



DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System

Program Year October 2021-September 2022

Mississippi County Demonstrations



Presented By: Mississippi County Cooperative Extension Service

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Agriculture

The University of Arkansas Cooperative Extension Service in Mississippi County has provided reliable recommendations to producers and homeowners for more than a century. Our county programs have included on-farm variety trials, research verification demonstrations, irrigation demonstrations, crop fertility demonstrations, and lawn herbicide demonstrations.

We realize the need to educate our students here in the county on how important agriculture is to our area. We have begun implementing Ag in the classroom lessons to different public and private schools here in the county teaching them everything from basic parts of plants to crossing and breeding crops.

Agriculture is important to our communities and the need to educate individuals on how to implement safe and efficient methods in agriculture are as equally important. We are here to strengthen agriculture, communities, and families by connecting trusted research to the adoption of best practices.

Lawn Herbicide Demonstrations Crabgrass Pre-Emerge Demonstration

Cooperator: Mississippi Co. Master Gardeners/ NEREC

Agent: Ethan Brown

Relevance:

The Mississippi Co Extension Council and Ag subcommittee recommended more programs designed to demonstrate best management practices (BMP) for lawn care and maintenance on Bermuda lawns within the county.

Response:

Mississippi County Extension agent Ethan Brown established lawn herbicide pre-emerge plots to demonstrate control one of the most common weeds in Bermuda grass lawns, Crabgrass. Commonly used pre-emerge herbicides were applied with a burndown application of Glyphosate to kill off winter weeds at 32 oz./a rate to a lawn located at the University of Arkansas Northeast Research and Extension Center on March 3, 2022.

Results:

Each plot was rated once a month from the application date up until June. The ratings were based on 0-4 scale meaning 0 was 100% control while 4 meant 0% control. Dual, Prowl, and Specticle seemed to have the best control overall into the early summer months as there was no visible emergence of crabgrass in either plot while Prodiamine revealed a breakthrough in control. One other observation made during this demonstration is that Prodiamine can kill Bermuda roots if the enough rainfall creates puddles in the treated area causing the herbicide to runoff into these areas. The untreated check was covered in Crabgrass by the May 18 rating date.

Pre-emerge Herbicide Control Results

Herbicides	April 15	May 18	June 16
Prowl	0	0	1
Dual	0	0	1
Prodiamine	0	1	2
Untreated	2	4	4
Specticle	0	1	1

Best Management Practice Lawn Demonstration

Cooperator: Mississippi Co. Master Gardeners

Agent: Ethan Brown

Relevance:

The Mississippi Co Extension Council and Ag subcommittee recommended more programs designed to demonstrate best management practices (BMP) for lawn care and maintenance on Bermuda lawns in the county.



Response:

Mississippi County Extension agent Ethan Brown created a Best Management Practice Demonstration where he took four 20x20 ft. plots and created one for our recommended fertilizer rates for the plot, one for our recommended herbicide applications, one untreated check, and one with the combined herbicide and fertilizer recommendations.

Results:

The idea of this demonstration was to give a visual to homeowners or lawncare specialists to see how much of a difference that it makes when we use the University recommendations for best management practices on Bermuda lawns. Herbicide included 16 oz. rate of Glyphosate, and 16 oz. rate of 2,4-D, and Prodiamine 16 oz.

<p>Untreated Check-</p> <p>Henbit-5, Clover-4, Crabgrass-1, Dandelion-3, Dallisgrass-3</p> <p>Lots of pest weeds present within the plot.</p>	<p>Fertilizer and Herbicide (BMP)-</p> <p>Plot was weed free. Noticeable amount of Bermuda growth starting to show compared to the herbicide only plot.</p>
<p>Fertilizer Only-</p> <p>Henbit-5, Clover-4, Crabgrass-4, Dandelion-3, Dallisgrass-4</p> <p>Lots of pest weeds present within the plot. There is a noticeable difference in growth within this plot and untreated check.</p>	<p>Herbicide only-</p> <p>Dallisgrass-1</p> <p>Plot was weed free. Bermuda was beginning to emerge</p>

Row Crop Demonstrations Mississippi County Soybean Verification

Producer: Jason Bennett Farms

Agent: Ethan Brown

Location: Bassett

Planted: May 18,2022

Harvested: October 27,2022

Previous Crop: Soybeans

Plant Population: 101K

Row Width: 38in

Variety: Becks 5005XF

Yield: 58 Bu/A



Total Fertility (lbs./Ac) N 0 P 0 K 50 S 0 Zn 0

The 32-acre field, Dundee Silt Loam, was located west of Bassett and followed the previous year soybean crop. A cover crop of cereal rye was planted in the fall on existing beds. The field was planted May 18 with Becks 5005XF, Escalate seed treatment, at 148,000 seed/acre on 38" beds. The field emerged on May 26 to a plant population of 101,000 plants/acre. Initial herbicide application was made on June 24 of 22 ounces/acre Xtendimax followed by second herbicide application on June 27 of 1 quart/acre glyphosate. Disease and Insect pressure remained below threshold and no treatment was recommended. The field was furrow irrigated 5 times and harvested on October 27 yielding 57.8 bushels/acre adjusted to 13% moisture.

Mississippi County Wheat Verification

Producer: Jason Bennett

Agent: Ethan Brown

Location: Bassett

Planted: October 25, 2021

Harvested: June 20, 2022

Previous Crop: Soybeans

Planting Population: 126 lbs/A

Variety: Dyna Gro 9811

Yield: 66 bu/A



The 134-acre field with a Dundee silt loam soil was located near Bassett and followed soybeans. No pre-plant fertilizer was applied. Following land preparations, the field was broadcast planted on October 25, 2022, at 115 pounds/acre with Dyna Gro 9811 + Cruiser Maxx Vibrance Cereal seed treatment. Wheat emerged on November 1, 2022, to a stand of 20 plants/sq.ft. Initial early spring fertilizer application of 50lbs/acre ammonium sulfate plus 50lbs/acre urea on March 17, 2022, followed by a second application of 100lbs/acre urea on March 30, 2022. The final application of spring fertilizer of 100lbs/acre urea was applied on April 7, 2022, for a total spring nitrogen rate of 126 pounds/acre. The field was harvested on June 20, 2022 and yielded 66 bushels/acre adjusted to 13.5% moisture.

Mississippi County Rice Verification

Producer: Jeff Lammers Farms

Agent: Ethan Brown

Location: Dell

Planted: April 30, 2022

Harvested: September 23, 2022

Previous Crop: Soybeans

Planting Population: 24 lbs./A

Variety: RiceTec FP 7521

Yield: 218 Bu/A



The Mississippi County Rice Verification was located on Jeff Lammers Farm just south of Dell on a Sharkey Clay soil type. The field was planted on 4/30/2022 with RiceTec FP 7521 and was sprayed with Command at 16 oz/A, and Glyphosate at 32 oz/A. The rice emerged great, and we overlapped pre-emerge on 5/20/22 with Preface at 4 oz/A, and Facet at 32 oz/A. On 5/20/2022 the field was fertilized with 260 lbs./A of Urea and 25 lbs./A of AMS. We applied the second shot of 75 lbs. on 6/11/2022. We ended up having some Rice Stinkbugs come in late on scouting the field 8/7/2022. On 8/8/2022 we sprayed the field with Lambda-Cyhalothrin at 3 oz/A. The next week we found that the field needed to be sprayed again as threshold had not decreased any from the week before. We then sprayed Endigo at 5 oz. on 9/18/2022. The field was salted on 9/18/2022 and was harvested on 9/23/2022 and cut 218 Bu/A dry.

Corn Irrigation Timing – Soil Moisture Sensor Demonstration/Surge Valve Demonstration

Producer: Donner Farms

Agent: Ethan Brown

Planted: 4/29/2022

Maturity Date: 8/21/22

Harvested: 9/21/2022

Adjusted Yield: 189 bu/A



Soil moisture sensors in corn, Donner Farms, 2022.

Relevance: Soil moisture sensors provide moisture status readings during the growing season. These readings may help producers manage irrigation events based on crop needs instead of using prescribed calendar day triggers. Additionally, knowing the moisture status in the rooting zone should help producers time irrigation termination. Surge Valves provide a farmer with a quality irrigation. By alternating sets when irrigating, a surge valve allows the water to soak in the soil and not run out the bottom of the field. By using both of these tools it allows a farmer to take advantage of irrigating effectively.

Response:

Soil moisture sensor readings were collected from 6-, 12-, 18-, and 30-inch depths. Sensors were installed with telemetry to provide a format for retrieving soil moisture status remotely. A surge valve was placed on the riser and was used with each irrigation to ensure a proper soaking.

Results:

Soil moisture status readings helped the cooperating producer track the efficiency of irrigation events, time irrigation based on soil moisture availability, and time irrigation termination. By allowing the surge valve to alternate sets the farmer was able to take advantage of water use by absorbing more of the water into the crop and not allow the water to run out the bottom of the field. Crop yields were 189 bushels per acre and were consistent with the producer's other corn fields. Additionally, end of season soil moisture status allowed the producer to terminate irrigation one cycle sooner than his standard practice. At an irrigation rate of 2-acre inches across approximately 40,000 acres of corn in Mississippi County, irrigation termination could have potentially saved 2.1 billion gallons of water.

Soybean Irrigation Timing Using Soil Moisture Sensors

Producer: Danny Gipson Farms

Agent: Ethan Brown

Planted: 5/3/2022

Final Irrigation: 8/23/2022

Plant Population: 128,000

Soil Type: Clay

Variety: Becks 4885

Adjusted Yield: 75 bu.



Mississippi Co. Extension agents installing soil moisture sensors.

Purpose:

Improving irrigation water use efficiency is necessary to ensure long-term sustainability of natural resources and to reduce crop production costs. Developing irrigation decision rules based on soil moisture status in the rooting zone can help producers refine irrigation practices and improve efficiency.

Methods:

Soil moisture sensors were installed with telemetry capabilities on a commercial soybean field in Mississippi Co. for the 2021 production season. Soil moisture readings were collected from 6-, 12-, 18-, and 30-inch depths. Readings were transposed to the University of Arkansas Soil Moisture Sensor Calculator App and used to time irrigation. All production inputs were based on the cooperating producer's standard practices.

Results:

The field was harvested on 9/28/2022 at a moisture level of 11.0%. When adjusted for moisture, the yield was calculated to be 74.7 Bu/a. Monitoring the soil moisture status during the season resulted in 3 fewer irrigations than would have been initiated using the producer's standard practice. Extrapolated for the acres of soybeans in Mississippi County, basing irrigation events on soil sensor triggers could potentially reduce irrigation by 45 billion gallons and reduce irrigation costs by nearly \$3,000,000.00.

Mississippi County Cotton Variety Demonstration

Producer: Wildy Family Farms
Agent: Ethan Brown
Location: Manila
Planted: May 18, 2022
Harvested: 11/4/2022

2022 Cotton Variety Demonstration

Variety Name	Clark County		Jefferson County		Lee-Phillips County		Lonoke County		Mississippi County		Poinsett County		St. Francis County		Average	
	Lint lb/A	R	Lint lb/A	R	Lint lb/A	R	Lint lb/A	R	Lint lb/A	R	Lint lb/A	R	Lint lb/A	R	Lint lb/A	R
ST 4595 B3XF	693	2	1342	8	1781	6	1659	1	1968	1	1511	5	1799	4	1536	3.9
DP 2115 B3XF	611	7	1489	4	1792	5	1504	2	1919	2	1545	4	1789	5	1521	4.1
DP 2127 B3XF	706	1	1405	3	1913	2	1379	7	1813	4	1361	11	1856	1	1490	4.1
NG 3195 B3XF	517	12	1425	5	2063	1	1489	3	1697	9	1498	6	1833	2	1503	5.4
ST 5091 B3XF	661	5	1415	11	1856	3	1486	4	1793	6	1407	9	1820	3	1491	5.9
DG 3456 B3XF	608	8	1391	6	1613	11	1448	6	1844	3	1442	7	1599	9	1421	7.1
PHY PX1140 W3FE	571	10	1350	2	1591	12	1473	5	1765	7	1421	8	1615	8	1398	7.4
DP 2038 B3XF	662	4	1483	10	1810	4	1084	12	1809	5	1265	12	1728	6	1406	7.6
DG 3511 B3XF	573	9	1349	1	1639	9	1263	10	1597	11	1573	3	1572	12	1367	7.9
PHY 411 W3FE	669	3	1397	12	1637	10	1345	8	1659	10	1579	2	1589	10	1411	7.9
NG 4190 B3XF	611	6	1340	7	1692	7	1289	9	1541	12	1371	10	1674	7	1360	8.3
DP 2020 B3XF	520	11	1240	9	1652	8	1136	11	1698	8	1612	1	1578	11	1348	8.4
LSD P=.05																

4-H Projects
Ag in the Classroom
(Parts of a Plant and Planting Tree classes)

Cooperator: Rivercrest Elementary School

Agent: Ethan Brown

Relevance:

The Mississippi Co Extension Council and Ag subcommittee recommended more programs designed to expose youth to agriculture in the county. Additionally, incorporating STEM based projects into agriculture topics may help youth identify career opportunities in agriculture.

Response:

Mississippi County Extension agent Ethan Brown worked with 2nd grade students from Rivercrest Elementary School to show them the importance of plants in our environment and how to plant trees. The students were given worksheets to show them the parts of a plant and the parts of trees. By teaching them that new plants come from seeds this was the perfect opportunity to bring in some trees for them to plant themselves.

Results:

The Friday before Spring Break, Ethan was able to bring in around 100 Shumard Oak trees and give one to each student to plant over spring break. It was explained to them that each of these trees had derived from an acorn and now was a seedling tree. There have been multiple reports from these students that many of the trees made it through the drought that we had during the summer and done well into the fall.



Mississippi County 4-H Community Club

Cooperator: 4-H Community Club

Agent: Kamella Neeley

Relevance:

A 4-H Community Club was formed from youth members across the county that were interested in participating and leading out in countywide community driven projects. Members are accepted from Cloverbud to Senior age levels, so projects are created and organized for each 4-H age group to be able to actively participate in with a sense of accomplishment. The club's mission is to find youth interested and involved in making a difference through a community presence and nurture or assist that desire by providing projects for them to participate in around the county in varying community settings exposing them to new people and community ties.



Response:

Organized and participated in various community projects in the county as a club

-Food Drive of canned and boxed goods donated to food pantry The Union Mission in Blytheville

-Partnered with the United Way of Northeast Arkansas and participated in their back-to-school Stuff the Bus campaign in Osceola

-Participated in a Community Thanksgiving Meal in Manila by making food, serving the meal, talking to people as they came to get a plate of food and delivering boxed meals to the needy

-Organized and completed Christmas Cards for Troops to send to an air force troop in Oklahoma with home ties to Mississippi County

Results:

This new 4-H club continues to garner interest from people across the county looking for ways to get their kids involved within their communities and work with other like-minded youth. Through their community efforts being visible through social media, being spotted in the county and participating in events, their community projects have been published in countywide newspapers 6 times since their start. The club has grown since its start with 4 members and now is approaching 15 members with more inquiring monthly.

4-H Youth Leadership Program

Agent: Kamella Neeley

Relevance:

Mississippi County relies on the development of youth in leadership roles contributes greatly to the positive development of both young people and their communities. According to the US Census Bureau, Half of Americans ages 18-29 cast a ballot in the 2020 general election, one of the highest youth voting rates in recent history and an 11-point increase from 2016 (from 39% to 50%). Voting is an indicator of civic engagement suggesting a need for the 4-H Youth Leadership Program (YLP). The 4-H YLP provides experiences to develop youth leadership skills, social responsibility, and civic awareness.



Response:

Six high school juniors are selected from each school district (36 youth total) to participate in Youth Leadership Program. In the 2021-2022 YLP, each participant received 24 leadership development hands-on educational hours for a total of 864 hours. Monthly sessions throughout the school year includes topics targeting life skills that are critical for developing leadership qualities such as: critical thinking, decision making, managing conflicts, teamwork & goal setting. Workshops consist of civic and community service, project planning, personality assessments, leadership styles, teambuilding, and public speaking. Participants are required to complete an essay, community service-learning project, and a group presentation.

Results:

The 4-H Youth Leadership experience helps youth gain life skills in conflict resolution, self-motivation, and responsible citizenship. According to a year-end evaluation, youth reported their desire to increase their involvement with their communities (100%), look for further opportunities in leadership roles (100%), apply knowledge in a way to make better informed decisions about their future (100%) and tell others about what they've learned in YLP (100%). Ninety-six percent of youth intend to engage in future community service. Youth reported interest in a career helping others (96%), registering to vote when they turn 18 (93%), plan to tell others what they've learned in this program (96%), and have greatly increased their knowledge of teamwork and teambuilding (60%). As a result of the 4-H Youth Leadership Program, youth gained confidence in public speaking (97%), and learned what civic engagement is and how it relates to them and their communities.

FCS Projects

Improving Wellness with Extension Get Fit

Relevance:

The Miss. Co. FCS subcommittee has repeatedly identified nutrition and healthy eating, exercise and physical activity, nutrition and healthy eating, and mental health among their top five concerns. In Mississippi County, 42% of adults are obese. For teens and children, 40.9% are overweight or obese.

Response:

Increasing physical activity is linked to improved overall health and well-being. Physical activity recommendations for Americans include a minimum of 150 minutes of aerobic exercise and two to three sessions of weight bearing exercise weekly. Extension Get Fit participants meet twice weekly for 45 minutes to one hour of exercise sessions including routines on balance, strength training, flexibility/stretching, and aerobics. Forty unduplicated participants had the opportunity to participate in 72 sessions at our Arkansas Northeastern College Community Partner's Aerobics Room on the main campus in Blytheville.

Results:

From End of Course Surveys, participants reported: 100% overall health improved; 93% felt physically stronger, experienced increase in energy, and became more physically active; 78% reported improved sleep.

Quotes from Participants:

"My quality of life has improved greatly because of this program. I'm more flexible and stronger. My balance has improved also. Thanks for making this available to us."

“Real change in joint mobility.”



SNAP Ed Impact FY22

Eating Smart with Teen Cuisine

Relevance:

Mississippi County has a SNAP caseload of 11,746 unduplicated persons, with 2,975 cases ages 7-18. Mississippi County is ranked among the least healthy counties in Arkansas in Health Outcomes and Health Factors: 73 out of 75 and 72 out of 75 respectively. Blytheville School District student population is 53.2% overweight or obese with 10th grade males 28.7% and 10th grade females 55% overweight or obese.

Blytheville High School has 74% free or reduced lunch students. Gosnell School District has a student population of 38.8% overweight or obese with 10th grade males 38.1% and 10th grade females 37.1% overweight or obese. Gosnell High School has 73% of students on free or reduced lunch. Manila High School has a student population 43.2% overweight or obese with 10th grade males 44.1% and 10th grade females 37.7% overweight or obese. Manila High School has 58% of students on free or reduced lunch.

Response:

Teen Cuisine, a cooking and nutrition education curriculum for teens grades 6-12, was introduced in Mississippi County in January 2022 as pilot program of 6-12 lessons depending on the time schedule of the participating high schools: Blytheville, Gosnell, and Manila High Schools. The goals included: apply MyPlate to meal and snack



planning, including breakfast; identify nutrient-dense foods and beverages that are low in added sugars, saturated fats, and sodium; read and follow a recipe, using correct cooking and measuring techniques; demonstrate safe knife handling skills; prepare food safely to prevent foodborne illness; use food labels to choose healthier foods and snacks; understand the importance of physical activity and consider ways of incorporating it into everyday life. These goals will enable teens to prepare foods at home reducing reliance on foods away from home which are higher in calories, total fat and saturated fat, and lower in calcium, fiber, and iron. The healthy eating and increasing physical activity concepts contribute to addressing overweight and obesity rates of the teens included in the program at the three participating high schools. Each of the six lessons included a foods lab and were taught in the high schools' family and consumer sciences classes with access to foods labs. Students received instruction in the key concepts including a workbook, supplemental handouts, and in class activities. Healthy recipes included in the curriculum were prepared by the students with tasting samples consumed by participants. Students received incentives to reinforce the lessons such as a cutting board, measuring equipment, cookbook, apron, and more. They also received a certificate. A pre and post evaluation tool was used along with an end of course assessment. The participating teachers also completed an assessment. FCS Agent taught 48 sessions at the three high schools to 36 students, grades 10-12.

Results:

According to pre and post surveys and end of course surveys, students who participated in the Teen Cuisine program reported the following: 92% increased eating healthy fruits and vegetables and continued or increased physical activity. Other positive indicators included: 64% eat breakfast regularly, 60% each read food labels when purchasing food and practice food safety rules regularly. Another improvement indicated from the comparison of the pre, and post surveys included increased confidence using measuring cups and spoons.

Quotes:

Comments from students on end of course survey in response to what they learned or was helpful from the Teen Cuisine program included: "It taught me that different foods should be eaten all the time to get all nutrients," stated one student. Another stated, "It showed me how to live healthier and make better decisions." Another student responded, "It helped me to become a better teen cuisine and eat much better than I normally do." The participating teachers indicated the program was helpful and effective and they heard many positive comments from students.

More Information:

Serve on Gosnell School District and Blytheville School District Wellness Committees. Assisting Blytheville School District in updating School District Wellness Plan. Advised Rivercrest High School Family and Consumer Sciences teacher on offering a least one healthy beverage option in a school beverage fundraiser for next school year. Serve on the Mississippi County Arkansas Economic Opportunity Commission Head Start Menu Planning and Health Committee. Advised on ways to increase physical activity. In connection with the Gosnell School District and Blytheville School District Wellness Committees, agent in partnership with Crystal Bowne at the Little Rock State office initiated, improved, or expanded professional development opportunities on nutrition and physical activity at Gosnell Elementary (grades K-6), Blytheville Primary (grades K-2), and Blytheville Middle (grades 6-8) by creating monthly PSE newsletters for all staff at those schools. In addition, 1119 Adults at 3 Senior Center sites under Mississippi County Senior Center agency received 29 sessions of Fresh Conversations. Two high schools, Manila and Rivercrest Family and Consumer Sciences students received 9 sessions of Arkansas Foods with 26 participants. Indirect contacts receiving Right Bite Newsletters and Commodity Newsletters include 5050 at 4 sites for 47 sessions. Mississippi County has 18 SNAP Ed partners from all parts of the county.