Comparing Methods of Establishing Corn in a Kura Clover Perennial Living Mulch

Michelle Dobbratz
M.S. Student in Applied Plant Sciences
University of Minnesota
John Baker*, Scott Wells, & Julie Grossman

Cool season challenges

Kura Clover

Perennial Living Mulch Management

- Suppression
  - Mowing
  - Herbicide
- Row Preparation
  - Band Herbicide
  - Strip Till

Objective
Explore novel spring tillage as an approach to establish corn rows in a kura clover living mulch

Shank Till
Rotary Zone Till
Wider seedbed

Faster corn emergence & development

Higher grain yields

Treatments

Shank Till

Rotary Zone Till

Band Kill
4kg/ha a.i. glyphosate
30.5cm band

Materials and Methods

Emergence & development

Grain & Stover Yield

One week post-treatment 2016

One month post-treatment 2015

Kura clover biomass
2016 1.8 Mg/ha
2015 1.2 Mg/ha

Depth (cm)

Shank Till

Rotary Zone Till

30cm = band kill width
5cm = corn planting depth

Tillage zone visualization
Yield Varied by Treatment in 2016

<table>
<thead>
<tr>
<th></th>
<th>Grain$\dagger$</th>
<th>Stover§</th>
<th>Grain</th>
<th>Stover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015 Mg ha(^{-1})</td>
<td>2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Band Kill</td>
<td>14.2</td>
<td>8.6</td>
<td>7.9 b</td>
<td>5.3</td>
</tr>
<tr>
<td>Shank Till</td>
<td>13.2</td>
<td>7.5</td>
<td>8.7 b</td>
<td>4.8</td>
</tr>
<tr>
<td>Rotary Zone Till</td>
<td>13.7</td>
<td>8.7</td>
<td>11.2 a</td>
<td>8.3</td>
</tr>
</tbody>
</table>

$\dagger$Corn grain yields are adjusted to moisture content of 155 g kg\(^{-1}\).
§Stover yields are reported on a dry matter basis.

Within columns, with different letters are different according to Tukey’s HSD (P = 0.05).

Discussion

Wider seedbed

Faster corn emergence & development

Higher grain yields

Acknowledgements

Dr. John Baker
Dr. Julie Grossman
Dr. Scott Wells
Peyton Ginakes
Mark Lotstetter
Jerry Holz
Bill Breiter
Eric Ristau
Cody Winker
Adam Reese
Mathilda Scott
Lisa Espinal
Thanwalee “JiJY” Soobaa-nguan
Dan Raskin
Liz Perkins
Sharon Petersen
Alex Liebman
Questions?