Impact of Cover Crops on Profitability and Sustainability in Cotton

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Introduction

- Cover Crops can be used in a row crop setting to improve soil health and help with soil conservation
- 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 rainwater, and reducing the need to work/till the field
- Clay County Extension is promoting cover crops because they provide multiple potential benefits to soil health, while also helping maintain cleaner surface and groundwater
- They prevent erosion, improve soil physical and biological properties, cycle nutrients to the following crop, suppress weeds, improve soil water availability, and break pest cycles

Objective

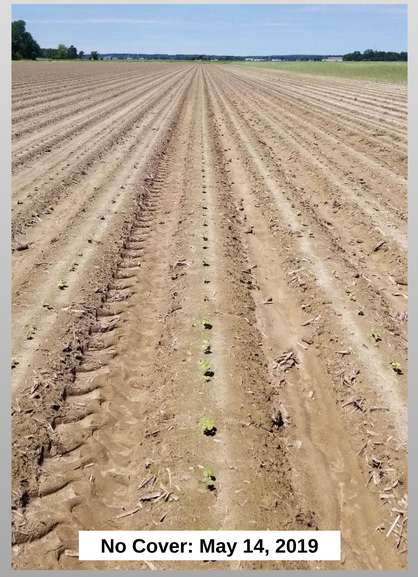
- To promote the benefits of cover crops in Clay County and to increase the number of producers incorporating cover crops into their production systems

Materials and Methods

- A 73 acre field split in two located on Terry Pollard's farm in Clay County, Arkansas was utilized for this study
- On November 21,st 2018, 56 pounds of cereal rye cover crop were broadcasted across the 38-acre half of the field which was planted in corn the year before. The other 35-acre half did not receive a cover crop which was planted in cotton the year before
- Cotton was planted on both sides on April 27, 2019 at 49,000 seeds/acre
- Farmer treated both halves of the field just as he usually would and fields were scouted separately each week
- Both halves of the field were picked separately to show yield differences

Broadcasting Cover Crop Seed

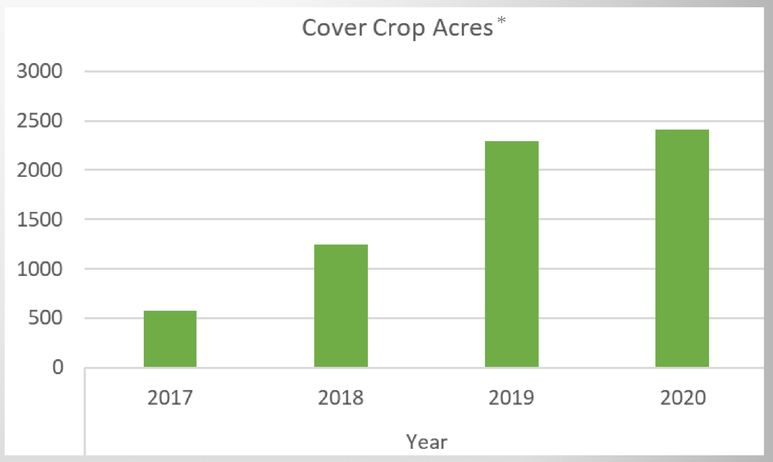
Cover: May 14, 2019



No Cover: May 14, 2019

Cover: May 22, 2019

No Cover: May 22, 2019



* These are the acres contracted through the USDA NRCS incentive programs. These numbers do not include cover crop acres not contracted through the programs.

Educational Methods

- 60 people attended a field day tour in August of 2019 with a stop at the cover crop demo field
- More than 60 people attended a production meeting in January of 2020 whom learned about cover crops and the demonstration from Extension and NRCS personnel
- A Demo Book that included information on this demonstration was dispersed to over 150 people

Cover: Mid Season, 2019

No Cover: Mid Season, 2019

Results and Discussion

- Soil compaction was consistently lower, and soil moisture was consistently higher on the cover side throughout the growing season
- The cotton planted with a cover crop had a better turnout than the half without a cover crop (Turnout percentage is the measurement of the weight ratio of lint to cotton seed in any particular module)
- There was nearly a 100 lb increase in seed cotton in the non-cover field than the cover field
- Our thinking is that the side without a cover crop yielded more than the side with a cover because it was in corn last year. (Cotton usually does better planted after corn instead of cotton after cotton)
- There was less weed pressure in the side with a cover crop
- Water infiltration was improved and less runoff was measured on the cover side
- Multiple years of a cover crop are needed to achieve the desired benefits

Impacts and Conclusion

- Terry Pollard is doubling his cover crop acres this year and another 10 people expressed interest in cover crops who stated that they will be planting them in the future
- Data collected from the demo was published onto three social media sites reaching over 10,000 people
- Additional research is needed to further evaluate how profitability, sustainability, and soil health are related