2023 Faulkner County Agriculture Demonstration Summary





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Introduction and Acknowledgments

The 2023 Faulkner County Demonstration summary is a collection of on-site demonstration results conducted in Faulkner County by local County Agents. Demonstrations are the cornerstone of the University of Arkansas System Division of Agriculture Cooperative Extension Service's mission which is:

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

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

Conducted by:

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Acknowledgements:

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

Cooperating Producers					
Horticulture	Livestock and Forages	Row Crop			
Tracy Clark	Flying C Ranch	Schaefers Brothers			
Tom Henry, Cadron Crest Orchard		Joe and Austin Thrash			
Wayne Hudson, Hudson Orchard		Tucker Farms			
Freyaldenhoven's Greenhouse Inc.					
Faulkner County Master Gardeners					

Faulkner County Horticulture Demonstrations

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

• Spotted Wing Drosophila Monitoring

- Spotted-wing drosophila (SWD) is an invasive fruit fly that was first observed in Arkansas in 2012. SWD flies damage small fruits by laying eggs in ripening fruit that later develop into larvae that are present in harvested fruit. A commercial blackberry field was monitored weekly during the main growing season for SWD adults and ripe fruit were tested for the presence of SWD larvae.
- Multi-County Pumpkin Variety Trial
 - Many specialty crop growers in the state plant pumpkins to capitalize on the fall agritourism market. Three new pumpkin varieties of varying colors were trialed at 36 different sites to assess marketability and potential varietal resistance to melonworms and powdery mildew.

• Squash Vine Borer (SVB) Control

 Squash vine borers (SVB) are one of the most difficult pests to control in squash since SVB caterpillars feed on the inside of stems where insecticides cannot reach them. The biocontrol, *Bacillus thurengensis* (Bt), is known to be an effective control of many different caterpillar pests. Two different methods of applying Bt were tested for their effectiveness in controlling SVB on yellow squash.

• Tomato Training

 Training or supporting tomato plants by staking and trellising can make managing the plants easier and may increase yields particularly in small spaces. If left untrained, tomato plants become a tangled jumble of vines that is difficult to manage and can lead to pest problems and disease. Master Gardeners demonstrated three different ways to train tomatoes.

Greater Peach Tree Borer Trapping

Local Cooperator: Wayne Hudson, Hudson Orchard Location: 190 Cotton Hill Rd., Greenbrier, AR Established: April 25, 2023

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

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

	# Greater Peach Tree Borers Trapped				
Date	Trap #1	Trap #2	Trap #3	Trap #4	Actions Taken
5/2/2023	0	0	0	0	None
5/9/2023	11	6	2	7	Grower instructed to be ready to spray in the next 2 weeks
5/16/2023	16	14	8	11	Insecticide recommended and applied to the trunks of trees
5/25/2023	1	1	2	0	None
5/30/2023	1	4	0	1	None
6/5/2023	2	2	3	5	None
6/13/2023	1	3	4	2	None
6/27/2023	3	0	1	3	None
7/5/2023	0	0	2	1	None
7/11/2023	0	0	1	1	None
7/18/2023	32	33	26	25	Insecticide recommended and applied to the trunks of trees

Results:

Summary:

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



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

Spotted Wing Drosophila Monitoring

Local Cooperator: Tom Henry, Cadron Crest Orchard Location: 86 Mode Rd., Guy, AR Established: June 1, 2023

Spotted-wing drosophila (SWD) is an invasive fruit fly that was first observed in Arkansas in 2012. SWD flies damage small fruits by laying eggs in ripening fruit that later develop into larvae that are present in harvested fruit. The flies of adult SWD can be monitored using traps baited with specific plant-based kairomones to determine if and when insecticide applications are needed. Monitoring for SWD larvae in harvested blackberry fruit is another important tool to use during the harvest season to determine the success of pest management measures. SWD larvae can be detected in fruit by soaking ripe berries in salt water.

A commercial blackberry field was monitored weekly during the main growing season for SWD adults and ripe fruit were tested for the presence of SWD larvae.

Date	# Spotted Wing Drosophila Trapped		# Larvae in 100 Fruit Sample	Actions Taken
	Trap #1	Trap #2		
6/5/2023	2	0	NA	Insecticide application recommended- alternate modes of action weekly
6/13/2023	3	1	NA	Insecticide application recommended- alternate modes of action weekly
6/27/2023	1	0	NA	Insecticide application recommended- alternate modes of action weekly
7/5/2023	0	3	0	Insecticide application recommended- alternate modes of action weekly
7/11/2023	1	2	0	Insecticide application recommended- alternate modes of action weekly

Results:

Summary:

Weekly scouting helped the producer detect the presence of SWD and make decisions about the most timely and effective insecticide applications. Insecticide applications were effective for preventing infestation of the ripe fruit.



Water from a SWD trap was poured through a coffee filter and a single SWD adult was found (circled). The traps catch other types of fruit flies in addition to SWD.

Multi-County Pumpkin Variety Trial (36 Sites Statewide)

Project Leaders: Aaron Cato and Ryan Keiffer Local Cooperator: Tracy Clark Location: 132 Cedar Valley Dr., El Paso Established: June 29, 2023

Many specialty crop growers in the state plant pumpkins to capitalize on the fall agritourism market. Three new pumpkin varieties of varying colors were trialed at 36 different sites to assess marketability and potential varietal resistance to melonworms and powdery mildew. The table below highlights some of the attributes of the three pumpkin varieties trialed.

Variety	Days to Harvest	Color	Characteristics	Powdery Mildew Resistance
Justify	100	Orange	Traditional orange with pronounced ribbing. Large to 20 lbs. with a heavy, dark handle.	Intermediate
Moonshine	100	White	White and slightly ribbed. Small-medium to 8 lbs. with long green handle.	-
Spicy Mocha	100	Tan	Tan and deeply ribbed. Medium-Large to 15 lbs. with thick handles.	Intermediate

Table 1. A table showing the three varieties of pumpkins in the demonstration and their different characteristics and advertised size from seed companies.

Five plants per variety were planted at most sites, but some larger sites received as many as 15 plants per variety. The plants were spaced 3 feet apart in-row with a 10-feet row spacing. Grower standard practices for irrigation and fertility were suggested but not required.

Results:

On average, each variety produced 2-3 pumpkins per vine with Moonshine having the highest average of 2.8 pumpkins per vine. The average weight of each variety was lower than advertised size descriptions from Table 1. Spicy Mocha and Justify were similar in all metrics, with an average of about 2 pumpkins per vine with an approximate weight of 7.5 lbs. each. Moonshine pumpkins averaged 4.1 lbs. per pumpkin, but set almost one more fruit per vine compared to Justify and Spicy Mocha. Overall, the percent marketability of the pumpkins was good with all three varieties near 85 percent. Moonshine was reported to have powdery mildew by 18% of counties who reported on that category compared to 8% for Justify and Spicy Mocha (Charts 1). Many factors may have contributed to reduced size or % marketability when compared to advertised weight, but the most likely culprit was drought conditions during flowering and/or water delivery issues.

Variety	Avg. # of pumpkins/vine	Avg. Weight (Lbs.)	Percent Marketable Fruit
Justify	2.0	7.3	85.3
Moonshine	2.8	4.1	84.9
Spicy Mocha	2.0	7.7	84.7

Table 2. Results from the trial showing average number of pumpkins per vine, average weight per pumpkin (Lbs.), and percent marketable fruit.



Chart 1. Powdery mildew was observed on Spicy Mocha and Justify even though they have an intermediate amount of powdery mildew resistance. Moonshine lacks powdery mildew resistance and was observed in 18% of reporting counties compared to 8% for the other two varieties.

Summary:

One of the main objectives of this demonstration was to evaluate melonworm resistance in pumpkin varieties, however we failed to observe melonworm across much of the state. Because melonworm larvae can quickly defoliate plants, as well as feed on the rind and handles of pumpkins, we urged frequent scouting of pumpkins to detect this pest. Melonworm was found in research trials at the SWREC in Southwest Arkansas in late August. This indicated that the pest may be detected in county agent demonstrations, but melonworm wasn't observed anywhere else in the state until the pest was found again in research trials at the VRS in Kibler on October 10th. Thus, we were unable to evaluate the susceptibility of the demonstration varieties to melonworm this year; although research trials are still being conducted by state specialists to determine cucurbit species susceptibility to melonworm. However, this demonstration showcased the importance of scouting when considering insecticide applications, as none were warranted for melonworm this year, unlike previous years. Other issues presented themselves when agents reported their data, and Chart 2 shows some of the common issues that impacted demonstration success or failure.



Chart 2. Heat and irrigation issues were the number one issue impacting demonstration success. Additionally, deer pressure and squash bug damage were the second biggest issues for agents.



Teachers and students from Sheridan Elementary and Intermediate Schools are shown collecting data on 'Justify' pumpkins.

Squash Vine Borer (SVB) Control

Local Cooperators: Faulkner County Master Gardeners and Freyaldenhoven's Greenhouse Location: The Teaching Garden, 1305 E Siebenmorgan Rd, Conway Established: June 19, 2023

Squash vine borers (SVB) are one of the most difficult pests to control in squash since SVB caterpillars feed on the inside of stems where insecticides cannot reach them. The biocontrol, *Bacillus thurengensis* (Bt), is known to be an effective control of many different caterpillar pests. Two different methods of applying Bt were tested for their effectiveness in controlling SVB on yellow squash.

Treatments:

Treatment 1	Untreated Control
Treatment 2	Weekly injections of Bt into the stems of plants whether SVB caterpillars are present or not
Treatment 3	Bt injected into stems infested with SVB caterpillars

Results:

	Pr	esence of S	VB	
Date	Trtmt 1	Trtmt 2	Trtmt 3	
June 19	Absent	Absent	Present	
June 21	Absent	Absent	Present	
June 23	Present	Absent	Absent	
June 26	Present	Absent	Absent	
June 28	Present	Absent	Absent	
June 30	Absent	Absent	Absent	
July 3	Absent	Absent	Absent	
July 5	Absent	Absent	Absent	
July 7	Absent	Absent	Absent	
July 10	Absent	Absent	Absent	
July 12	Absent	Absent	Absent	
July 14	Absent	Absent	Absent	

Summary:

SVB was not a significant pest at this site in 2023. Only two plants were infested during the growing season. Injecting an infested stem with Bt did appear to kill the caterpillar and the plant recovered. The infested plant in the control group died, but no other plants were infested. It would be useful to repeat this demonstration in the future to obtain more data before making any conclusions.

Tomato Training

Local Cooperators: Faulkner County Master Gardeners and Freyaldenhoven's Greenhouse Location: The Teaching Garden, 1305 E Siebenmorgan Rd, Conway Established: April 22, 2023

Training or supporting tomato plants by staking and trellising can make managing the plants easier and may increase yields particularly in small spaces. If left untrained, tomato plants become a tangled jumble of vines that is difficult to manage and can lead to pest problems and disease. Master Gardeners demonstrated three different ways to train tomatoes.

Tomato Support Structures:

Flat Vertical Cattle	A metal cattle panel was installed in the middle of the bed and supported by
Panel	metal fence posts.
Cattle Banel Arch	A long metal cattle panel was bent over a walkway between two beds to make
	an arch.
Tall String Trallic	A 10 ft. tall support structure was constructed from PVC in a garden bed and
Tail String Treilis	strings were tied at the top of the support structure.

Results:

All of the tomatoes grew and produced well. Total yield is difficult to assess since this is a community garden and the public harvests as fruit ripen. Gardeners commented on the ease of harvesting from the cattle panel arch since it was easy to reach up and pick all the fruit. The tall string trellis was a good way to grow a lot of tomatoes in a small space, though a ladder was needed to harvest later in the season. This was also a good way to demonstrate the difference in growth of determinant and indeterminant tomatoes. The determinant tomatoes growing on the flat vertical cattle panel never grew more than 4 ft. tall, while the indeterminant plants easily reached the top of the 10 ft. tall string trellis.

Summary:

There are many different and effective ways to support tomato plants in home gardens.



Determinant tomatoes were planted at the base of a flat vertical cattle panel and allowed to grow on both sides of the panel. Branches were tied to the panel as the plants grew.



Indeterminant tomatoes were planted at the base of a cattle panel arch and at the bottom of strings tied to the tall string trellis. Branches were tied to the trellises as the plants grew.

Faulkner County Livestock, Forage and Row Crop Demonstrations

- MIRI Irrigation
 - A Multiple Inlet Rice Irrigation demonstration was established the Joe and Austin Thrash farm to demonstrate how much water could be saved compared to conventional pumping.

• Soybean Pre-Emerge Herbicide

- A soybean pre-emerge herbicide demonstration was established on Tucker Farms to determine which herbicide would control yellow nutsedge.
- Corn Research Verification Field
 - This was the second year for a Corn Research Verification field on Schaefers Brothers Farms. The field averaged 185 bushels per acre.

• Rogue Rice Herbicide of Weedy Rice

- A Rogue herbicide demonstration was established on the Schaefers Brothers Farms to determine the control of weedy rice.
- Group V Soybean Variety Trial
 - A group V soybean variety trial was established on Schaefers Brothers Farms behind wheat. The field was planted in July and harvested in November.

• Hay Verification Field

• This was the 5th year for a verification field with Flying "C" Ranch. The field is 100 acres and produced 2.5 tons of hay per acre this year.

Multiple Inlet Rice Irrigation (MIRI)

Local Cooperators: Joe and Austin Thrash Location: Lollie Bottoms

Using MIRI or "Multiple Inlet Rice Irrigation" we were able to flood up three different conventional rice fields with this method. Using drones to fly the field we gathered the sizes of our levees and then using pipe planner we were able to determine how many gates were needed based off the size of the paddies in correlation to the amount of water coming out of the pump(s). This method was able to reduce the amount of time watering by around 50%. In general, it would take them a week to flood up one of these fields and we were able to get it flooded in around 3 days. This of course was in favorable condition given the ground was not bone dry.

Soybean Pre-Emerge Demo

Local Cooperators: Tucker Farms Location: Lollie Bottoms

There were 13 different herbicides used in this demonstration. To save some strain on the eyes the best pre-emerges for grasses, broadleaves, and yellow nutsedge can be listed as: Trivence, Boudary, Canopy and Zidua. All that is taken into consideration is that these herbicides have multiple ways to control weeds. The best way to control weeds moving forward is to use the combination of PRE & POST emergence herbicides that provide multiple modes of action against these broad complexes of weeds. Whether it be tolerance or resistance, it is a matter of making sure that we are using herbicides timely, and properly. Nutsedge can further be controlled by using STS soybeans to ensure that we can use Permit over the top of them.



Corn Research Verification Program

Local Cooperators: Schaefers Brothers Farms Location: Lollie Bottoms

The Faulkner County corn research verification field was located south of Conway, near Lollie Bottoms on Gallion Silt Loam soil. The field was 58 acres, and the previous crop was soybeans. A mixed pre-plant fertilizer of 39-0-60-18-0 was applied on April 14 and incorporated with a field cultivator. On April 15, the field was planted to Stine 9818 at 32,000 seeds/ac on 30-inch-wide rows. The field emerged on April 24 to a final plant population of 30,625 plants/ac. On May 16, the grower made a fertilizer application of 175 pounds/ac of urea plus 75 pounds/ac of ammonium sulfate, followed by a 150 pound per acre pretassel application of urea on June 12. On May 16, a lay-by herbicide application of 3.6 pints/ac of Halex GT, 1.5 quarts/ac of atrazine, plus 1 pint/ac of crop oil. The total fertilizer for the field was 204-0-60-36-0. The field was center pivot irrigated three times. The field was harvested on August 28, and yielded 197 bushels per acre adjusted to 15.5% moisture.



Rogue Rice Herbicide Control of Weedy Rice

Local Cooperators: Schaefers Brothers Farms Location: Palarm

Rogue is a grass herbicide that is used in straight levee and precision level rice that can maintain floods easily. This product is flown in the flood and let sit for 5 days before pumping water back into the field. The purpose of this was to control sprangletop and weedy rice. There was 100% control of the sprangletop but 0% of the weedy rice was controlled. The only way to combat weedy rice is the selection of Provisia varieties and if available to rotate soybeans in with the use of glyphosate.



Group V Soybean Variety Trial

Local Cooperators: Schaefers Brothers Farms Location: Lollie Bottoms



Crop:	Soybeans	Producer:	Schaefers Brothers
Location:	Lollie Bottoms	GPS:	34.9907 -92.5776
Soil Type:	Gillion Silt Loam	Row Width:	30 inches
Previous Crop:	Wheat	Planting Rate:	140,000
Planting Date:	July 3, 2023	Harvest Date:	November 2, 2023

Fertilizer (N-P-K-S-Zn)

Irrigation Furrow Irrigation 4 times

Variety	Adjusted Yield (Bushels/Acre) ¹	% Moisture at Harvest	Plant Stand ²	Lodging Score ³	Test Weight
GoSoy 541E22	60.2	15.5%	-	-	52.2
Stine 54EE02	58.0	13.2%	-	-	56.2
Stine 58EE02	57.2	15.6%	-	-	52.9
Delta Grow 51E30	53.4	13.8%	-	-	52.6
Donmario DM51E62S	36.2	13.4%	-	-	54.2

¹ Yield adjusted to 13% moisture

² Plant Stand – Plants per acre

³ 1 is no lodging, 10 is completely lodged

*Note:	Plant stands and Lodging score were not recorded.
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Hay Verification Field

Local Cooperators: Flying "C" Ranch Location: Vilonia

Summary: This was the 5th year working with the Flying "C" Ranch with the hay verification field project. A verification field is one where the producer agrees to work with the County Extension Agent and follow Extension recommendations. All of the inputs were recorded on the field throughout 2023 and the State Economic Specialist James Mitchell put together an enterprise budget for the field. The field was soil sampled in February and a fertility program was worked out for the year. Scouting started in March and the weekly information was used to help the producer make production decisions, and the information was used in the agriculture update. After the first harvest bales were weighed to get an average weight in order to keep up with tons of forage harvested throughout the year.

Results: A fertilizer application of 200 pounds of 30-0-20 was applied in March. The first harvest was in June with a yield of 167 bales. An herbicide application of metsulfuron and 2,4-D was applied after the first harvest. The field was harvested again in July (205 bales) and August (253 bales). Hay bales averaged 800 lbs of dry matter and a total of 2.5 tons per acre of dry matter was harvested off the field (625 bales). Another fertilizer application of 200 pounds of 30-0-20 was applied after the July harvest.