect to pay for muriate of potash fertilizer?	900 $/ton	0.75 $/lb of K_2O	
What is the yield potential of your field?	50 bu/acre		
What is your soil-test K value (STK) and range?	113 ppm	Soil test range +/-	10
What is your cost to apply fertilizer (equipment, labor, fuel or custom)?	7.50 $/acre	...your rate in lbs of K_2O/acre:	55
Profit change comparing applying at 10.1lb K_2O/acre to no fertilizer:	-6.94 $/acre	Profit-max rate over your rate:	$5.90

The fertilizer does not generate enough revenue to pay for itself and costs to apply



SOIL TESTING

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Disclaimer: This software is provided 'as is' and without warranties as to performance or merchantability. Further, statements may have been made to you about this software, and they do not constitute warranties and shall not be relied upon by the user to use the program or act on its results. This program is provided without any expressed or implied warranties whatsoever. Because the diversity of conditions and hardware under which this program may be used, no warranty of merchantability or warranty of fitness for a particular purpose is offered. The user is advised to test the program thoroughly before relying on it. The user assumes the entire risk of using the program. The authors will not be liable for any claim or damage brought against the user by any third party, nor will the authors be liable for any consequential, indirect, or special damages suffered by the user as a result of the software. Results pertain to silt loam soils common in major rice producing regions of the humid mid-Southern U.S.

Plant Tissue Results & K Monitoring Tool:

The first leaf tissue samples were collected 5-10 days after the rice reached green ring (PI). The average leaf tissue K level (2.36 % K) was well above the UADA model trigger (1.6% K) to recommend corrective late season potash.

The range of K tissue levels for the first samples was from 2.01 to 2.79 % K. None of the 8 project fields called for late season K fertilizer based on 1st tissue sample results.

Checking results of the second tissue samples taken on project fields (19-25 days after PI), 1.95 % was the average tissue K level. The K level range was from 1.74 to 2.11%. As with the first tissue sample results, none of the project fields triggered a need for late season corrective K fertilizer.

Yield Results:

Yields for the project fields ranged from 160 to 227 bushels per acre (bpa), with an overall 186 average. The average yield was comparable to the farmer estimated yield potential (205 bu) for their fields.

Discussion & Summary:

At planting time, 6 of 8 of the project rice fields called for K fertilizer according to the PRC. For this study the soil test standard fertilizer recommendation and PRC recommendation were about the same (75 vs. 69 units K/acre, respectively).

Comparing yields and soil test K levels, in this study there was not a pattern for higher yields with higher soil test K levels. Some of the fields testing low for soil test K had top yields, while others testing low had lower yields.

Leaf tissue sampling in rice is a fairly easy process. A consultant can collect 20-30 Y-leaves (only leaf blades, from the newest leaves extending from the whorl, with leaf collar showing) to represent the field as he is making his weekly circle in the field to scout for pests. The leave blades are small and can easily be put in a pocket when scouting the field. They also dry out very quickly on the truck dash and are very compact to package up and send to the diagnostic lab.

University of Arkansas System, Division of Agriculture

Greene County K2O Management Soybean Program 2023

Table 1: Soil Test, Potash Rate Calculater (PRC), & Plant Tissue Sample, Information & Results

Entry Number	S1	S2	S3	S4	**Average**
Crop	Soybean	Soybean	Soybean	Soybean-47XF2	7 fields
Est. Yield - Bu./Acre	50	60	60	55	56
Est Grain Nutrient Removal - #K2O/A	60	72	72	66	67
Crop Price - $/Bu.	$13.00	$13.00	$13.00	$12.50	$ 12.93
Potash Price - $/ton	$525	$525	$525	$515	524
Soil Test Report Date	April 27th, 2023	May 1st, 2023	April 27th, 2023	March 23rd, 2023	
Soil Test K Level - VL,L,M,O,AO	VL	M	VL	M	
Soil Test K Level Ave - PPM	45	128	45	94	80
Soil Test K Level Range - PPM	10	10	10	22	13
Soil Test Rec K Rate - #K20/A	160	75	160	75	118
PRC refined Rec K Rate - #K20/A	165	31	165	86	108
PRC Profit Max Rec K Rate - #K20/A	123	0	129	89	80
Ext Agent Adjust Rec K Rate - #K20/A	120	0	120	90	78
Potash applied at planting - #K20/A	120	0	72	90	77
Poultry litter at planting - #K20/A	0	18	0	0	3
Total Preplant - #K2O/A	120	18	72	90	79
Soybean R1 (First Flower) Date	July 5th	June 2nd	June 19th	May 30th	
Tissue Sample #1 Date	July 11th R2-6	June 7th R2-6	June 26th R2-7	June 6th R2-6	
Tissue Sample days past R1					
Tissue Sample #1 - % K	1.37	1.92	1.71	1.86	1.71
Est % Yield - Dynamic Critital K Level	85	95	91	94	91
Recommended - #K2O/A	60	0	60	0	26
Late Season K Applied - #K2O/A	2	0	36	0	7
Tissue Sample #2 Date	July 31st R3-12	June 26th R4-10	July 11th R3-12	June 20th R4-9	
Tissue Sample days past R1					
Tissue Sample #2 - %K	1.42	2.06	1.55	1.85	1.89
Est % Yield - Dynamic Critital K Level	88	99	90	95	95
Recommended - #K2O/A	60	0	30	0	13
Late Season K Applied - #K2O/A	0	0	0	0	0
Crop Yield - Bu/A	49	68	60	60	61

University of Arkansas System, Division of Agriculture
Greene County K2O Management Soybean Program 2023

Table 1a: Soil Test, Potash Rate Calculater (PRC), & Plant Tissue Sample, Information & Results

Entry Number	S5	S6	S7	**Average**
Crop	Soybean	Soybean	Soybean	7 fields
Est. Yield - Bu./Acre	40	60	65	56
Est Grain Nutrient Removal - #K2O/A	48	72	78	67
Crop Price - $/Bu.	$13.00	$13.00	$13.00	13
Potash Price - $/ton	$525	$525	$525	524
Soil Test Report Date	April 27th, 2023	March 16th, 2023	March 31st, 2022	
Soil Test K Level - VL,L,M,O,AO	L	VL	M	
Soil Test K Level Ave - PPM	73	51	126	80
Soil Test K Level Range - PPM	10	20	10	13
Soil Test Rec K Rate - #K20/A	120	160	75	118
PRC refined Rec K Rate - #K20/A	119	155	34	108
PRC Profit Max Rec K Rate - #K20/A	94	126	0	80
Ext Agent Adjust Rec K Rate - #K20/A	94	120	0	78
Potash applied at planting - #K20/A	60	120	75	77
Poultry litter at planting - #K20/A	0	0	0	3
Total Preplant - #K2O/A	60	120	75	79
Soybean R1 (First Flower) Date	July 5th	June 9th	May 26th	
Tissue Sample #1 Date	July 12th R2-6	June 20th R3-7	June 6th R2-6	
Tissue Sample days past R1				
Tissue Sample #1 - % K	1.22	1.89	2.02	1.71
Est % Yield - Dynamic Critital K Level	82	95	96	91
Recommended - #K2O/A	60	0	0	26
Late Season K Applied - #K2O/A	10	0	0	7
Tissue Sample #2 Date	July 31st R3-12	July 6th R3-12	June 26th R4-10	
Tissue Sample days past R1				
Tissue Sample #2 - %K	1.83	2.13	2.37	1.89
Est % Yield - Dynamic Critital K Level	96	100	100	95
Recommended - #K2O/A	0	0	0	13
Late Season K Applied - #K2O/A	0	0	0	0
Crop Yield - Bu/A	40	72	75	61

University of Arkansas System, Division of Agriculture
Greene County K2O Management Rice Program 2023
Table 2: Soil Test, Potash Rate Calculater (PRC), & Plant Tissue Sample, Information & Results

Entry Number	R1	R2	R3	R4	**Average**
Crop	Jewel	RT 753	MAv7231	DG263L	8 fields
Est. Yield - Bu./Acre	170	200	170	170	183
Est Grain Nutrient Removal - #K2O/A	27	32	27	27	29
Crop Price - $/cwt	$15.50	$15.50	$15.50	$17.10	16
Potash Price - $/ton	$525	$525	$525	$515	523
Soil Test Report Date	4/27/2023	5/1/2023	4/27/2023	March 23rd, 2023	
Soil Test K Level - VL,L,M,O,AO	M	L	VL	L	
Soil Test K Level Ave - PPM	91	88	50	86	89
Soil Test K Level Range - PPM	27	10	10	43	19
Soil Test Rec K Rate - #K20/A	60	90	120	90	75
PRC refined Rec K Rate - #K20/A	57	62	132	66	68
PRC Profit Max Rec K Rate - #K20/A	0	83	114	84	69
Ext Agent Adjust Rec K Rate - #K20/A	0	83	114	84	69
Potash applied at planting - #K20/A	120	0	72	90	78
Poultry litter at planting - #K20/A	0	110	0	0	14
Total Preplant - #K2O/A	120	110	72	90	92
Rice PI (greenring) Date	June 16th	June 11th	June 11th	June 8th	
Tissue Sample #1 Date	June 21 1.5" IE	June 21st 1" IE	June 21st 3/4" IE	June 20th 1.5" IE	
Tissue Sample days past PI					
Tissue Sample #1 - % K	2.01	2.50	2.10	2.25	2.36
Tissue Goal - Adequate Level % K	1.6	1.6	1.6	1.6	1.60
Recommended - #K2O/A	0	0	0	0	0
Late Season K Applied - #K2O/A	30	0	0	0	4
Tissue Sample #2 Date	July 5th 5" IE	July 5th 8" IE	July 5th 7" IE	July 5th 8" IE	
Tissue Sample days past PI					
Tissue Sample #2 - %K	1.90	2.07	1.74	1.87	1.95
Tissue Goal - Adequate Level % K	1.6	1.6	1.6	1.6	1.60
Recommended - #K2O/A	0	0	0	0	0
Late Season K Applied - #K2O/A	0	0	0	0	2
Crop Yield - Bu/A	170	209	175	160	186

University of Arkansas System, Division of Agriculture
Greene County K2O Management Rice Program 2023
Table 2a: Soil Test, Potash Rate Calculater (PRC), & Plant Tissue Sample, Information & Results

Entry Number	R5	R6	R7	R8	**Average**
Crop	FP 7321	RT 753	RT 7401	DG263L	8 fields
Est. Yield - Bu./Acre	180	200	200	170	183
Est Grain Nutrient Removal - #K2O/A	29	32	32	27	29
Crop Price - $/cwt	$15.50	$15.50	$15.50	$17.10	16
Potash Price - $/ton	$525	$525	$525	$515	523
Soil Test Report Date	4/27/2023	4/11/2023	3/16/2023	March 23rd, 2023	
Soil Test K Level - VL,L,M,O,AO	M	L	O	L	
Soil Test K Level Ave - PPM	90	83	156	68	89
Soil Test K Level Range - PPM	24	19	10	10	19
Soil Test Rec K Rate - #K20/A	60	90	0	90	75
PRC refined Rec K Rate - #K20/A	59	72	0	99	68
PRC Profit Max Rec K Rate - #K20/A	67	94	0	109	69
Ext Agent Adjust Rec K Rate - #K20/A	67	94	0	109	69
Potash applied at planting - #K20/A	60	100	90	90	78
Poultry litter at planting - #K20/A	0	0	0	0	14
Total Preplant - #K2O/A	60	100	90	90	92
Rice PI (greenring) Date	June 17th	June 20th	June 14th	June 20th	
Tissue Sample #1 Date	June 27th 1" IE	June 27th 1/2" IE	June 20 3/4" IE	June 27th 1/4" IE	
Tissue Sample days past PI					
Tissue Sample #1 - % K	2.79	2.6	2.41	2.19	2.36
Tissue Goal - Adequate Level % K	1.6	1.6	1.6	1.6	1.60
Recommended - #K2O/A	0	0	0	0	0
Late Season K Applied - #K2O/A	0	0	0	0	4
Tissue Sample #2 Date	June 27th 6"IE	July 12th 4"IE	July 6th 8" IE	July 11th 4"IE	
Tissue Sample days past PI					
Tissue Sample #2 - %K	1.96	2.02	2.11	1.94	1.95
Tissue Goal - Adequate Level % K	1.6	1.6	1.6	1.6	1.60
Recommended - #K2O/A	0	0	0	0	0
Late Season K Applied - #K2O/A	0	0	18	0	2
Crop Yield - Bu/A	200	190	227	160	186

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

2023 Greene County Extension Soil Trends

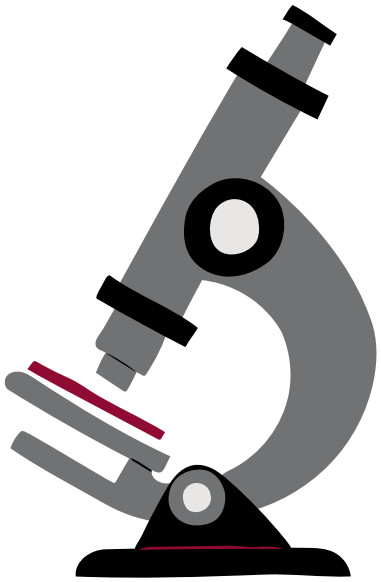
8529 soil samples were submitted to the UofA Soils Lab for analysis from Greene County during the 2023 program year*

Total of 47,513 acres were represented by samples

***as of October 1, 2022- September 30, 2023**

Most common crop recommendations requested for Greene County samples:

- Row Crops (Soybeans, Rice, Corn)
- Forages (Hay & Pasture)
- Vegetable Garden
- Lawn (Bermudagrass)
- Food Plots



Your Greene County Cooperative Extension Service
www.uaex.uada.edu/counties/greene

U of A DIVISION OF AGRICULTURE RESEARCH & EXTENSION
University of Arkansas System

Annual Update

2023 Greene County Extension Education Outreach

- Total Educational Contacts: 13,563
- Total County Volunteer Hours: 2,627 Hours
- Value of Volunteer Efforts: $78,652.38

Greene County 4-H Program

Overview of Programs

- 175 4-H Members
- 46 4-H Volunteers
- 17 4-H Clubs/ Project Groups
- Total Educational Contacts: 4,090

Key Programs & Activities Conducted:

County Events:

- 4-H Kick-Off Night, 4-H County Day Camp, Fall Farm Mudder, Christmas Community Service Activity, Poultry BBQ Contest, Beef Cooking Contest, Dairy Recipe Contest, Ross Photography Contest, Citizenship Community Service Project at Memorial Gardens, Youth Teaching Garden Educational Sessions, 4-H Craft Night, Fair Entry Prep Night, and 4-H O'Rama Competitions
- Conducted a Intercollegiate Swine Judging Contest- 130 collegiate contestants from nine different colleges representing seven different states competed. Over 40 4-H youth and volunteers were involved in planning, hosting, serving, and conducting the event.

Leadership & Achievements:

- 1 youth named Arkansas 4-H Teen Stars
- 2 youth received district-level record book awards
- 2 youth received state-level record book award

Community Economic Development

Key Programs & Activities Conducted

- Assisted with & conducted community beautification projects, Paragould Farmers Market, Leadership Paragould Program
- Partnered to establish Paragould as a "Tree City USA" community

Agriculture & Natural Resources

Overview of Program

- Educational Contacts: 743,828
- 2,053 Farm/Site Visits
- 12 Demonstrations

Key Programs & Activities Conducted

Rice:

- Arkansas Rice Performance Trial (Cultivar Test)
- Potassium management program - 8 fields
- IPM survey & scout reporting - 5 fields
- Barnyard herbicide resistance screening - 3 fields

Soybean:

- Soybean Research Verification Program
- Xtend Flex variety demonstration
- Potassium management program - 7 fields
- IPM Survey & scout reporting (disease & insect) - 5 fields
- Corn earworm moth trapping program – 6 sites checked weekly (June- August)
- Grow for the Green Soybean Yield Challenge

Corn:

- Hybrid Trial
- Poultry litter rate study
- Southwestern Corn Borer Moth Trapping – 4 sites checked weekly (June- July)

Wheat:

- Wheat Research Verification Program

Horticulture:

- 25 Year Greene County Master Gardener Celebration
- 33 Greene Co Master Gardener Members, 9 New trained
- Fall Garden Seminar
- Brown Bag Lunch – 8 garden-education sessions
- Monthly Master Gardener Newsletter, GCMG Facebook Page
- Pumpkin Variety Trial
- Arkansas Diamonds Trial (evaluate annuals)

Livestock & Forages:

- Monthly Livestock & Forage Newsletters/e-Updates
- Weekly Forage IPM survey & scouting
- Livestock & Forage Field Day
- Small Ruminant Workshops
- Bi-Annual Calfhood Vaccinations
- Bi-Annual Breeding Soundness Exams
- Multiple Weed Control Demonstrations
- Small Ruminant Dewormer Study
- Cow Herd Improvement Programs
- Tick Collection Survey
- Beef Quality Assurance Certification Programs
- On-Farm Forage Nitrate Sampling

Program Partners

We want to thank the many businesses & individuals who contributed to our 2023 Greene County Extension Crop, Livestock, & Youth Demonstrations, Programs, & other Projects. Many are listed below.

Farmers:

Derek & Royce Boling, Ryan Boozer, Nathan Davis, Johnny Distretti, Garret & Shaun & Ginger Burgess, Alice Cleveland, Zach Combs, Shawn & Brandon Finch, Dustin Henson, Grant Howe, Tommy Justice, Zach McCormick, Tyler & Raney Nutt, Clint Pigue, David Pigue, Ron Pigue, Kory Randleman, Chris & Allen & Randy Russom, Aaron & Stacey Speer, Frank & Jackie & Jimmy Williams

Consultants:

Sterling Clifton, Jack Cox, Brandon Davis, Dustin Engler, Shane Frost, Austin Miller, Chris Murray, Lance Ramthun, Mike Simmons, Charles Wood, Luke Zitzelberger

Business Supporters:

4 S & J Inc., AgriGold, Baker Implement Company Inc., BASF, C & H Insurance, Delaplaine Seed Company, Delta Livestock Diagnostics, Final Drive Genetics, GreenPoint AG, Hog Air Aviation, Horizon AG LLC., K & B Sheep, Kin Co AG Aviation Inc., Lawrence County Seed Company, Legacy Equipment, MFA Agri Services, Nutrien Ag Solutions, Riceland Foods, Inc., Scott Flying Services Inc., Simplot Grower Solutions, SMART Reproduction, Steve Cobb & Family; Sugar Creek Ranch,

Community Supporters:

City of Paragould, Greene County Cattlemen's Association, Greene County Conservation District, Greene County 4-H Foundation, Greene County Fair Association, Greene County Farm Bureau Board, Greene County Tech FFA, Greene County Quorum Court, Paragould City Council, Paragould Church of God, Paragould Parks & Recreation, Paragould Regional Chamber of Commerce, The Crossing, USDA Natural Resources Conservation Service,

University Staff:

Scharidi Barber, Jerry Clemons, Dr. Mike Daniels, Dr. Jason Davis, Chris Elkins, Dr. Travis Faske, Dr. Shane Gadberry, Dr. Jarrod Hardke, Allison Harmon, Dr. Jason Kelley, Dr. Jason Norsworthy, Dr. Dan Quadros, Dr. Trent Roberts, Stewart Runsick, Dr. Jeremy Ross, Kenny Simon, Ples Spradley, Scott Stiles, Dr. Glenn Studebaker, Priscella Thomas-Scott, Cheri Villines, Dr. Eva Wray, UADA Diagnostics Lab-Cheri Villines, UADA 4-H Department, UADA Animal Science Department

Individual Supporters:

Josh Agee, Langston Ashmore, ASU Farm & Staff, Ron Bellomy, Cory Burton, Bruce Carr, Josh Carr, Steve Cobb & Family, Steve Copeland-DVM, Adam Eades, Stan Foster, Kathy Graber, Danny Graham, Cody Gray, Terry Gray, Vicki Griggs, Aaron Harmon, Kristie Head, Brenda Hester, Colin Hester, Sherry & Jim Holland, James Kashak, Dr. Donald "Bud" Kennedy, Jordan Leatherman, Patrick Lenderman, Angela Loveless, Doug Manning, Kim Mayberry-Holifield, Daniel Mayer, Dale McClelland, Jeremy McClelland, Rusty McMillon, Paula Norman, Blaine & Vicki Nunn, Bill Pollard, Adam Rawls, Dr. Jerica Rich, Stephen Riggs, Patti Roberts, Stephannie Rodrigues, Casey Rogers, Jason Scatterfield, Randy Scott, Harvey Songer, Andy Swindle, Rich Tate, Mindy Tritch, Caleb Wall, Scott Watson, Tim Wells, Bonnie White, Richard Yeazel

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