



# Cover Crops Increase Soil Organic Matter

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## Introduction

- The adoption of winter cover crops in traditional corn-soy rotations may increase soil organic matter (SOM)
- This two-year field study evaluated the impact of wild pennycress, cereal rye, and a mixture of pea, clover, radish, and oats on SOM, compared to a fallow control in a corn-soybean rotation (Figures 1 & 2).
- SOM was measured using loss on ignition from soil samples collected after two growing seasons of cover crops and summer cash crops in the fall of 2022 (Figure 3 & 4).

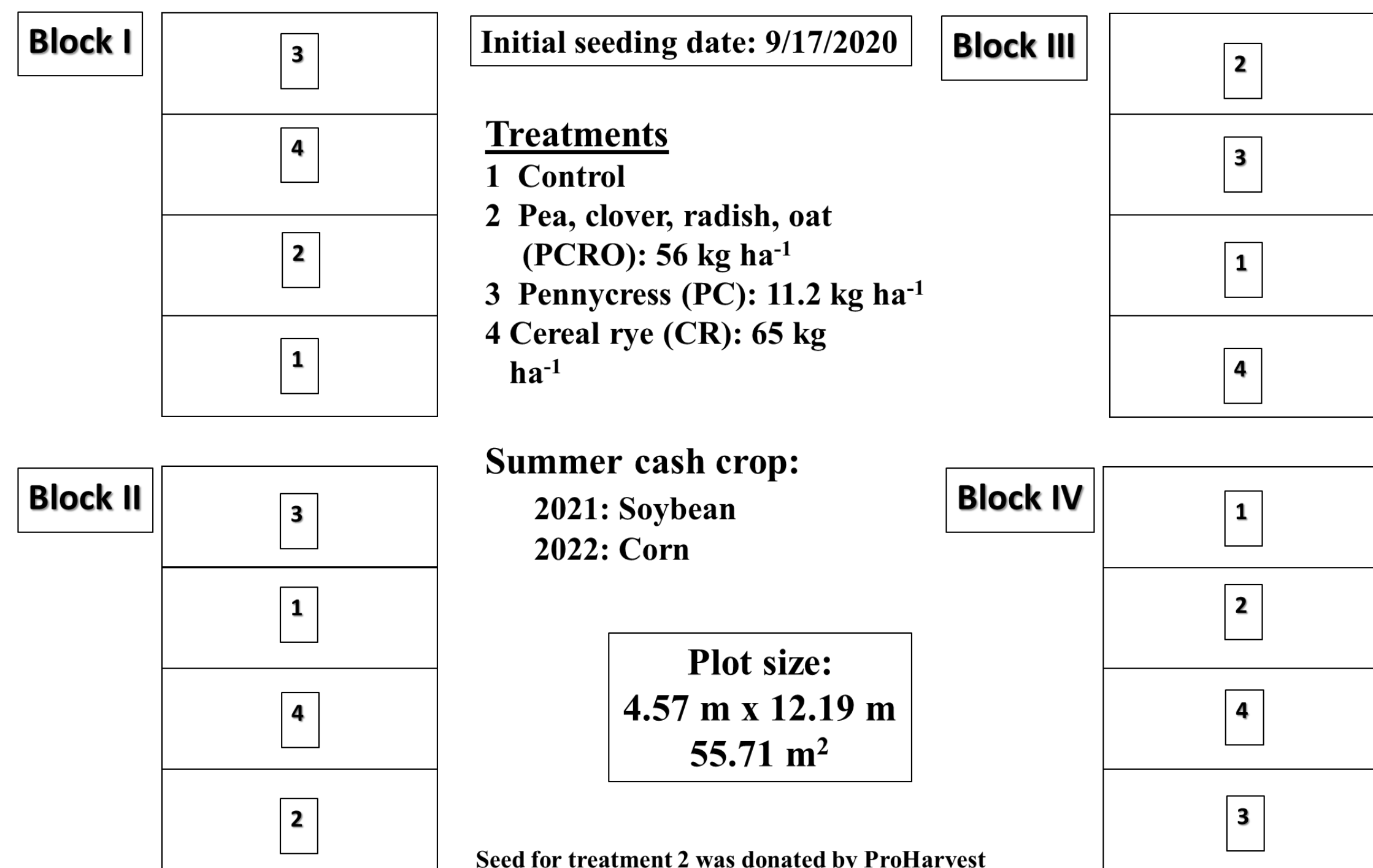


Figure 1. Experimental design. Plots were located at the ISU Research Farm in Lexington, IL.



Figure 2. Growth of winter cover crops cereal rye, a mix of peas, clover, radish, and oats (PCRO), and pennycress on May 31, 2022.



Figure 3: Soil organic matter was measured by loss on ignition after running soil samples in a muffle furnace (a & b) at 450 °C for 5 hours 9 (c).

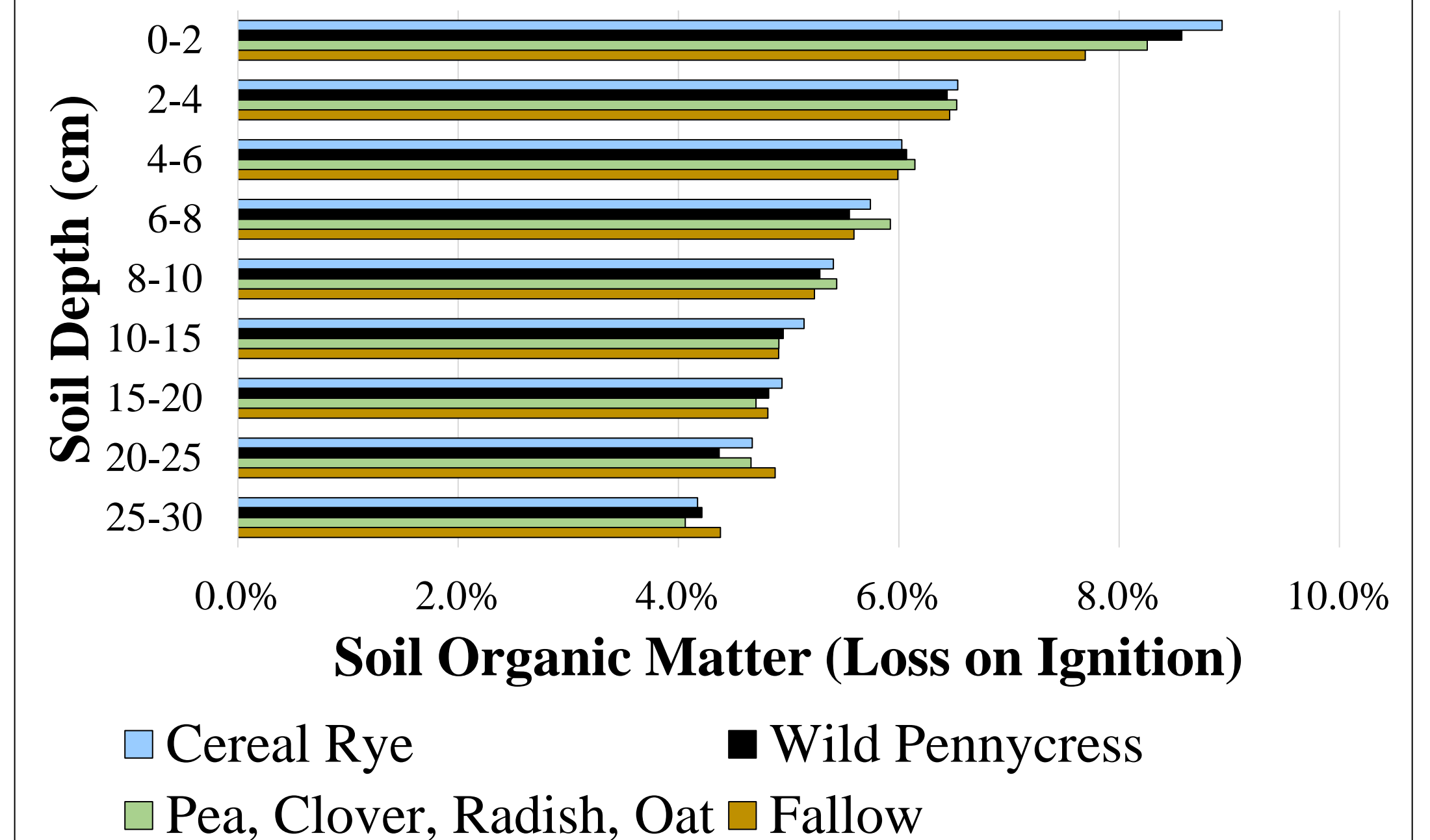
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## Results

- Cover crops increased SOM in the top 0-2 cm after two growing seasons (Figure 4)

Figure 4. Effect of Cover Crops on SOM after Two Years



## Conclusions

- These winter cover crops increased soil organic in the top 0-2 cm. This may positively affect indicators of soil quality, such as rainfall infiltration, water holding capacity, soil aggregate stability, soil fertility, and water holding capacity.
- Additional cover crops of annual ryegrass, golden pennycress and CoverCress have been added to the study.
- Long-term studies are needed to evaluate how long it takes C to be sequestered at lower depth.

