Covering Ground: Assessing Effectiveness of Interseeded Cover Crops in Late Season Cabbage to Enhance Soil Health in the Northeast

The Agroecology Lab

GLADYS ADU ASIEDUWAA
gladys.adu@maine.edu
PhD Student

Advisors:

JASON LILLEY: Assistant Extension Professor Sustainable Agriculture and Maple Industry Educator, University of Maine Cooperative Extension

RACHEL SCHATTMAN: Assistant Professor of Sustainable Agriculture, University of Maine School of Food and Agriculture

award number LNE22-451R

United States Department of Agriculture
National Institute of Food and Agriculture

Identifying the Problem: Motivation Behind the Study

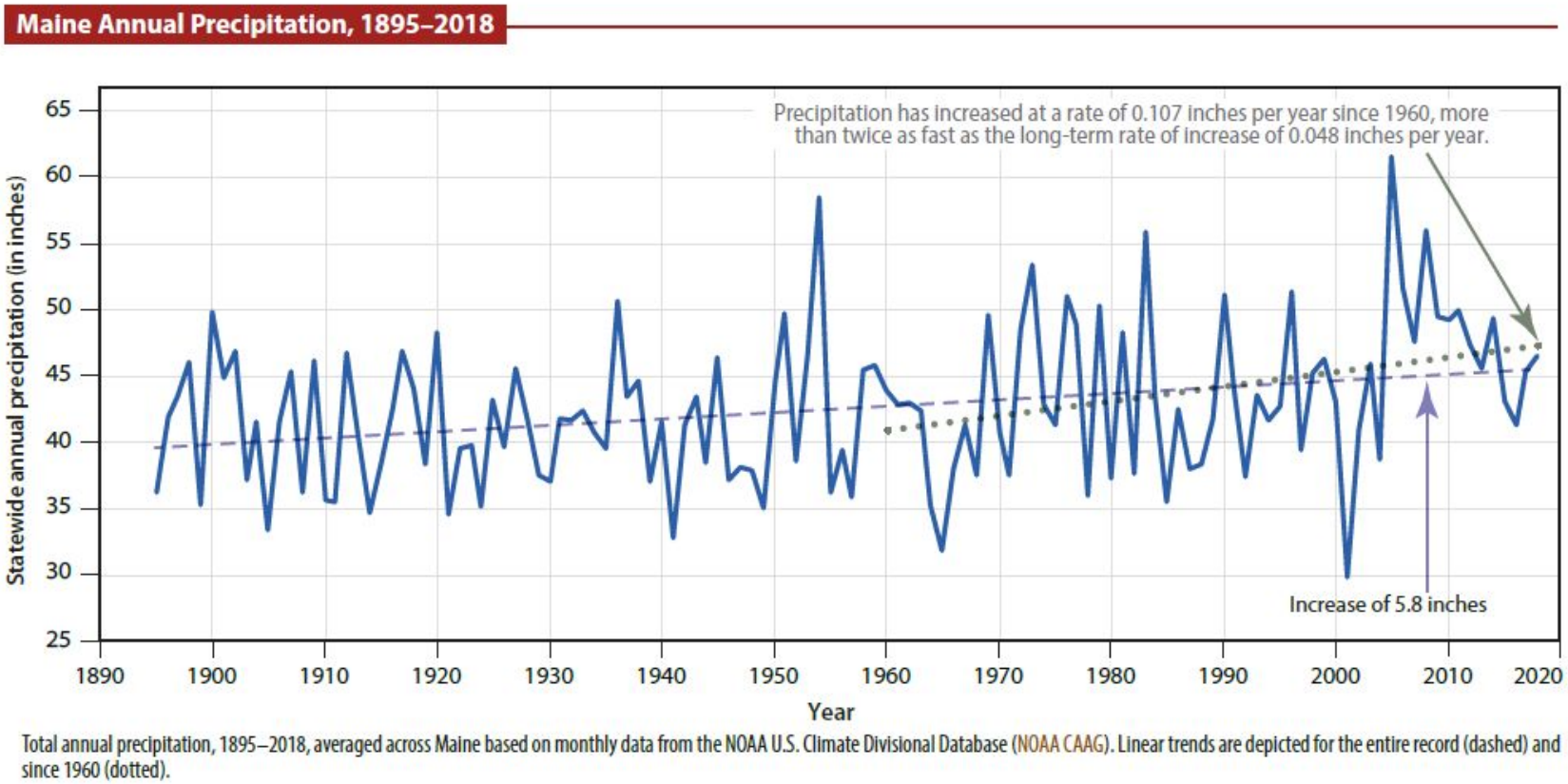
Maine survey showed that 78% of farmer respondents (n=21) are limited in their ability to plant cover crops due to "late season cash crops coming out too late".

74.1% of respondents (n=20) stated that research-based data about interseeding in the Northeast would help them with decision making about late season cover cropping.

Lilley and Schattman, 2020

Heavy mid-season rains can degrade soils between crops.

The Northeast is forecasted to experience longer spring wet periods in coming decades, making bare spring soils increasingly vulnerable.



Fernandez et. al., 2020.

Waiting to plant after harvesting is not favorable

Our Approach and Methods

Explored the Impact of Timing, Seeding Methods, and Species Selection

Trial A

Timing

10 DAT

21 DAT

30 DAT

DAT (Days After Transplant)

Seeding Methods

Broadcast

Broadcast and Incorporate

Drilling

Trial B

Cover Crop Species

1. Annual rye grass + Crimson clover (25 lb/A 60% ryegrass:40% clover)
2. Oats + Field peas (100lb/A 50%:50%)
3. Winter rye grass + Hairy vetch (55lb rye, 25 lb vetch/A)

Variety

Storage #4

Spacing

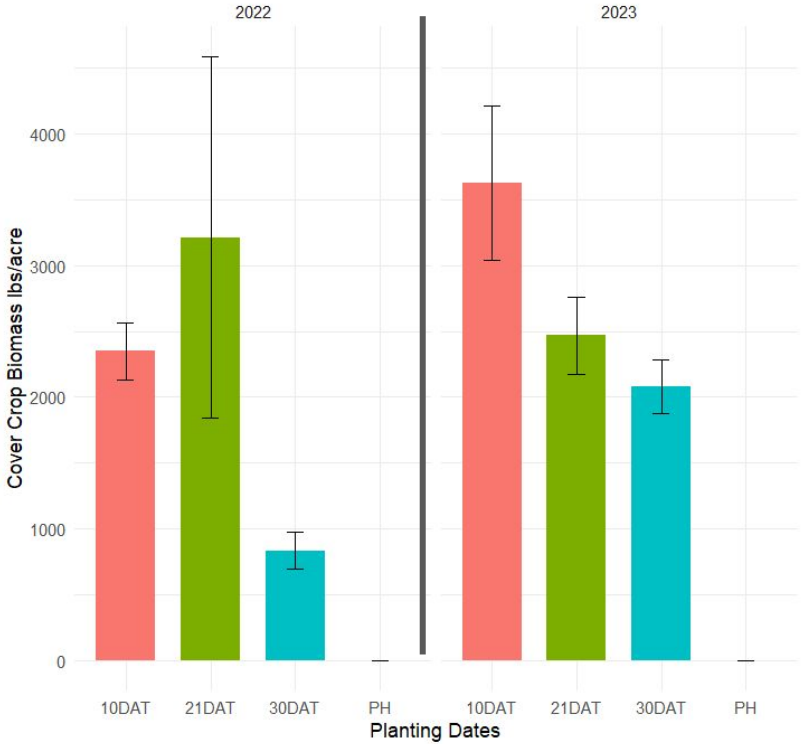
Beds 5.5ft center to center.

18" between-rows in bed, 18" in-row spacing.

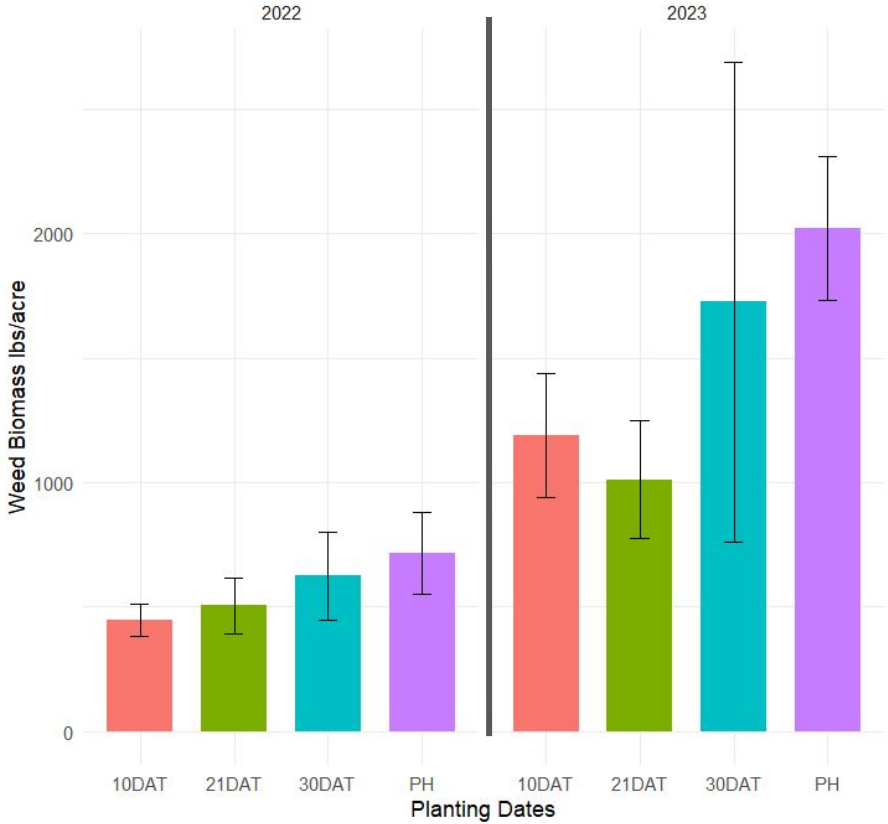
Typical Project Timeline	
Cabbage Transplant	July 6
1st Cover Crop Seeding	July 18 (10 DAT)
2nd Cover Crop Seeding	July 28 (21 DAT)
3rd Cover Crop Seeding	August 7 (30 DAT)
Harvest	October 17-20

The consistency of cover crop planting date across 2 growing seasons.

Cover Crop Biomass



Weed Biomass



Significant differences

- **Early planting = more biomass**
- **Influence of precipitation and soil moisture**

2022=NS 2023=S

Annual rye grass + Crimson clover planted at different times

10 DAT

21 DAT

30 DAT

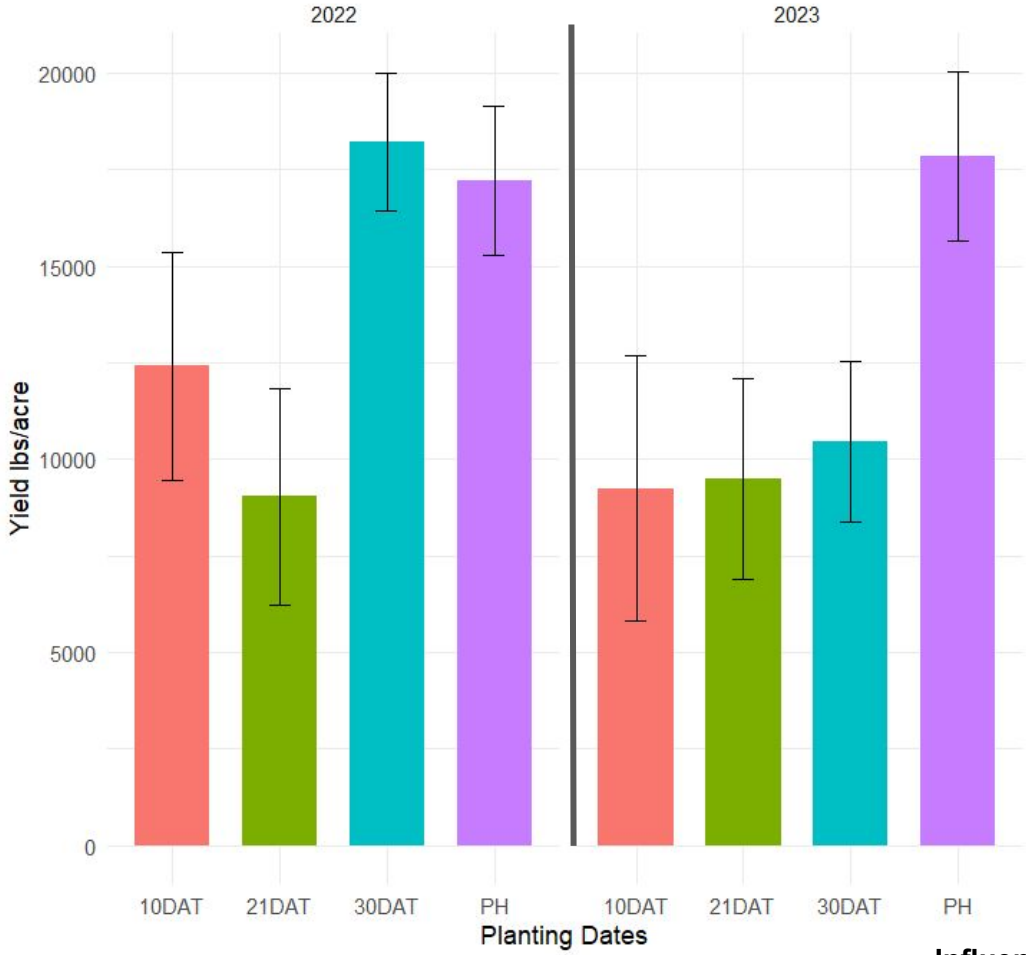
Weed Biomass- 2023 Wet season

Early stage of the season

During field season

At the end of the season

The consistency of cover crop planting date on yield across 2 growing seasons.



Significant difference

Influence of precipitation and soil moisture

Cover Crops Species

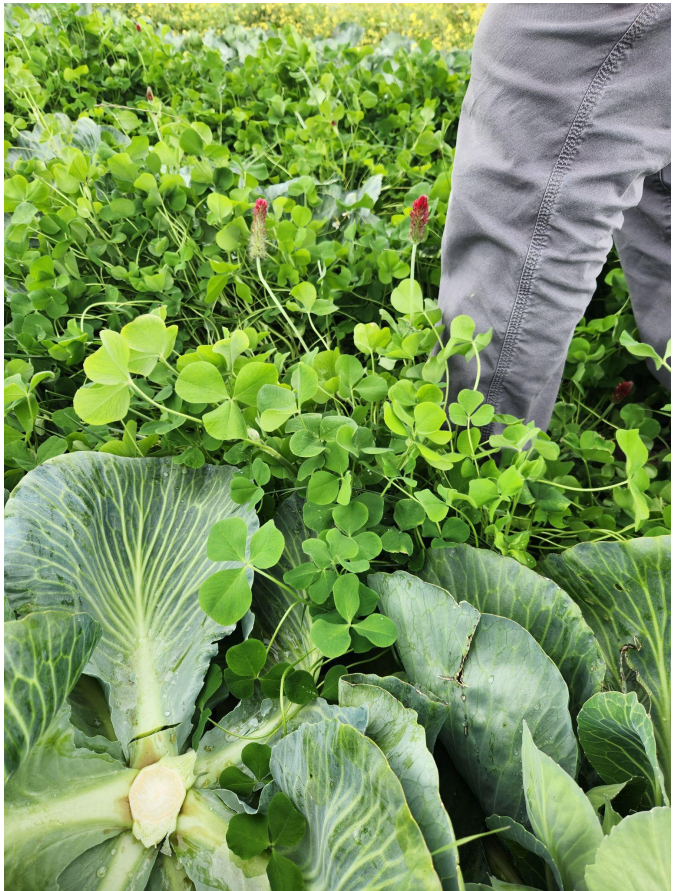
Winter rye + Hairy vetch

Control

Oats + Field peas

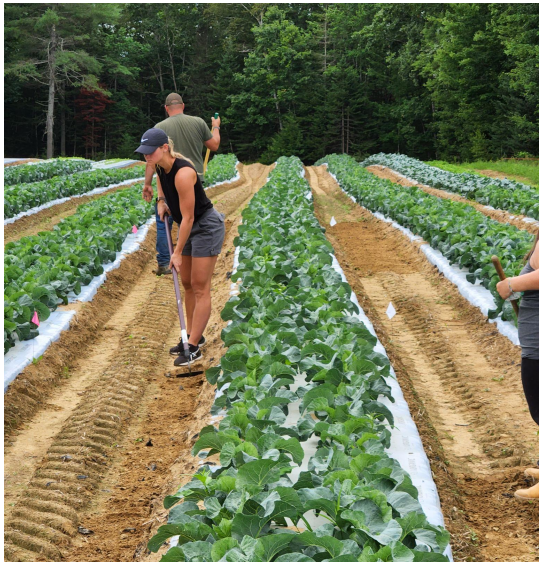
Annual ryegrass + Crimson clover

Annual rye grass + Crimson clover can be agressive too!



Winter rye planted after corn harvest.

Interseeded at V5.

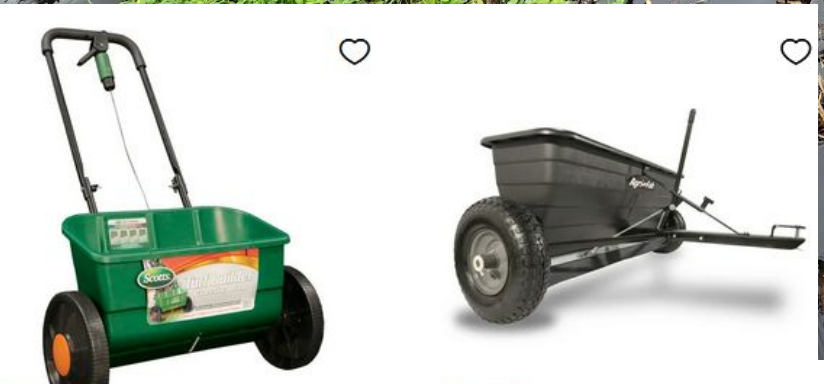


Logistical Considerations

- Row Spacing
- Herbicide Interactions
- Pest Concerns
- Labor Demands at Seeding Time

G-Cultivation Tractor with front mounted electric driven drop spreader

Ground Driven or Electrical Hoppers


Scotts

Agrola

Winter Squash Overseeded at Vine Run

Take Away

- Planting date is very important when considering cover crop and yield dynamics
  - Late seeding date aligns with last cultivation date

- Align interseeding timing with weather—dry or wet years make all the difference!

- Experimenting with interseeding
  -Start small and try it out!

The Agroecology lab @ UMaine

Lab managers
Kylie Holtz (Former), Ian Farm (Current)

Undergrad assistants
Rose Duane, Chelsea Gilgan, Charlie Cooper, Megan Smith, Payton Bledsoe, Mary-Kate Smith, Griffin McDevitt & Ryan McAulay

Farm manager
Joe Cannon

Committee members
- Dr Rachel Schattman (Advisor)
- Jason Lilley (Co-Advisor)
- Dr Ivan Fernandez
- Dr. Stephanie Burnett
- Dr. Allison Gardner

Collaborating farms
- R. Belanger & Sons Farms
- Goranson Farm
- Jordan's Farm
- Bumbleroot Organic Farm

The Agroecology Lab

GLADYS ADU ASIEDUWAA
gladys.adu@maine.edu
PhD Student

Advisors:

JASON LILLEY: Assistant Extension Professor Sustainable Agriculture and Maple Industry Educator, University of Maine Cooperative Extension

RACHEL SCHATTMAN: Assistant Professor of Sustainable Agriculture, University of Maine School of Food and Agriculture

Award Number LNE22-451R

United States Department of Agriculture
National Institute of Food and Agriculture

This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number award number LNE22-451R