Weed control ability of two cover crops *Neonotonia wightii* and *Centrosema pascuorum* in banana plantations; effects on nitrogen competition and on banana productivity.

R. Achard$^{12}$, A. Fevrier$^{12}$, J. Roger Estrade$^3$

$^1$ Campus Agro-environnemental Caraïbe
Le Lamentin, Martinique, French West Indies.
$^2$ CIRAD, GECO, Banana and Pineapple Cropping Systems Research Unit, Montpellier, France
$^2$ UMR211 Agronomie /AgroParisTech, Thiverval-Grignon, France
Contact : raphael.achard@cirad.fr

*Neonotonia wightii* intercropped under a banana crop
Evaluation of two legume cover crops:
- *Neonotonia wightii* (NW), perennial, shade tolerant,
- *Centrosema pascuorum* (CP), annual high covering ability,

Cover crops sowing 1 week before banana plantation.

Introduction, Material and methods

General question
Which cover crops to control weeds in banana plantations without yield loss?

Specific question for a cover crop specie

1. Sufficient weed control level
2. Impact on soil nutrient availability
3. Resulting impact on crop productivity?
   (unchanged fertilizer level)

Evaluation of two legume cover crops:
- *Neonotonia wightii* (NW), perennial, shade tolerant,
- *Centrosema pascuorum* (CP), annual high covering ability,

Cover crops impact on the agrosystem

1. Sowing and mowing management
2. Nutrient competition
3. Yield

Light competition ➔ weed control
Weed control of the two cover crops

Weed control 90 days after sowing

- NW: Neonotonia wightii cover,
- CP: Centrosema pascuorum cover,
- SP: Spontaneous weed cover.

55% Weed biomass reduction on CP
No control on NW

But no reduction of the Cover crop and Weeds total biomass and N uptake
Weed control

After mowing at 120 days, cover response at 240 days at banana flowering stage:
- High regrowth of the weeds on SP,
- CP: not regrowth, ➔ no more weed control still occurred,
- NW: good regrowth ➔ provide a good soil cover and 70% of weed biomass reduction.

Result of the control and the two cover crop management at 180 days:
SP: Spontaneous cover  
NW: *N. wightii* cover  
CP: Weeds after *C. pascuorum*
**Crop response to cover competition**

<table>
<thead>
<tr>
<th></th>
<th>Planting to flowering (weeks)</th>
<th>Number of fingers per bunch</th>
<th>Bunch weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CWC</strong></td>
<td>31.4 B</td>
<td>144</td>
<td>24.1</td>
</tr>
<tr>
<td><strong>CP</strong></td>
<td>37.1 A</td>
<td>152</td>
<td>25.5</td>
</tr>
<tr>
<td><strong>NW</strong></td>
<td>35.6 A</td>
<td>146</td>
<td>25.7</td>
</tr>
<tr>
<td><strong>SP</strong></td>
<td>34.3 AB</td>
<td>134</td>
<td>23.9</td>
</tr>
<tr>
<td><strong>Statistics</strong></td>
<td></td>
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<tr>
<td></td>
<td>Highly Significant P&lt;0.001</td>
<td>Not Significant</td>
<td>Not Significant</td>
</tr>
</tbody>
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**Conclusion:**
The two living covers in combination to one application of an antigraminae and one mowing provided an effective weed control during the first banana cycle, but generate a N competition that delayed the flowering date by 5 weeks without inducing any reduction of the bunch size.

**Further research:**
Compensate the N competition by the fertilizer schedule to optimize productivity without promote leaching.
Thank you for your attention

On farm evaluation of *N. wightii* cover