Economic Analysis of Cover Crops in the Southern High Plains

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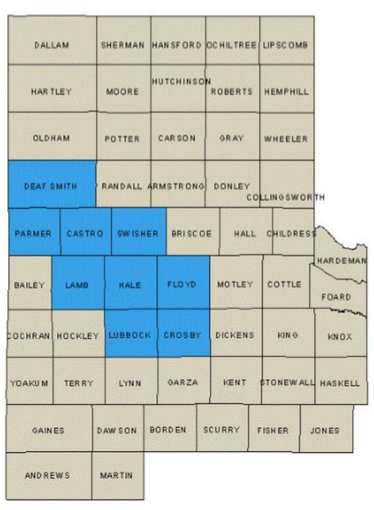
Introduction

Since 2005, the Texas Alliance for Water Conservation (TAWC) has worked directly with producers in over nine counties in the Southern High Plains to demonstrate technologies and management practices to support water conservation efforts. There are over 30 demonstration sites that cover over 5,000 acres representing monoculture, multi-crop, and integrated crop-livestock systems. Irrigation systems represented on the sites include furrow, Low Elevation Spray Application (LESA), Low Energy Precision Application (LEPA), Mid-Elevation Spray Application (MESA), Subsurface Drip Irrigation (SDI), and dryland. The objective of this project is to determine the profitability of monoculture cotton as it compares to cotton grown after a cover crop of grain sorghum. Both sites have similar soil types and fixed costs are assumed to be equal. Both crops were grown up center pivots with similar nozzles and both producers had the ability to track available moisture with soil moisture probes.



Methods

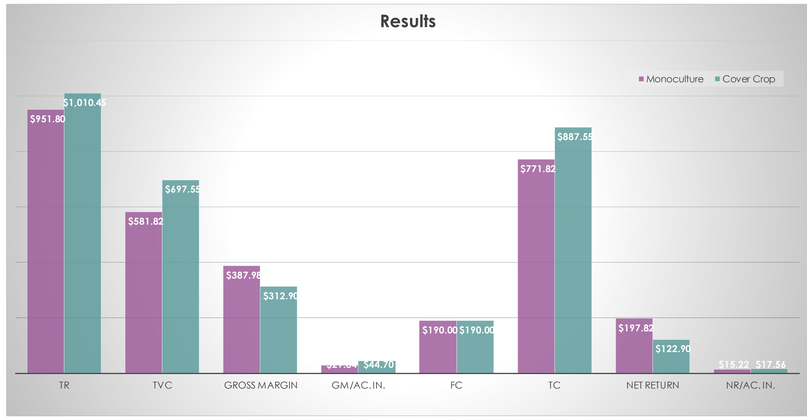
Budget data from the TAWC was used to compare two producer sites. One field was planted to monoculture cotton, while the other was planted into a no-till field following grain sorghum previously planted strictly as a cover crop. Both fields contain 60 acres each consisting of ½ of the total acres under a center pivot.

Table 1. Site Description

	Conventional	Cover Crop
Irrigation System	LEPA	LEPA
Irrigation Water Applied	13 inches	7 inches
In-season Rainfall	15.4 inches	17.2 inches
Total Water	28.4 inches	24.3 inches
Variety	Cropland 3226	FM 2322
Yield	1210 lb.	1285 lb.
Tillage Practices	4	1

Results

Site 4 (monoculture) applied 13 acre inches of water using LEPA nozzles and received 15.4 inches of in-season rainfall, generating a yield of 1,210 lbs./acre of lint. Site 60 (cover crop) applied 7 acre inches of water using a LEPA irrigation system and received 17.2 inches of in-season generating 1,285 lbs./acre of lint. Site 60 received higher Total Revenue than Site 4 ($1,010 vs. $952), whereas Site 4 had less variable expenses ($582 vs. $698). The tillage practices for Site 4 included field cultivator, mulch tiller, planter, and chisel plow. Estimated costs for these activities for this are $61.82/acre. The only tillage operation for Site 60 was the planter for an estimated cost of $16/acre. The savings form reduced tillage were offset by higher herbicide costs for site 60 ($168 vs. $70).



Summary

During the 2017 growing season both sites received well above average rainfall, reducing the potential benefits of cover crops and reduced tillage on cotton lint yield and economic returns. Overall, the reduced cost from fewer tillage operations with the cover crop system were negated by increased herbicide costs to control weeds. There are many potential benefits to soil health through cover crop and reduced tillage systems, however this study fails to indicate any economic benefits when compared to a conventional tillage system in the Southern High Plains of Texas.

Acknowledgements

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References

Texas Alliance for Water Conservation. 2017. "12th Annual Research Report." Texas Tech University. http://www.depts.ttu.edu/tawc/

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