Introduction

- Sunn hemp (Crotalaria juncea L.) is a warm-season annual legume that has been successfully used as cover crop due to the significant amount of atmospheric N fixation and biomass production in relatively short periods of time.
- In addition, sunn hemp has been beneficial to decrease undesirable nematode population in the soil.
- A feeding trial was conducted in Florida and there was no difference in forage intake from heifers consuming 100% bermudagrass [Cynodon dactylon (L.) Pers.] hay or 50% bermudagrass - 50% sunnhemp hay. These preliminary results have shown that sunn hemp has potential to be a viable forage in Florida.
- However, there is limited information about recommended cultivars and harvest time for sunn hemp in Florida.

Objectives

- The objective of this study was to evaluate herbage accumulation (HA), nutritive value, N fixation, and nematode reduction of different cultivars of sunn hemp in Florida.

Methods and Materials

- The research was conducted in Ona, FL (27° N) from 2016 to 2018.
- Treatments were the factorial arrangement of two harvest periods (60-d after seeding or flowering) and four sunn hemp cultivars, ‘AU Golden’, ‘Blue Leaf’, ‘Crescent Sun’, and ‘Ubon’, distributed in a randomized complete block design with four replicates.
- Plot size was 4.5 x 4.5 m with a 2.0-m alley between plots. Plots were seeded with 28 kg seed ha⁻¹ in a prepared seedbed in March 2016.
- Plots were fertilized with 30 kg N, 12 kg P, and 24 kg K ha⁻¹. The sources of fertilizer applied were ammonium nitrate, sodium phosphate, and potassium chloride.

Results

- Herbage accumulation was greater at flowering than 60-d harvest for all cultivars; however, the magnitude of increase was greater for Blue Leaf and Crescent Sun than AU Golden and Ubon. AU Golden and Ubon flowered 83 and 92 d after seeding, while Blue Leaf and Crescent Sun flowered 159 and 174 d after seeding, respectively.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Harvest time</th>
<th>SE</th>
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<tbody>
<tr>
<td></td>
<td>60-d</td>
<td>Flowering</td>
</tr>
<tr>
<td>AU Golden</td>
<td>2,020b†</td>
<td>3,920aA</td>
</tr>
<tr>
<td>Blue Leaf</td>
<td>1,500cB</td>
<td>14,690aA</td>
</tr>
<tr>
<td>Crescent Sun</td>
<td>3,360aB</td>
<td>15,250aA</td>
</tr>
<tr>
<td>Ubon</td>
<td>1,950bB</td>
<td>5,010aA</td>
</tr>
</tbody>
</table>

† Means followed by the same lower-case letter within column are not different (P ≥ 0.05). Means followed by the same upper-case letter within row are not different (P ≤ 0.05).

- There was a genotype × harvesting time interaction for CP and IVDOM. The CP interaction occurred because AU Golden (160 g kg⁻¹) and Crescent Sun (115 g kg⁻¹) did not decrease CP concentration from 60 d to flowering; however, Ubon and Blue Leaf had greater CP concentration at 60 d than flowering (from 140 to 120 g kg⁻¹; from 130 to 110 g kg⁻¹, for Ubon and Blue Leaf, respectively). AU Golden had the greatest CP concentration at both harvest times. Crescent Sun had the least CP concentration at 60 d (110 g kg⁻¹) but there was no difference among Blue Leaf, AU Golden at flowering (mean = 117 g kg⁻¹).

- The IVDOM was greater for AU Golden (580 g kg⁻¹) and Crescent Sun (600 g kg⁻¹) at 60 d and did not differ among the other genotypes (mean = 530 g kg⁻¹). However, AU Golden and Ubon had the greatest IVDOM at flowering (mean = 540 g kg⁻¹), while Blue Leaf and Crescent Sun had lesser IVDOM (mean = 430 g kg⁻¹). AU Golden and Ubon maintained the IVDOM from 60 d to flowering and there was a decrease in Crescent Sun from (600 to 430 g kg⁻¹) and Blue Leaf (from 530 to 410 g kg⁻¹).

- Plots harvested at flowering had greater atmospheric N fixation than at 60-d (95 vs. 50 kg N ha⁻¹). Crescent Sun had the greatest atmospheric N fixation (81 kg ha⁻¹) and there was no difference among the other cultivars (55 kg ha⁻¹). Blue Leaf and Crescent Sun had the greatest reduction in root-knot nematode count, followed by Ubon, and AU Golden had the least reduction in nematode count. Plots harvested at flowering had greater reduction in nematode count than at 60-d (73 vs. 34%).

Conclusions

- The relatively early flowering characteristics of Ubon and AU Golden may be a desirable trait due to superior nutritive value and potential seed production, which decreases the cost of seed in the USA.
- Conversely, genotypes that did not flower has greater potential to produce greater HA with limited nutritive value.