Digging Deeper

Strategies for Improving Soil Health in Far Northern Regions
Why Don’t We Change?

Farming Already Risky Enough.

If It Works Don’t Change It.

I Already Get Good Yields.
What Happens When What Works Doesn’t Work Anymore?
Trends in Extreme Precipitation

Increase in the number of 2” rainfalls per year from 1958 to 2011

Figure 2. Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.
Why We Change?
What is the value of Your topsoil?

Why are YOU just giving it away?
Sometimes We Need Encouragement
Legendary Tillage Radish

CAN TILLAGE RADISHES SAVE THE WORLD?
What Can We Do?
50 Top Corn Silage Growing Counties
Winter Hardiness Zones

The black line indicates the area of the country with seasonally low temperatures similar to Vermont. The work proposed in this grant could be applied to areas north of this line.

26 of the 50 top producing corn silage counties are north of this line encompassing 919,815 acres.

Legend

- Vermont State Boundary
- Top 50 Corn Silage Acres in Production Counties
- Top 50 Corn Silage Counties

Hardiness Zones Low Temperatures
-44 - -40
-39 - -30
-29 - -25
-19 - -10
-9 - 0
0 - 10
11 - 20
50 Top Corn Silage Growing Counties
30 Year Average Precipitation

The black line indicates the area of the country with similar growing season to Vermont. This map indicates that in the Northeastern US there is more precipitation than other corn silage growing regions which creates challenges for using cover crops on a wide scale.

Legend
- Vermont State Boundary
- Top 50 Corn Silage Acres in Production Counties
- Top 50 Corn Silage Counties

30 Year Average Precipitation (Inches)
- 1.79-6.7
- 6.8-15.6
- 15.7-21.8
- 21.9-30.6
- 30.7-38.8
- 38.9-44.4
- 44.5-49.53
- 49.6-56.4
- 56.5-65.8

UNIVERSITY OF VERMONT EXTENSION
CULTIVATING HEALTHY COMMUNITIES
Crop Rotation
Corn Yields and Cover Crops

Darby et al., 2017

2 ton corn silage yield increase

CC

WCCCC

Darby et al., 2017
Double Cropping

$55 - $150 Return per acre
# 12 Month Cropping System for Cover Cropping

<table>
<thead>
<tr>
<th>Month</th>
<th>Task</th>
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<tbody>
<tr>
<td>January</td>
<td>Update Nutrient Management Plan</td>
</tr>
<tr>
<td>February</td>
<td>Terminal Cover Crop</td>
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<tr>
<td>March</td>
<td>Harvest forage crop</td>
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<tr>
<td>April</td>
<td>Design cover crop plan for fields. Assess status of stand planted last year</td>
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<tr>
<td>May</td>
<td>Obtain seed blends for cover crop plan</td>
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<tr>
<td>June</td>
<td>Interseed cover crop mix</td>
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<tr>
<td>July</td>
<td>Top Dress/side dress interseed</td>
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<tr>
<td>August</td>
<td>Harvest corn</td>
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<tr>
<td>September</td>
<td>Spread Manure / soil test</td>
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<tr>
<td>October</td>
<td>Fall planting of cover crop</td>
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<tr>
<td>November</td>
<td>Com Seed Fertilizer pre-purchase</td>
</tr>
<tr>
<td>December</td>
<td>Spread manure on to 6-8 inch established cover crop. Manure injection on cover cropped fields also works well.</td>
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*Assess what fields rotations need to be made, can reduced tillage be part of the plan. Start thinking about where cover crops and other soil building practices could be implemented.*
Harvest Dates of Corn

- 92-98: 9-Sep
- 102-108: 4-Oct, 19-Sep, 29-Sep, 24-Sep

[Image of bar chart showing harvest dates for corn with the dates 9-Sep, 4-Oct, 19-Sep, 29-Sep, 24-Sep, and labeled as harvest dates for 92-98 and 102-108 for different years.]
30,000 acres of cover crops
Developing Corn Silage Systems to Meet the Needs of Cover Crops

NESARE Project # LNE18-361
Kick the Tillage Addiction
$50 - $75 savings per acre
7000 acres of no-till
Yield acre⁻¹ (35% DM)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tbody>
<tr>
<td></td>
<td>71</td>
<td>85</td>
<td>91</td>
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(35% DM)
Developing Technical Skills of Service Providers in the Northeast to Assist Farmers with Transition to No-Till

NESARE Project # ENE18-149