Sugarcane Intercropped with Oil Seeds in The Southeast of Brazil

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Objective: Based on the current increasing demand for food and biofuel, the study has focused on Oilseeds-Sugarcane intercropping. Canola tropicalization is a part of this research.

→ Sugarcane on Southeast of Brazil: more than 2 million hectares, being 600 thousand hectares with irrigation.

→ Canola Tropicalization: a second harvest would be possible, optimizing the use of land, machinery and staffs used for corn and soybeans crops in millions of hectares in Center West of Brasil (Cerrado Area).

Material and Methods

Plots of Sugarcane, Intercrops and Oil Seeds were installed in April, 2015, in Piracicaba, State of São Paulo, Brazil (-22.70456S, -47.62284W, 540m).

➢ Sugarcane cv. RB867515
➢ Crambe cv. FMS Brilhante
➢ Canola cv. Hyola 61
➢ Canola cv. Hyola 401

The intercrops were established sowing two rows of oilseeds (Canola cv. Hyola 61; Canola cv. Hyola 401; Crambe cv. FMS Brilhante) between rows of sugarcane (1.4m).

Results

Weather Data: Daily average temperature: 15.2°C to 20.1°C; Global Solar Radiation: average of 15.65 MJ m⁻² d⁻¹; Rainfall from April to August, 2015: 153,6mm; Rainfall from September, 2015 to April, 2016: 1,300 mm normally distributed.

Single Crops Yield:
- Crambe: 2,230.0 kg ha⁻¹
- Canola cv. Hyola 61: 1,566,0 kg ha⁻¹
- Canola cv. Hyola 401: 1,105.0 kg ha⁻¹
- Sugarcane: 74.2 ton ha⁻¹

Intercrops Yield:
- Crambe: 1,131,0 kg ha⁻¹
- Canola cv. Hyola 61: 1,167.0 kg ha⁻¹
- Canola cv. Hyola 401: 1,055.0 kg ha⁻¹
- Sugarcane (Crambe): 87.6 ton ha⁻¹
- Sugarcane (Hyola 61): 74.2 ton ha⁻¹
- Sugarcane (Hyola 401): 63.8 ton ha⁻¹

Seeds Oil Content
- Crambe 33.0%
- Canola cv. Hyola 61: 31.0%
- Canola cv. Hyola 401: 28.8% da

Qualitative analysis of sugarcane

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Brix (%)</th>
<th>POL (%)</th>
<th>ARC (%)</th>
<th>Fiber (%)</th>
<th>ATR (kg ton⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugarcane</td>
<td>13.0</td>
<td>9.51</td>
<td>0.44</td>
<td>10.04</td>
<td>93.65</td>
</tr>
<tr>
<td>Sugarcane x Crambe</td>
<td>13.0</td>
<td>9.48</td>
<td>0.45</td>
<td>10.57</td>
<td>93.17</td>
</tr>
<tr>
<td>Sugarcane x Can. H. 61</td>
<td>12.3</td>
<td>8.63</td>
<td>0.53</td>
<td>10.01</td>
<td>86.16</td>
</tr>
<tr>
<td>Sugarcane x Can. H. 401</td>
<td>12.8</td>
<td>9.55</td>
<td>0.40</td>
<td>10.15</td>
<td>93.61</td>
</tr>
</tbody>
</table>

Further research will focus on improve irrigation and earlier maturity sugarcanes.

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