The use of sunn hemp as a cover crop and forage in Florida

The March Ona Highlight Webinar Series

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Forage Specialist

Sunn hemp

- Sunn hemp (*Crotalaria juncea*) is a tall herbaceous annual plant widely grown in the tropics, primarily as cover crop

Sunn hemp

- The genus *Crotalaria* includes some species known to be toxic to livestock
- The toxic compound pyrrolizidine alkaloid is primarily found in *Crotalaria* seeds
- According to Mosjidis et al. (2012), sunn hemp is a valuable source of forage without toxic effects to animals
- However, seeds should not be part of the animal diet
There is a growing interest in cultivating sunn hemp as a cover crop in vegetable and row crop areas in Florida. Producers would like to know the potential of using sunn hemp as a forage for livestock. However, there is limited information on the characteristics of different sunn hemp cultivars and the feasibility of using sunn hemp as a forage.

Therefore, a series of studies have been conducted in Florida to evaluate different cultivars and the use of sunn hemp as a forage.

### Sunn hemp Production

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Harvesting time</th>
<th>Flowering Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 d</td>
<td>Flowering</td>
</tr>
<tr>
<td></td>
<td>lb DM / acre</td>
<td>days</td>
</tr>
<tr>
<td>AU Golden</td>
<td>1,790</td>
<td>3,500</td>
</tr>
<tr>
<td>Blue Leaf</td>
<td>1,300</td>
<td>13,000</td>
</tr>
<tr>
<td>Tropic Sun</td>
<td>3,000</td>
<td>13,500</td>
</tr>
<tr>
<td>Ubon</td>
<td>1,700</td>
<td>4,450</td>
</tr>
</tbody>
</table>
### Sunn hemp

#### Sunn hemp Nematicode and N fixation

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Decrease in Nematode Population (Meloidogyne spp.) (%)</th>
<th>N fixation (lb N/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU Golden</td>
<td>44b</td>
<td>52b</td>
</tr>
<tr>
<td>Blue Leaf</td>
<td>73a</td>
<td>56b</td>
</tr>
<tr>
<td>Tropic Sun</td>
<td>83a</td>
<td>72a</td>
</tr>
<tr>
<td>Ubon</td>
<td>32b</td>
<td>47b</td>
</tr>
</tbody>
</table>

#### Sunn hemp N release

![Graph showing N release over time](graph.png)

- N remaining

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3/9/2021
Sunn hemp Microbial Soil Effect

<table>
<thead>
<tr>
<th>Weeks after seeding</th>
<th>CP (%)</th>
<th>IVTD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>31.6a</td>
<td>72a</td>
</tr>
<tr>
<td>5</td>
<td>22.3b</td>
<td>69a</td>
</tr>
<tr>
<td>6</td>
<td>14.3c</td>
<td>61b</td>
</tr>
<tr>
<td>7</td>
<td>12.6d</td>
<td>59c</td>
</tr>
<tr>
<td>SE</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
### Sunn hemp - Silage

<table>
<thead>
<tr>
<th>pH</th>
<th>0</th>
<th>0.5</th>
<th>1.0</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactic acid (DM)</td>
<td>0.03</td>
<td>1.47</td>
<td>5.68</td>
<td>Linear</td>
</tr>
<tr>
<td>Acetic acid (DM)</td>
<td>5.00</td>
<td>2.39</td>
<td>2.16</td>
<td>Linear</td>
</tr>
<tr>
<td>Propionic acid (DM)</td>
<td>1.78</td>
<td>2.40</td>
<td>3.80</td>
<td>Linear</td>
</tr>
<tr>
<td>Butyric acid (DM)</td>
<td>5.09</td>
<td>3.93</td>
<td>0.38</td>
<td>Linear</td>
</tr>
<tr>
<td>Ammonia (% N)</td>
<td>57</td>
<td>42</td>
<td>21</td>
<td>Linear</td>
</tr>
</tbody>
</table>

### Sunn hemp - Mixture

#### Botanical Composition

<table>
<thead>
<tr>
<th>Harvest</th>
<th>Cayman</th>
<th>Mixture</th>
<th>Sunnhemp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>3</td>
<td>500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

#### Herbage accumulation (lb DM/acre)

- Sunn hemp - Silage
- Sunn hemp - Mixture
### Sunn hemp - Forage

#### Treatment Forage intake (% BW) In vivo DMD (%)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Forage intake % BW</th>
<th>In vivo DMD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunnhemp</td>
<td>1.2b</td>
<td>52a</td>
</tr>
<tr>
<td>Sunnhemp + Bermudagrass</td>
<td>1.4b</td>
<td>52a</td>
</tr>
<tr>
<td>Bermudagrass</td>
<td>1.6a</td>
<td>48b</td>
</tr>
<tr>
<td>SE</td>
<td>0.1</td>
<td>1.3</td>
</tr>
</tbody>
</table>

#### Treatment (g seed/2 L Rumen Fluid + Buffer) SE

<table>
<thead>
<tr>
<th>Treatment</th>
<th>0</th>
<th>30</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVTD (%)</td>
<td>52a</td>
<td>48a</td>
<td>39b</td>
</tr>
</tbody>
</table>
Sunn hemp - Forage

Thank you

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