

# ECONOMICS of Soil Health Systems

## Upper Snake-Rock Watershed of Idaho



### FARM SIZE

750 crop acres  
200-300 stoker  
cattle



### CROPS GROWN

Wheat  
250 acres  
Dry Bean  
250 acres  
Corn  
250 acres



### SOIL TEXTURE

Sandy and silt loam



### SOIL HEALTH MANAGEMENT SYSTEM

Cover crops  
Grazing cattle  
Composite field  
soil sampling to  
evaluate nutrient  
levels



### NET INCOME INCREASE

\$15.91/acre

## INTRODUCTION

The Tim Cornie farm in the Upper Snake-Rock Watershed of Idaho increased profitability by adding revenue derived from grazing cattle with a soil health management system (SHMS) of planting cover crops. The organic farm has incrementally added cover crop acreage, beginning in 1994.

### Benefits of the SHMS reported by the farmer:



- **IMPROVED SOIL BIOLOGY AND SOIL STRUCTURE**
- **DECREASED EROSION AND IMPROVED WATER INFILTRATION**
- **REDUCED PEST PRESSURE**
- **REDUCED IRRIGATION APPLICATIONS ON CASH CROPS**

ADDITIONAL INFORMATION ON THE FARM IS AVAILABLE IN A REPORT AND VIDEO PRESENTATION AT [WWW.NACDNET.ORG/SOIL-HEALTH-ECONOMICS](http://WWW.NACDNET.ORG/SOIL-HEALTH-ECONOMICS).

## METHODS

The Soil Health Institute conducted an interview in 2020 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](https://soilhealthinstitute.org/economics).

## FINDINGS

### Initial Management System and Reduced Expenses

- The initial management system included organic wheat, dry bean, and corn production without cover crops.
- The farm produced organic cash crops.
- There were no reduced expenses for cash crop production associated with the SHMS.

## FARM #27

# ECONOMICS of Soil Health Systems: Upper Snake-Rock Watershed of Idaho

## Soil Health Management System and Additional Expenses

- The soil health management system adopted was planting cover crops in conjunction with the initial organic production practices.
- Cover crop species included tillage radish, various pea types, buckwheat, and turnip, as well as volunteer wheat.
- Cover crop seed costs were \$30.00/acre.
- Cover crops were drilled after harvesting of cash crops.
- Cover crops were irrigated with six applications of 0.75 inch per application.
- Cover crops did not require termination because of cattle grazing.
- Additional expenses were \$59.09/acre.

## Soil Health Management System Impact on Farm Income

- Stocker cattle were grazed on the cover crops before planting the subsequent cash crop.
- Purchased feed value of grazed cover crops was \$75.00/acre.
- **Net farm income increased \$15.91/acre.**

Table 1. Partial Budget<sup>1</sup> Analysis, 25 Years with a Soil Health Management System on a 750-Acre Farm, \$ per Acre per Year (2019 Dollars).

Expense Category	Grazing	
	BENEFITS	COSTS
	REDUCED EXPENSE	ADDITIONAL EXPENSE
Seed	0.00	30.00
Fertilizer & Amendments	0.00	0.00
Pesticides	0.00	0.00
Fuel & Electricity	0.00	9.89
Labor & Services	0.00	9.88
Equipment Ownership	0.00	9.32
<b>Total Expense Change</b>	<b>0.00</b>	<b>59.09</b>
	ADDITIONAL REVENUE	REDUCED REVENUE
Grazed, acre	1.00	0.00
Forage Value, \$/acre	75.00	0.00
<b>Revenue Change</b>	<b>75.00</b>	<b>0.00</b>
	TOTAL BENEFITS	TOTAL COSTS
<b>Total Change</b>	<b>75.00</b>	<b>59.09</b>
<b>Change in Net Farm Income</b>	<b>15.91</b>	

<sup>1</sup> Expenses and expected yields based on farmer reported production practices. (<https://soilhealthinstitute.org/economics/>)