PROFITABILITY of Soil Health Systems



Barry Evans
Lubbock, Texas

FARM SIZE
4,500 acres

CROPS GROWN
Cotton
Grain Sorghum

SOIL TEXTURE
Silty and sandy loam

SOIL HEALTH MANAGEMENT SYSTEM
No-till production

Benefits reported:

- → **IMPROVED WATER INFILTRATION**
- → **IMPROVED SOIL STRUCTURE**
- → **REDUCED WIND EROSION**
- → **ENHANCED CROP RESILIENCE**
- → **REDUCED WATER EROSION**

INTRODUCTION

Over time, the Barry Evans farm in Lubbock, Texas, increased profitability for cotton and grain sorghum by decreasing production costs and increasing crop yields with a soil health management system of no-till production. The farm in the Southern High Plains has flat terrain with silty loam and sandy loam soils. Most production was non-irrigated, with 600 acres of center pivot irrigation. The 4,500 acres of cropland were split evenly between cotton and grain sorghum. The operation uses soil testing with composite sampling for nutrient management.

The farm has been following no-till practices for 25 years. While growers in the beginning stages of managing for soil health can realize some cost savings, they may not see overall profitability gains until soil health improves.

FINDINGS

Initial Management System and Reduced Expenses

- → The initial practice was conventional tillage for cotton and grain sorghum.
- → Three tillage operations and one operation to shred stalks were eliminated for cotton and grain sorghum.
- → A nitrogen application was eliminated with 40 units of UAN 32% for cotton and 40 units of urea for grain sorghum.
- → Total reduced expenses were $94.65/acre for cotton and $87.14/acre for grain sorghum.

Additional Expenses from Soil Health Management

- → The alternative practice adopted was no-till production for cotton and grain sorghum.
- → An herbicide application with Valor was added for cotton and grain sorghum.
- → Sharpen was added in an herbicide tank mix application for grain sorghum.
- → Post-harvest expenses associated with increased yield for grain sorghum included drying, hauling, and check-off fees.
- → Post-harvest expenses associated with increased cotton yield were assumed paid by increased value of cotton seed.
- → Total additional expenses were $40.42/acre for cotton and $63.61/acre for grain sorghum.

PROFITABILITY of Soil Health Systems: Barry Evans Farm, Lubbock, Texas

Impact on Farm Income from Soil Health Management

- Cotton reduced expenses were $54.23/acre greater than additional expenses.
- Grain sorghum reduced expenses were $23.53/acre greater than additional expenses.
- Cotton yield increased 150 lb./acre and grain sorghum yield increased 18 bu./acre due to soil health management.
- With long-term average prices, cotton revenue increased $105/acre and grain sorghum revenue increased $75.60/acre.
- Net farm income increased $159.23/acre for cotton and $99.13/acre for grain sorghum.

Partial Budget[1] Analysis, 25 Years with a Soil Health Management System on a 4,500-Acre Farm, $/Acre per Year (2024 Dollars)

	Cotton		Grain Sorghum	
Expense Category	**REDUCED EXPENSE**	**ADDITIONAL EXPENSE**	**REDUCED EXPENSE**	**ADDITIONAL EXPENSE**
Seed	0.00	0.00	0.00	0.00
Fertilizer & Amendments	24.69	0.00	23.17	0.00
Pesticides	0.00	20.92	0.00	40.70
Fuel & Electricity	8.08	1.51	7.23	1.86
Labor & Services	18.54	6.03	17.27	5.53
Post-harvest Expenses	0.00	0.00	0.00	4.68
Equipment Ownership	43.34	11.96	39.47	10.84
Total Expense Change	**94.65**	**40.42**	**87.14**	**63.61**
	ADDITIONAL REVENUE	**REDUCED REVENUE**	**ADDITIONAL REVENUE**	**REDUCED REVENUE**
Yield, lb., bu.	150.00	0.00	18.00	0.00
Price Received,[2] $/lb., $/bu.	0.70	0.70	4.20	4.20
Revenue Change	**105.00**	**0.00**	**75.60**	**0.00**
	TOTAL BENEFITS	**TOTAL COSTS**	**TOTAL BENEFITS**	**TOTAL COSTS**
Total Change	**199.65**	**40.42**	**162.74**	**63.61**
Change in Net Farm Income	**159.23**		**99.13**	

[1] Expenses and expected yields based on farmer reported production practices. [2]Commodity prices applied to yields based on long-term average prices. Irwin, S. "IFES 2018: The New, New Era of Grain Prices?" Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, 2019. View our full methodology at www.soilhealthinstitute/economics.

METHODS: Our partial-budget farmer interviews calculate impacts on revenue and expenses due to changes in management.



Net change in farm income = Benefits – Costs
Benefits = Reduced Expenses + Additional Revenue
Costs = Additional Expenses + Reduced Revenue

For related studies in additional regions, search "Profitability" on soilhealthinstitute.org/resources.

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