

## 2020 Cover Crop / Soil Health Demonstration



**General Information**

County: Clay Grower: Terry Pollard

Cash Crop: Cotton Variety: DP 1646 B2XF

County Agent: Allison Howell

Location of Field: Hwy 1, Piggott, AR GPS: 36.381366, -90.130632

Previous Cash Crop: Cotton on Cover side and Corn on the Non-Cover side

Planting Date: Cereal Rye- November 18, 2019 Cotton- May 2, 2020

Row Width: 38"

Harvest Date: Cover Crop Side: October 18, 2020 No Cover Side: October 22, 2020

**Fertility: (lb/ac)**

	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	Zn
--- Preplant					
--- Sidedress	100 units of 32% Liquid N	Both: 60 units phosphorus	Both: 100 units potash		
--- Other					
<b>Total Fertility:</b>	100	60	100	0	0

**TOTAL RAINFALL: 15.62"**

**Cover Crop Side**

Irrigation Type: Furrow Number of Times: 8 times= 8.31 Acre Inches

Cover Crop Planting Date: Cereal Rye- November 18, 2019 Planting Method: Broadcast Acres: 38

Cover Crop Species	Cereal Rye	Oats	Vetch	Winter Peas	Other	Other	Other	Other	Other
	lb / acre								
	56								

Total Cover Seed Cost (\$ / acre): Total seed cost = \$880 (2 totes)

Tillage Time/Type	Disk	Cultivator	Landplane	Bedder-roller	Do-All	Other	Other	Other	Other
	----- # of passes -----								
Fall									
Spring					1.00				
Summer						1.0			

Pesticides	-----Product Name-----															
	Liberty	RoundUp PowerMax	Cotoran	Asana	Helena ENC	Folex	Mepiquat	Transform	Acephate	Bifenthrin	Bidrin	Diamond	Dropp	Ethophon	Def	Finish
Product Name																
oz /acre	30	60	25	128		3.2	48.0	2		6	8	6	4.2	80	5	8
qt /acre																
lb /acre									1.75							
pt /acre					1											

Cover Crop Treatment Yield: 1541.98 lbs Turnout: 40.41%

Note: This side of the field was impacted by herbicide injury multiples times, wheras the no cover side was not.

**Non-Cover Crop Side**

Irrigation Type: Furrow Number of Times: 8 times= 8.31 Acre Inches Acres: 35

Tillage Time/Type	Disk	Cultivator	Landplane	Bedder-roller	Do-All	Other	Other	Other	Other
	----- # of passes -----								
Fall									
Spring					1				
Summer						1			

Pesticides	-----Product Name-----															
	Liberty	ndUp Power	Cotoran	Asana	Helena ENC	Folex	Mepiquat	Transform	Acephate	Bifenthrin	Bidrin	Diamond	Dropp	Ethophon	Def	Finish
Product Name																
oz /acre	30	30	25	128		3.2	48	2		6	8	6	4.2	80	5	8
qt /acre																
lb /acre									1.75							
pt /acre					1											

Non-Cover Treatment Yield: 1546.54 lbs Turnout: 39.11%

Purpose:

Soil health is a term that is growing in popularity. This term is defined very broadly as “the continued capacity of the soil to function as a vital living ecosystem to sustain plants, animals, and humans.” (USDA-NRCS) and can be interpreted very differently depending on the context of its application. What can be more easily defined is implementation “soil health” practices which consist of not disturbing (tilling) the soil while keeping living roots growing in the soil for as many months out of the year as possible. In the Arkansas row crop setting, this consists of implementing no-till and utilizing cover crops during fall and winter months. Depending on the cover crops being used, many benefits can be achieved like: improved soil structure, increased water infiltration rates, increased water holding capacity, decreased erosion, increased soil nitrogen content, decreased weed pressure for the following cash crops, and others. These benefits can have positive economic implications, especially in years when environmental conditions are conducive and the cover crop is properly planned and managed. If the cover crop system is poorly planned and managed, negative economic implications can also be observed. With a side by side comparison of a cover crop and a non-cover crop practice, economic and management differences can be observed. To track the effects of management differences on each side of the field, measurements on water infiltration rates will be taken along with soil samples to measure the change in soil structure (bulk density and aggregate stability), nematode populations, and soil fertility. Soil moisture sensors will be utilized at varying depths in season to see how infiltration depths differ and if irrigation demand is different among practices. All of these measurements are ultimately being taken to find the economic implications on production.

Cover crops can potentially provide economic benefits like reducing herbicide applications, reducing irrigation frequency by increasing water infiltration rates that allow for greater utilization of rain water, and reducing the need to work/till the field. Some of these benefits like increased infiltration may take more than 1 or 2 years to observe, but others like reduced tillage and herbicide use are likely observable in the first year. If transitioning from a conventional till system to a no-till system with the use of cover crops, the reduced tillage is the biggest economic benefit. Often, the potential benefits of cover crops are lost when heavy tillage is reintroduced into the production system, so to maximize the potential economic benefit of cover crops, their use should be coupled with long-term no-till, or as close to no-till as possible. Also the non-cover side was planted into corn last year. We know that crop rotation alone can benefit yields, which could be a big reason why the side without a cover crop yielded a little less. We are looking for long-term benefits.



Cover



No Cover