

Soilsurance

Crop insurance for farmers building soil

Key problem	US Federal crop insurance disincentivizes farmers from building soil health over the long term.
Investment thesis	Invest in the rebuild of US topsoil by empowering farmers to practice regenerative farming, which mitigates risk and improves farm resilience.

Key details

Fund size:	USD \$150M
Geography:	United States of America
Target IRR:	Average 6% over the first 10 years, increasing to 7% by year 10
Investors:	Long-term patient capital providers - insurance companies, retirement funds & impact funds
Time horizon:	Minimum 10 years
Expense ratio:	0.2%

Current status and problem statement

The current Federal crop insurance system **prevents farmers from building soil health**, because:

- To qualify for crop insurance, farmers must meet the USDA's guidelines for 'good farm management'
- The USDA's good farming guidelines are outdated, and aren't compatible with practices that improve soil health, such as:
 - Planting cover crops
 - Perennial cropping
 - Diversified crop rotations
- To qualify for federal loans, farmers often need to have crop insurance to prove lower financial risk
- Farmers renew their policies in order to keep their access to loans and lower their financial burden, so they are trapped using the same practices year after year, with no way out.

The current system is a victim of **moral hazard**, because farmers are subsidized by taxpayers when a crop fails. The farmer has no incentive to improve their soil health and reduce the impact of future weather events, because they will be compensated by the public anyway, at a cost of **\$8bn per year** to the taxpayer.

Crop insurance policy design has contributed to large-scale **soil degradation**. The rate of soil erosion in the Midwestern US is 10 to 1,000 times greater than it was before modern agriculture practices. For example, Iowa would be **devoid of topsoil** in 40 years without intervention. Exclusion of cover crops and double cropping from federal crop insurance policies has exacerbated soil degradation as monoculture requires heavy tilling for yield protection. As erosion degrades soil, **productivity decreases** and farmers are required to increase tillage, use more fertilizers and enter into a **vicious cycle**.

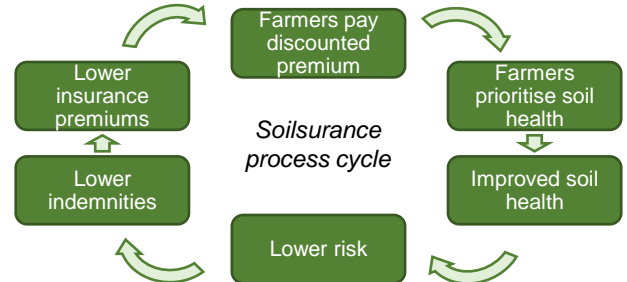
Whilst double cropping and cover crops are possible for US farmers, they have less incentives to adopt such measures due to a lack of adequate insurance mechanism. As federal insurance excludes such practices, farmers are **penalized for pursuing soil health** related measures. This gap in the market needs to be addressed as US soil health is directly related to continued food security and soil sustainability around the world.

Opportunity

The two largest drivers of indemnity in Federal crop insurance are **drought** (\$49bn in indemnities through 1995-2021, 34% of claims) and **excess water** (\$39bn, 27% of claims). Healthy soils are like sponges. Healthy soils reduce crop losses in drought, flood and hail events (UCS, 2017). One of the simplest actions farmers can take to improve soil health is by promoting **continuous living cover**. One example of this is by planting a cover crop (such as oats or turnip) in the winter. We want to enable farmers' use of continuous cover, which is currently penalized by Federal crop insurance.

Our solution

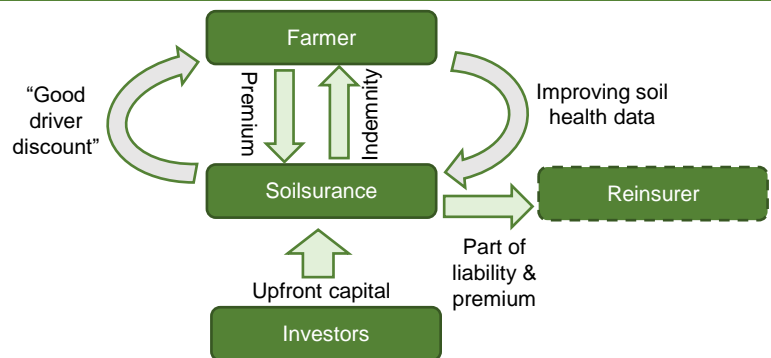
We propose an insurance vehicle that accounts for the **risk-mitigation benefits** of improved soil health – similar to a **“good driver discount”** where farmers earn a discount on their premiums based on the soil-building practices they implement, such as cover cropping.



Key features of our system:

- Farmers pay only a modest premium (~30%) to federally-subsidized insurance:** Discounted premium based on the farmer's use of soil-building practices such as cover cropping.
- Resistant to fraud & easily measurable outcomes:** Outcomes will be verified by measuring soil organic **carbon** levels – farmers who show increasing soil carbon stay enrolled
- Promotes environmental restoration:** To enroll, farmers must demonstrate history of prioritizing soil health or a **commitment** to improving soil health in the life of the insurance policy
- Lower cost:** Adherence is monitored using **satellite** rather than costly field insurance agents. High-resolution soil data exist and can be used to monitor implementation of soil-health practices such as continuous ground cover.

Fund diagram



Soilsurance

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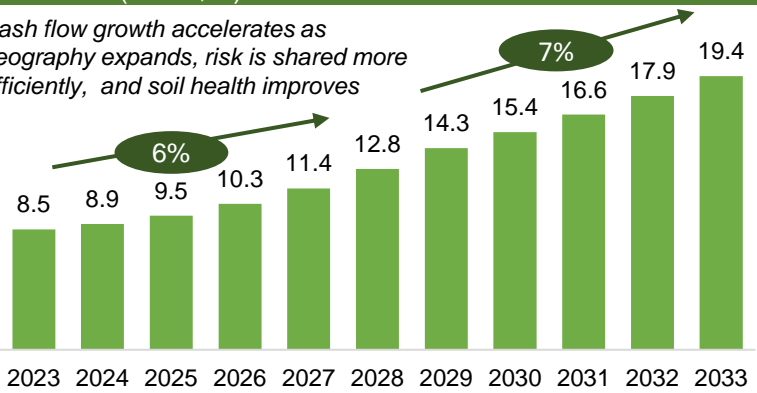


Key Financial Metrics

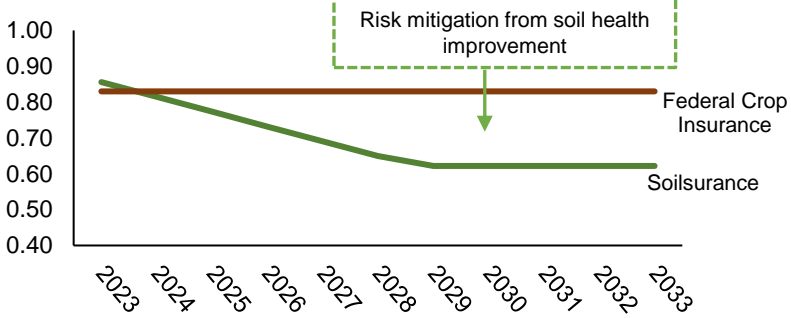
Unit Economics (per acre insured)	
Farmer premium	\$9.72
Good driver discount	\$3.70
Investment income	6% p.a.
Soilsurance revenue	\$18.49
Indemnity	\$10.44
Soilsurance return	\$8.05

Cash Flow (USD \$M)

Cash flow growth accelerates as geography expands, risk is shared more efficiently, and soil health improves



Loss Ratio

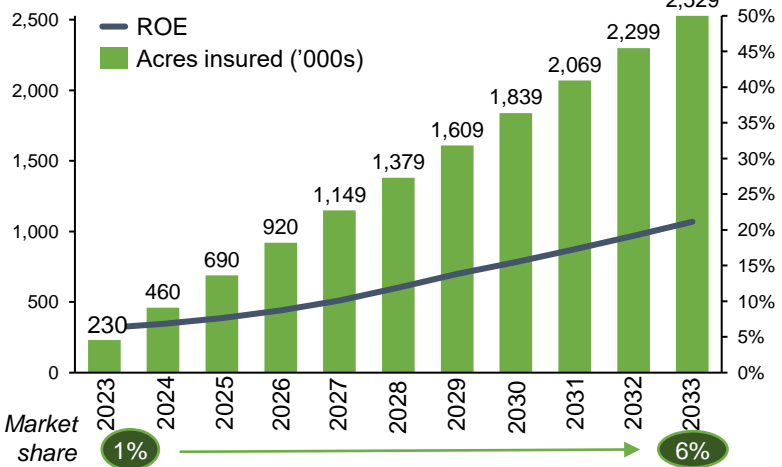


Projected Returns

Returns improve as:

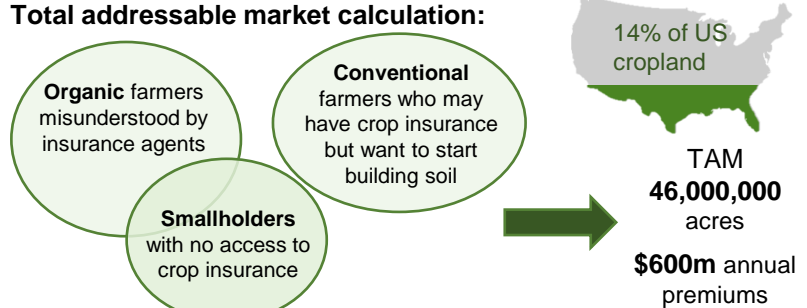
- 1) More farmers join the program, enabling more efficient risk sharing
- 2) Soil health improvements reduce risk of indemnity

Acres Insured ('000s) vs ROE & Market Share:

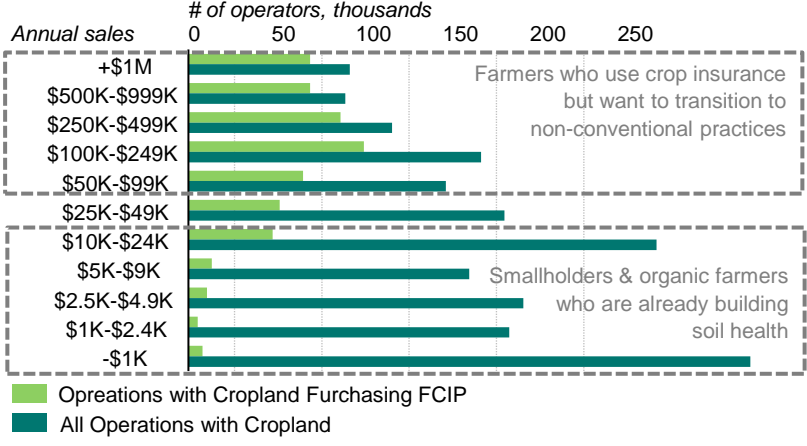


Market size

A varied target market allows for effective risk-sharing. Crop insurance is currently underutilized by 2 sectors: organic farmers and smallholders.



By building scale through targeting these varied groups, we will be able to **share risk effectively** across regions and crop types. Below, all farms and farms purchasing Federal crop insurance policies are shown:



Impact

Crop insurance consistently covers ~350 million acres of US farmland. Removing barriers to healthy soil practices is the most effective way to improve soil and water quality on a **large scale** for the benefit of farmers & the environment:

Positive impact on **farmers**:

1. Decreased cost of financial risk management
2. Enhanced **resilience** of land
3. Improved access to loans that require the farmer to hold a crop insurance policy
4. Increased **autonomy** to farm the way they want to farm and is right for their biosystem
5. Ecosystem services such as increased biodiversity

Impact on the **environment** and the **US public**:

1. **Reduced cost** to provide federally subsidized crop insurance (currently \$8bn per year)
2. Environmental costs of extractive agriculture no longer externalized to the taxpayer
3. Improved water and air quality
4. Healthier, more **nutritious food**

Quantitative impact metrics:

Soil organic carbon content %

Farm operating profit through the cycle

Catchment water quality