



DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System

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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 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 and Alan Beach 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 16 oz./a rate to a lawn located at the University of Arkansas Northeast Research and Extension Center on February 28,2023.

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. S-Metolachlor, Pendimethalin, and Prodiamine seemed to have the best control overall into the early summer months as there was little visible emergence of crabgrass in either plot while Atrazine revealed a breakthrough in control. By the June 13th date all plots began showing breakthrough. One other observation made during this demonstration is that Prodiamine can kill Bermuda roots if 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 18th rating date.

Pre-emerge Herbicide Control Results

Herbicides	April 12	May 18	June 13
Pendimethalin	0	1	2
S-Metolachlor	0	1	2
Prodiamine	0	0	1
Untreated	0	2	4
Atrazine	0	0	3

Best Management Practice Lawn Demonstration

Cooperator: Mississippi Co. Master Gardeners

Agent: Alan Beach

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 and Alan Beach created a Best Management Practice Demonstration where they 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 style="text-align: center;">Untreated Check-</p> <p style="text-align: center;">Henbit-5, Clover-4, Crabgrass-1, Dandelion-3, Dallisgrass-3</p> <p>Lots of pest weeds present within the plot.</p>	<p style="text-align: center;">Fertilizer and Herbicide (BMP)-</p> <p>Plot was weed free through the first of June. A noticeable amount of Bermuda growth starting to show compared to the herbicide only plot.</p>
<p style="text-align: center;">Fertilizer Only-</p> <p style="text-align: center;">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 style="text-align: center;">Herbicide only-</p> <p style="text-align: center;">Dallisgrass-1</p> <p>Plot was weed free other than one plant of Dallisgrass. Bermuda was beginning to emerge.</p>

Row Crop Demonstrations Mississippi County Soybean Verification

Producer: Danny Gipson

Agent: Ethan Brown and Alan Beach

Location: Burdette

Planted: April 11, 2023

Harvested: October 2, 2023

Previous Crop: Soybeans

Plant Population: 132K

Row Width: 38in twin row

Variety: Becks 4991X

Yield: 78.9 Bu/A



Total Fertility (lbs./Ac) N 0 P 0 K 100 S 0 Zn 0

The 74 acre field, Sharkey-Steele complex, was located south of Dell and followed the previous year soybean crop. Following fall tillage, the field was planted on April 11 with Becks 4991X2, Escalate treated seed, at 140,000 seed/acre on 38" twin-row seed spacing. On April 11, 1 quart/acre Gramoxone plus 1.5 pints/acre Metallic MTZ was applied for pre-emerge weed control. The field emerged on April 20 to a plant population of 132,000 seed/acre. Middles were plowed on May 23 to improve irrigation efficiency. Initial post emerge herbicide application was made on May 31 of 12.8 ounces/acre Engenia plus 1.25 pints/acre s-metolachlor. A second herbicide application was made on June 1 of 1 quart/acre glyphosate. According to in season tissue samples, the field was Potash deficient and 100 pounds/acre of 0-0-60 was applied by air. Disease and insect pressure remained below threshold and no treatment was recommended. The field was furrow irrigated 4 times and harvested on October 2 yielding 78.9 bushels/acre adjusted to 13%.

Mississippi County Corn Verification

Producer: Trey Coffman

Agent: Ethan Brown and Alan Beach

Location: Whitton

Planted: 3/29/2023

Harvested: 8/27/2023

Previous Crop: Soybeans

Plant Population: 34,000

Variety: Becks 6774

Yield: 234 bu/A



The Mississippi County corn research verification field was located near Whitton on Dundee Silt Loam soil. The field was 42 acres, and the previous crop was soybeans. A pre-plant fertilizer 40-45-60-6-0 was applied on March 28 followed by hipper/roller. The field was planted on March 29 to Becks 6774 at 34,000 seeds per acre on 38-inch row spacing followed by a pre-emerge application of Verdict at ten ounces per acre. The field emerged on April 10 and the final plant population was 34,000 plants per acre. On May 1, 125 pounds per acre of urea plus 75 pounds per acre of ammonium sulfate was applied and 2 quarts per acre of Acuron, 1 pint per acre of atrazine, plus 1 pint of crop oil was applied by the producer for weed control. An application of 150 pounds per acre of urea plus 60 pounds per acre of potash was made on May 21 followed by a pre-tassel application of 100 pounds per acre of urea on June 7. Total fertilizer for this field was 229-45-96-24-0. The field was harvested on August 27 and yielded 234.1 bushels per acre adjusted to 15.5% moisture.

Mississippi County Rice Verification

Producer: Oakes Farms

Agent: Ethan Brown and Alan Beach

Location: Denwood

Planted: April 19, 2023

Harvested: September 12, 2023

Previous Crop: Soybeans

Planting Population: 24 lbs./A

Variety: RiceTec FP 7321

Yield: 193 bu/A



The Mississippi County Rice Verification was located on Oakes Brothers Farm in Denwood on a Sharkey Clay soil type. The field was planted on 4/19/2023 with RiceTec FP 7321 and was sprayed with Command at 16 oz/A, Glyphosate at 28 oz/A, Sharpen 2 oz/A. The rice emerged great, and we overlapped pre-emerge on 5/14/23 with Preface at 4 oz/A, and Facet at 32 oz/A. On 5/15/2023 the field was fertilized with 200 lbs./A of Urea. We applied consecutive shots of 100 lbs/A urea on 5/30/2023, 6/26/2023, and 7/17/2023. The field was salted on 9/4/2023 and was harvested on 9/12/2023 and cut 193 Bu/A dry.

Corn Irrigation Timing – Soil Moisture Sensor Demonstration

Producers: Donner Farms and Dalton Dildine

Agent: Ethan Brown and Alan Beach

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 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 producers 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 consistent with the producer's other corn fields. Additionally, end of season soil moisture status allowed the producers 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

Producers: Danny Gipson, Vance Austin, Kevin Goble, Tony Hopper, Kade Stokes, Heath Donner, Robbie Veach, Mike Smith, Austin Matheny, Gavin Sullivan

Agent: Ethan Brown and Alan Beach

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.



Mississippi Co. Extension agents installing soil moisture sensors.

Methods:

Soil moisture sensors were installed with telemetry capabilities, or manual reads on 20 combined commercial soybean fields 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 irrigations. All production inputs were based on the cooperating producer's standard practices.

Results:

The fields were all harvested and were within normal yield averages. When the farmers were given a survey at the end of the season, 100 percent said that these practices helped them irrigate more efficiently and helped them save at least one or more irrigations.

Mississippi County Cotton Variety Demonstration

Producer: Wildy Family Farms
Agent: Ethan Brown and Alan Beach
Location: Manila
Planted: 5/18/2023
Harvested: 11/4/2023



2023 Cotton Variety Trial

Variety Name	Clark County		Mississippi County		Poinsett County		Phillips 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
DP 2127 B3XF	1279	1	1866	2	1786	2	1547	6	1866	2	1669	2.6
DP 2038 B3XF	1269	2	1655	10	1820	1	1595	3	1911	1	1650	3.4
DP 2115 B3XF	1165	5	1825	4	1744	3	1544	7	1760	6	1608	5.0
PHY 411 W3FE	1205	3	1795	5	1563	7	1421	9	1799	3	1557	5.4
ST 4595 B3XF	977	11	1842	3	1617	5	1578	4	1771	5	1557	5.6
NG 3195 W3FE	1056	9	1929	1	1426	12	1683	1	1709	10	1561	6.6
ST 5091 B3XF	1057	8	1677	8	1584	6	1559	5	1714	8	1518	7.0
NG 4190 B3XF	937	12	1718	6	1538	9	1633	2	1760	7	1517	7.2
DG 3528 B3XF	1121	7	1571	12	1562	8	1400	12	1787	4	1488	8.6
DP 2239 B3XF	1125	6	1580	11	1645	4	1416	10	1671	12	1487	8.6
DG 3519 B3XF	1200	4	1673	9	1468	11	1405	11	1714	9	1492	8.8
PHY 360 W3FE	994	10	1713	7	1470	10	1535	8	1706	11	1484	9.2
LSD P = 0.05	Not Replicated		321.96		128.28		162.20		141.59			

Mississippi County Crop Per Drop Fields

Cooperator: Heath Donner, Dalton Dildine, Danny Gipson, Vance Austin, Jason Bennett, Gavin Sullivan, Chad Wright

Agents: Ethan Brown and Alan Beach

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. In turn the Crop per Drop is a competition amongst commodity growers to see who can water the most efficiently throughout the state.

Methods: Each grower was given the option to receive soil moisture sensors, telemetry unit, and surge valves on a first come first serve basis. We also recommended using a pipe plan from the pipe planner or faucet software. Throughout the season we made sure that all the grower equipment stayed running efficiently and if the grower needed any assistance with their equipment we were there to help. We would check the telemetry units every few days and talk with growers on options for irrigations.

Results: We had 10 fields in the Crop Per drop program with 8 harvested. All the growers were pleased with their irrigation efforts during the growing season, many believed they saved themselves two or more irrigations without sacrificing yields. Winners will be announced at the Soil and Water Conference in February 2024.



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

Cooperator: Rivercrest Elementary School

Agent: Ethan Brown and Alan Beach

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 agents Ethan Brown and Alan Beach worked with Pre-K students from Rivercrest Elementary School to show them the importance of plants in our environment and how to plant them. The students were given worksheets to show them the parts of a plant and were given pots to plant flowers. By teaching them that new plants come from seeds this was the perfect opportunity to bring in seeds for them to plant themselves.

Results:

By providing each student with a pot, soil, seeds, water, and information about flowers and how they grow, each student in the Rivercrest Elementary PreK was 100 percent successful in growing a plant.

Mississippi County 4-H Summer Camps

Cooperator: Arkansas Northeastern College

Agent: Kamella Neeley and Pam Pruett

Mississippi County Extension Agents Kamella Neeley (4-H) and Pam Pruett (FCS) partnered with Arkansas Northeastern College (ANC) Department of Community Education, Northeast Arkansas Research and Extension Center (NEREC), and Big River Steel (corporate sponsor for NEREC site participants) to provide summer camps on cooking and etiquette. Two Food and Fun Cooking Camps were offered in the summer as camps, one on the North end of the County at Arkansas Northeastern College and one in the South end at NEREC, Keiser. Participants learned basic food preparation skills, knife safety skills, prepared several recipes each day and received booklets with 4-H information and basic nutrition facts. The Etiquette Essentials camp participants wrote invitations with RSVP requests and thank you notes, practiced making introductions, learned about table setting, and more. The culminating event was a formal tea including invited guests at the ANC Governor's Ballroom. Each camp program participant received a certificate of completion at the end of the program.



Evaluations were given and two Cooking Camp participants said, "I liked this class because we got to bake different things I've never tried, and I liked how you helped me learn new skills."

One Etiquette Camp participant said, "What I liked best about the class was meeting new people and learning about manners."

Several students reported that they had gone home and cooked these recipes at home.

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 by 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 at 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.