ECONOMICS of Soil Health Systems

Opossum Bayou-Tippo Bayou Watershed of Mississippi

FARM SIZE
200 acres

CROPS GROWN
Soybean
180 acres

SOIL TEXTURE
Predominantly Loam but ranged from Sand to Clay

SOIL HEALTH MANAGEMENT SYSTEM
No-till production
Cover crops
Monitoring of soil nutrient levels

NET INCOME INCREASE
Soybean
-$22.72/acre

FARM #26

INTRODUCTION

The Marquitrice Mangham farm in the Opossum Bayou-Tippo Bayou Watershed of Mississippi has recently adopted a SHMS of no-till production and cover crops for the past three years.

Benefits of the SHMS reported by the farmer:

- **IMPROVED SOIL MOISTURE**
- **REDUCED EROSION**
- **INCREASED WEED SUPPRESSION**
- **ENHANCED RESILIENCE TO EXTREME WEATHER CONDITIONS**

ADDITIONAL INFORMATION ON THE FARM IS AVAILABLE IN A REPORT AND VIDEO PRESENTATION AT WWW.NACDNET.ORG/SOIL-HEALTH-ECONOMICS.

METHODS

The Soil Health Institute conducted an interview to obtain production information for evaluating economics of the soil health system based on partial budget analysis. In this approach, the benefits and costs of a soil health system are assessed by calculating changes in revenue and expenses before and after adoption of that system. The change in net farm income associated with adopting a SHMS is calculated as shown below and presented in Table 1.

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

A DETAILED DESCRIPTION OF THE METHODOLOGY FOR PARTIAL BUDGET ANALYSIS CAN BE FOUND AT HTTPS://SOILHEALTHINSTITUTE.ORG/ECONOMICS.

FINDINGS

Initial Management System and Reduced Expenses

- The initial management system was conventional tillage production.
- Post-plant weed management was exclusively with herbicide in conventional tillage.
- Two tillage operations with a disk were eliminated for soybean.
- Total reduced expenses were $29.55/acre for equipment usage and associated costs.

SOIL HEALTH INSTITUTE — Enriching Soil, Enhancing Life
National Association of Conservation Districts
USDA United States Department of Agriculture — Natural Resources Conservation Service

 This material is based upon work supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under number NR183A750010C004. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture. USDA is an equal opportunity provider, employer, and lender.

ECONOMICS of Soil Health Systems: Opossum Bayou-Tippo Bayou Watershed of Mississippi

Soil Health Management System and Additional Expenses

- The soil health management system adopted was no-till production with cover crops.
- Wheat as a cover crop was drilled with seed cost of $13.75/acre in the fall after soybean harvest.
- Termination of the cover crop with herbicide before planting soybean was not an additional expense.
- Total additional expenses were $52.57/acre for planting and managing the cover crop.

Soil Health Management System Impact on Farm Income

- No-till production and planting cover crops did not reduce soybean yield in the first three years of adoption.
- Additional expenses were $22.72/acre greater than reduced expenses for soybean.
- **Net farm income decreased $22.72/acre for soybean.**

Table 1. Partial Budget[1] Analysis, 3 Years with a Soil Health Management System on a 200-Acre Farm, $ per Acre per Year (2019 Dollars)

	Soybean	
	BENEFITS	COSTS
Expense Category	REDUCED EXPENSE	ADDITIONAL EXPENSE
Seed	0.00	13.75
Fertilizer & Amendments	0.00	0.00
Pesticides	0.00	0.00
Fuel & Electricity	3.71	4.28
Labor & Services	7.86	12.36
Post-harvest Expenses	0.00	0.00
Equipment Ownership	17.98	21.88
Total Expense Change	**29.55**	**52.27**
	ADDITIONAL REVENUE	REDUCED REVENUE
Yield, bu./acre	00.00	00.00
Price Received,[2] $/bu.	10.00	10.00
Revenue Change	**0.00**	**0.00**
	TOTAL BENEFITS	TOTAL COSTS
Total Change	**29.55**	**52.27**
Change in Net Farm Income	**-22.72**	

1 Expenses and expected yields based on farmer reported production practices. (https://soilhealthinstitute.org/economics/)
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, January 11, 2019.

SOIL HEALTH INSTITUTE
Enriching Soil, Enhancing Life

National Association of Conservation Districts

USDA United States Department of Agriculture
Natural Resources Conservation Service

 This material is based upon work supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under number NR183A750010C004. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture. USDA is an equal opportunity provider, employer, and lender.