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Social & Economic Considerations

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Objectives

- Describe common challenges to SHMS adoption and transition.
- Summarize economic effects of SHMS through partial budgets and case studies.

Adopting Soil Health Practices

- "Requires not only an understanding of the physical resource data but also social data."
- Awareness a understanding key human social & economic considerations can assist with implementation & long term adoption

What is the current perception of soil health in your region?

What keeps people from implementing & how have others overcome these obstacles?

Source: The Adoption and Diffusion of Conservation Technologies, People, Partnerships, and Communications, Issue 7, Updated June 2005

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How To Impact Change

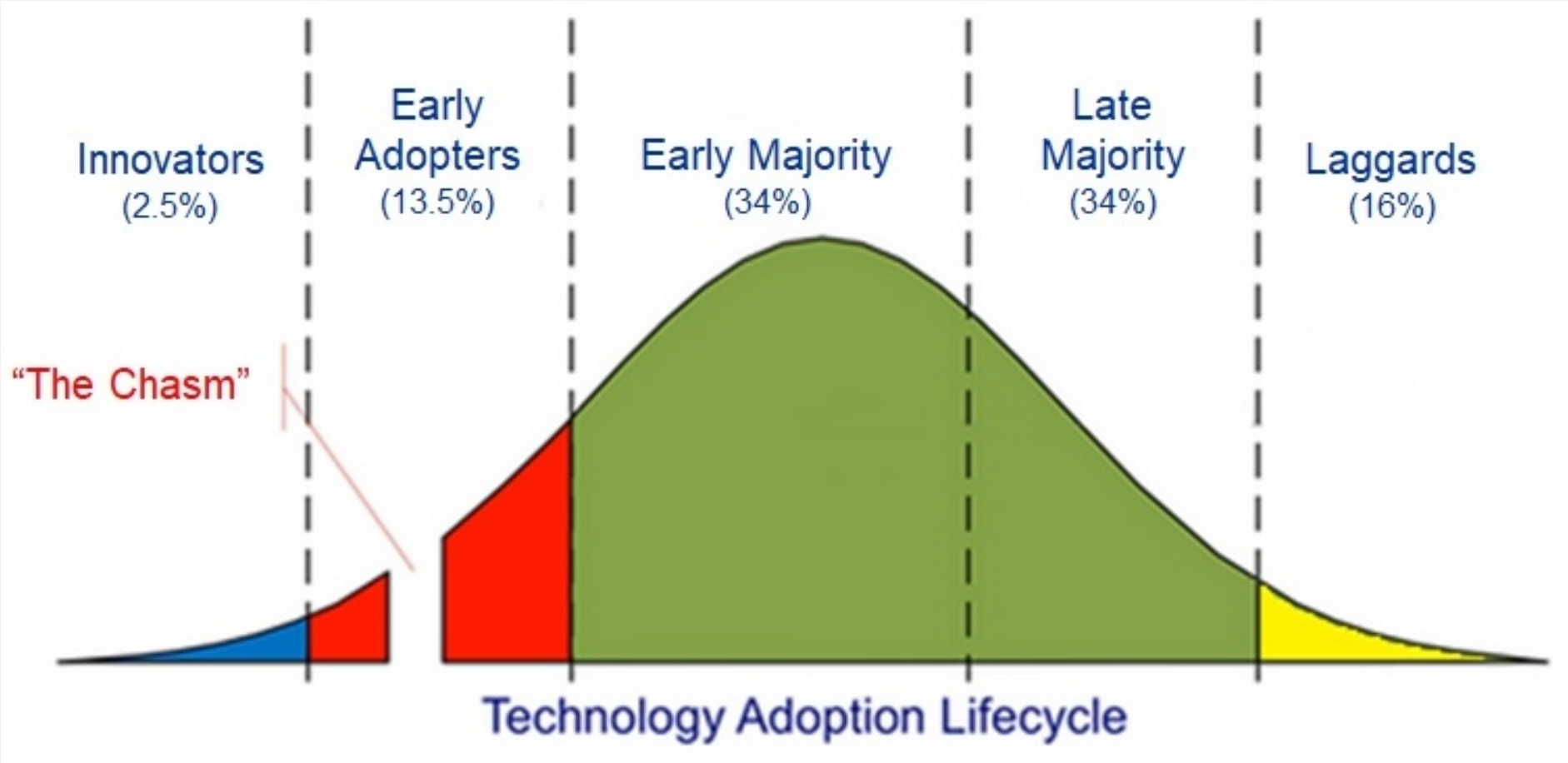
Adoption

Behavior associated with an individual's or group's decision on whether or not to accept new ideas, practices or products

Technology Transfer

The process by which the adoption of a new idea, practice, or product spreads throughout a group, community or society

Adoption Categories



Individual stages of adoption

The producer can return to any one of these stages at any time during the adoption process

Rogers and Shoemaker, 1971

Stages of adoption

- As a planner where do you fit in these stages?
  - In all of them
- At what stage can you fail the landowner?
  - Any stage: by lack of follow through or interest after the initial contact at the awareness stage or any time when the producer seeks assistance.

What are Some Obstacles to Soil Health Adoption?

- Lack of technical information
- Lack of community support (socially or economically)
- Inter-Agency organizational barriers
- Landlord/tenant relationships
- Economic
  - Installation cost
  - Management capability
  - Risk aversion

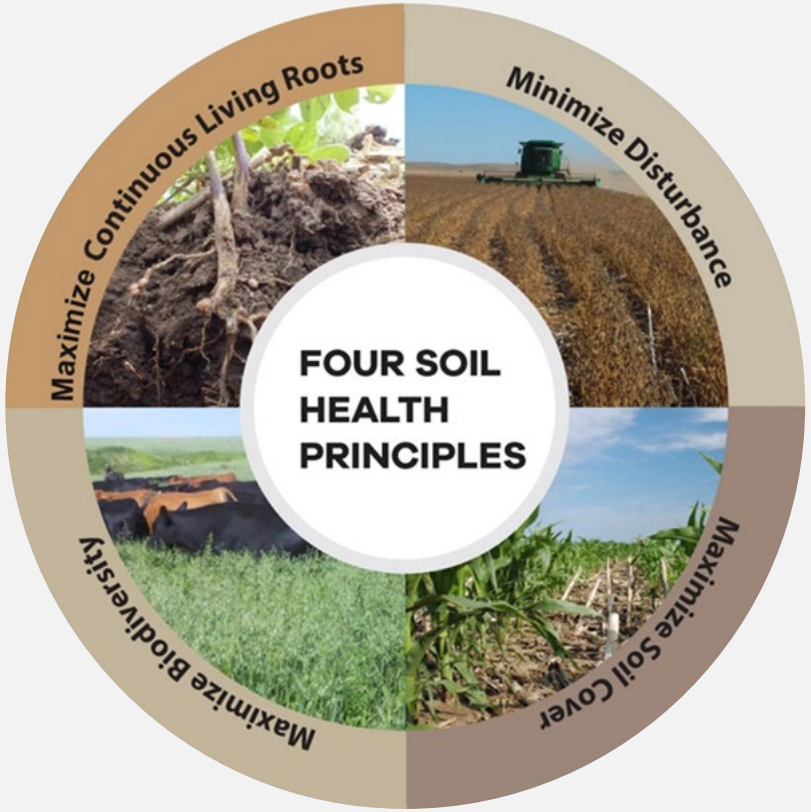
Economic Considerations

- How many producers have used these arguments to not improve soil health?
  - It costs too much
  - Lack of time to seed cover crops
  - Uses too much water
  - There is a yield drag
  - Don’t want any extra weeds in my field

Remsberg, SARE

Improved Soil Function can Lead to Benefits for the Producer

- Potential Benefits
  - Reduced Erosion
  - Increased Soil Organic Matter
  - Increased Nutrient Cycling
  - Increased Drought Resilience
  - More Available Water
  - Improved Filtering and Buffering
  - Reduced Pest and Disease incidence
  - Reduced Risk



Categories not as easy to quantify

(but important to consider)

- Changes in labor (timing)
- Soil health characteristics difficult to tie to actual dollars spent or saved
  - *e.g.* earthworms, SOC
- Risk
  - *e.g.* increased soil health can help reduce crop loss due to weather extremes
- Social Impacts

Case Studies

- Give real world examples
- Usually use partial budget
- Good case studies address all aspects of adoption, not just the positive aspects.
- Must be relatable.
  - Location, climate, crops
  - Available resources
- Read with a critical eye – ask:
  - “Are the benefits applicable to you?
  - How about the costs?”

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How do Economists Compare? Partial Budget Approach

We are looking at **WHAT CHANGES** – Before and After (or between "Baseline" and "Alternative(s)")

Positive Effects "+"	**Negative Effects "-"**
Increased Revenues	**Increased Costs**
Reduced Costs	**Decreased Revenue**

Soil Health Case Study Example

Jim, Julie, and Josh Ifft, Ifft Yorkshires Farms, IL

Josh holding his daughter, Julie, and Jim

Farm at a Glance

COUNTY: Livingston, IL

WATERSHED: Vermillion Headwaters

CROPS: Corn & soybeans

FARM SIZE: 1,800 acres cropland

SOILS: Silt loam & silty clay loam soils on flat to slightly rolling fields

SOIL HEALTH PRACTICES: Cover crops & nutrient management

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Partial Budget

Economic Effects of Soil Health Practices on Ifft Yorkshires Farms, IL (2018)

Increases in Net Income

Increase in Income

ITEM	PER ACRE	ACRES	TOTAL
Increased soybean yield due to cover crops (5 bu/ac)	$43.86	825	$36,185
Total Increased Income			**$36,185**

Decrease in Cost

ITEM	PER ACRE	ACRES	TOTAL
Fertilizer savings due to nutrient mgt (20% less P & K)	$19.83	825	$16,360
Herbicide savings due to weed control from cover crops	$14.80	825	$12,210
Total Decreased Cost			**$28,570**
Annual Total Increased Net Income			**$64,754**
Total Acres In this Study Area			**1,650**
Annual Per Acre Increased Net Income			**$39**

Decreases in Net Income

Decrease in Income

ITEM	PER ACRE	ACRES	TOTAL
None Identified			$0
Total Decreased Income			**$0**

Increase in Cost

ITEM	PER ACRE	ACRES	TOTAL
Cover crop costs	$30.00	825	$24,750
Combined practice learning costs (160 hrs/yr)	$2.37	1,650	$3,907
Variable rate technology upcharge	$0.50	825	$413
Total Increased Cost			**$29,070**
Annual Total Decreased Net Income			**$29,070**
Total Acres In this Study Area			**1,650**
Annual Per Acre Decreased Net Income			**$18**

Annual Change in Total Net Income = $35,685

Annual Change in Per Acre Net Income = $22

Return on Investment = 123%

* Savings from erosion reduction was not included in the economic analysis because the Iffts did not make mechanical repairs to their fields. • This table represents costs & benefits attributed to cover crops & nutrient management over the 1,650-acre study area as reported by the farmer. • All values are in 2018 dollars. • Prices used: Corn: $3.55/bu, Soybeans: $8.60/bu (Crop Values 2018 Summary, USDA, NASS). Phosphate: $.39/lb, Potash: $.27/lb (Estimated Costs of Crop Production in Iowa—2018, ISU). • Return on Investment is the ratio of Annual Change in Total Net Income to Annual Total Decreased Net Income expressed as a percent (i.e., net profit/cost of investment). • For study methodology, see https://farmland.org/soilhealthcasestudies. For USDA's Nutrient Tracking Tool, see https://www.oem.usda.gov/nutrient-tracking-tool-ntt. For USDA's COMET-Farm Tool, see http://cometfarm.nrel.colostate.edu. • Rounding errors may result in minor discrepancies in calculated results. • This material is based on work supported by a 2018 USDA NRCS CIG grant: NR183A750008G008.

Soil Health Case Study Example

Larry, Adam, and Beth Thorndyke, Thorndyke Farms, IL

Farm at a Glance

COUNTY: Ford County, IL

WATERSHED: Vermilion Headwaters

CROPS: Corn & soybeans

FARM SIZE: 2,600 acres cropland

SOILS: Silty clay loam soils, 50% flat fields & 50% rolling with 2–3% slopes

SOIL HEALTH PRACTICES: Cover crops, strip-till & no-till, nutrient management

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Partial Budget

Economic Effects of Soil Health Practices on Thorndyke Farms (2018)

Increases in Net Income

Increase in Income

ITEM	PER ACRE	ACRES	TOTAL
Yield Impacts due to Cover Crops	$12.95	700	$9,067
Total Increased Income			**$9,067**

Decrease in Cost

ITEM	PER ACRE	ACRES	TOTAL
Nutrient Savings Due to Nutrient Management	$66.00	700	$46,200
Reduced Machinery Cost due to Reduced Tillage	$17.68	1,400	$24,746
Reduced Machinery Cost due to Nutrient Mgt.	$2.73	1,400	$3,815
Total Decreased Cost			**$74,761**
Annual Total Increased Net Income			$83,828
Total Acres in this Study Area			1,400
Annual Per Acre Increased Net Income			$60

Decreases in Net Income

Decrease in Income

ITEM	PER ACRE	ACRES	TOTAL
None Identified			$0
Total Decreased Income			**$0**

Increase in Cost

ITEM	PER ACRE	ACRES	TOTAL
Nutrient Management Learning Activities	$0.87	1,400	$1,221
Cover Crops Learning Activities	$1.74	700	$1,221
Cover Crop Costs	$39.00	700	$27,300
Increased Pesticide Cost due to Reduced Tillage	$5.00	1,400	$7,000
Total Increased Cost			**$36,742**
Annual Total Decreased Net Income			$36,742
Total Acres in this Study Area			1,400
Annual Per Acre Decreased Net Income			$26

Annual Change in Total Net Income = $47,086

Annual Change in Per Acre Net Income = $34

This table represents costs and benefits over the entire study area (1,400 acres) as reported by the farmer.

All values are in 2018 dollars.

Crop prices used in the analysis: Corn: $3.55/Bu, Soybeans: $8.60/Bu. Source: Crop Values 2018 Summary, USDA, NASS

Fertilizer prices used in the analysis: Phosphate: $.39/LB, Potash: $.27/LB. Source: Estimated Costs of Crop Production in Iowa—2018

For information about study methodology, see http://farmland.org/soilhealthcasestudies. For information about USDA's Nutrient Tracking Tool, see https://www.oem.usda.gov/nutrient-tracking-tool-ntt. For information about USDA's COMET-Farm Tool, see http://cometfarm.nrel.colostate.edu/. This material is based on work supported by a USDA NRCS CIG grant: NR183A750008G008.

*CTIC is the Conservation Technology Information Center.

The Thorndykes are receiving technical and financial assistance through the federal Conservation Stewardship Program. Due to insufficient information about the contract, the study does not include the CSP income.

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Things to Remember

1. Adopting a soil health conservation system is a long-term investment.
2. Just like soil degradation does not happen over night, improving soil health also takes time.
3. There are agronomic benefits that result in economic benefits that may not be easily measured, such as reduced risk of yield variability.
4. To realize the greatest benefits from a SHMS, we must find what works best for a producer given THEIR objectives and goals.

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Moving from Awareness to Adoption

- Work to develop relationships with producers
- Pursue opportunities for producer education
- Invite and accompany them to soil health-related events
- Invite them to the field and do the assessment together.
- Conduct demos at SWCD meetings, equipment auctions, fairs, their farms, etc.

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Moving from Awareness to Adoption (cont.)

- Use discussions about erosion on their fields to transition to soil health principles and opportunities
- Develop and coordinate an email listserv or social media group of interested producers
- Conduct periodic coffee and doughnut meetings around SH topics

➢What other approaches do you use or think you could use to engage your producers?

NRCS Economic Resources – Enter “NRCS Economics” in Search Engine