

A bait and trap method for sampling symphylid populations in pineapple.

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Symphyliids = main soil-borne parasites for pineapple in many production areas

- Like well aerated and gravelous soils
- Yield loss evaluation
(yield may be reduced up to 50%)



Symptoms very similar to nematodes

- Plot level = irregular patchwork of wilted plants with heterogeneous growth



Root symptoms

- Symphylids feed on root tips leading to « witches broom » symptoms



Pest management

- Classical : pesticides

but new regulations tend to eliminate the efficient molecules for environmental problems

- Classical Fallows are inefficient because symphylids are polyphagous parasites
- Looking for ***Ecologically-based integrated pest management***

need for efficient sampling methods

Bait and trap device



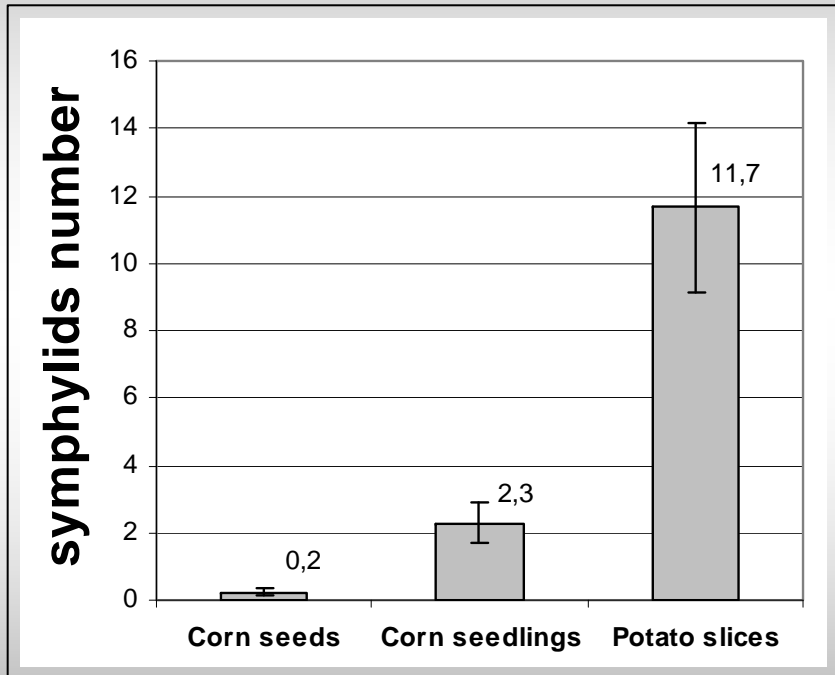
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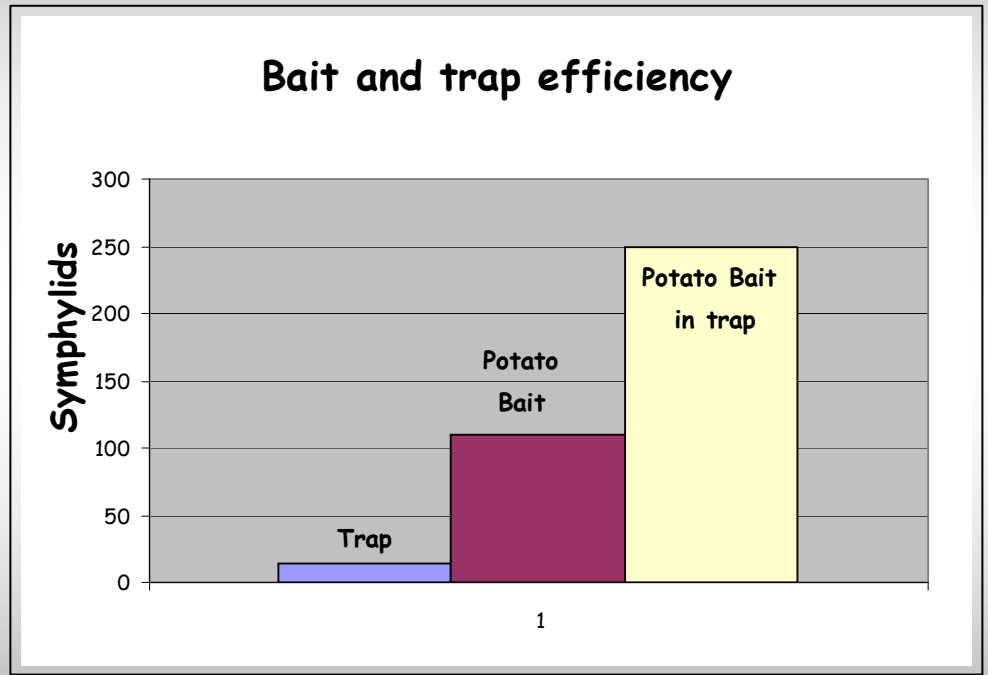
how to use it ?

- *traps 15 cm into the soil, meaning the whole pot was covered with soil.*
- *The potato bait + soil consisted in the same soil sample but with three calibrated potato slices (diameter: 2.5 cm, thickness: 1.5cm) inside the soil at 1/3 of the height, and covered with soil*

Set up of the bait and trap system



Different baits



Combining bait and soil sample

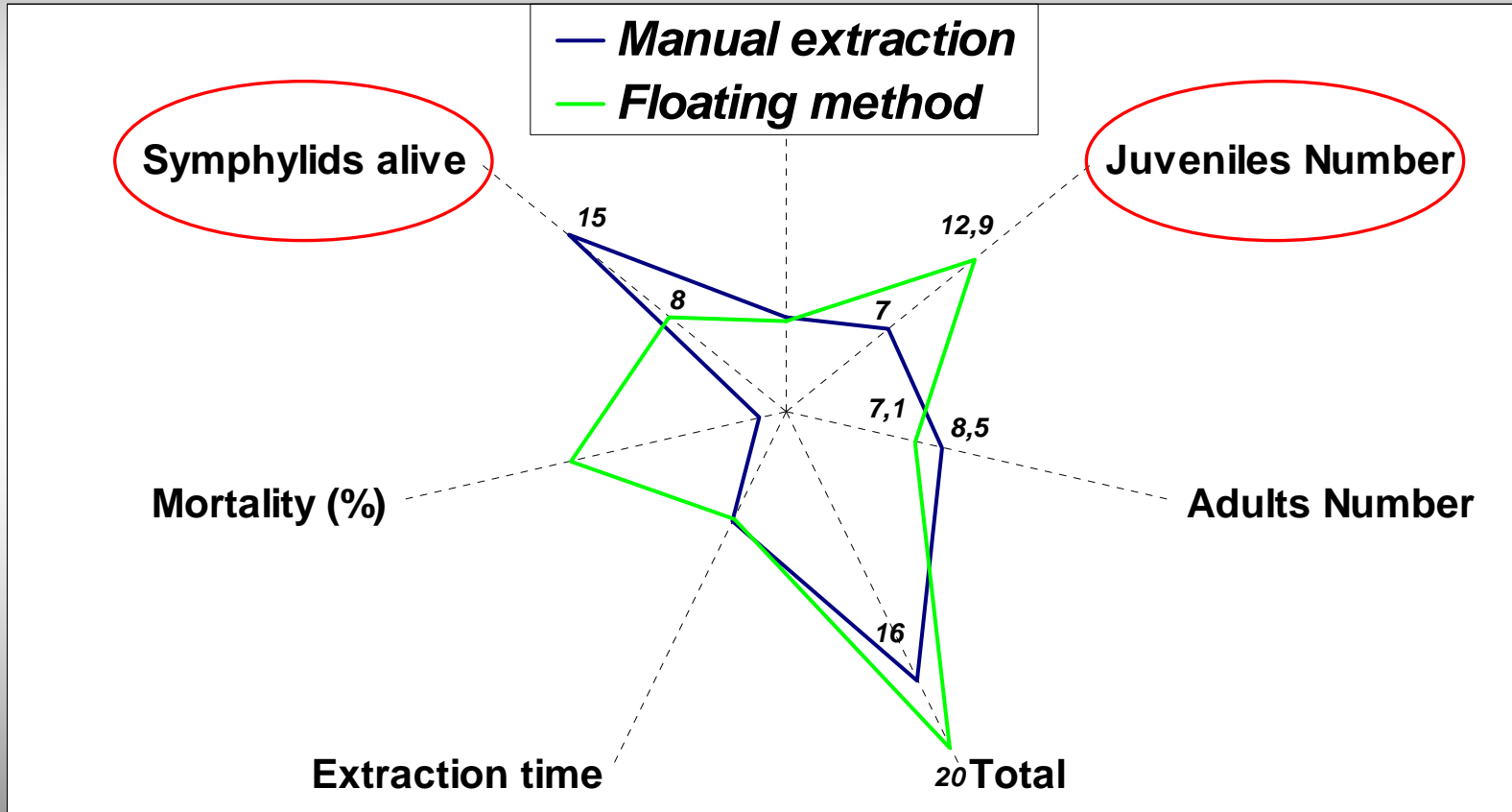
Symphylids extraction from soil samples

Manual extraction

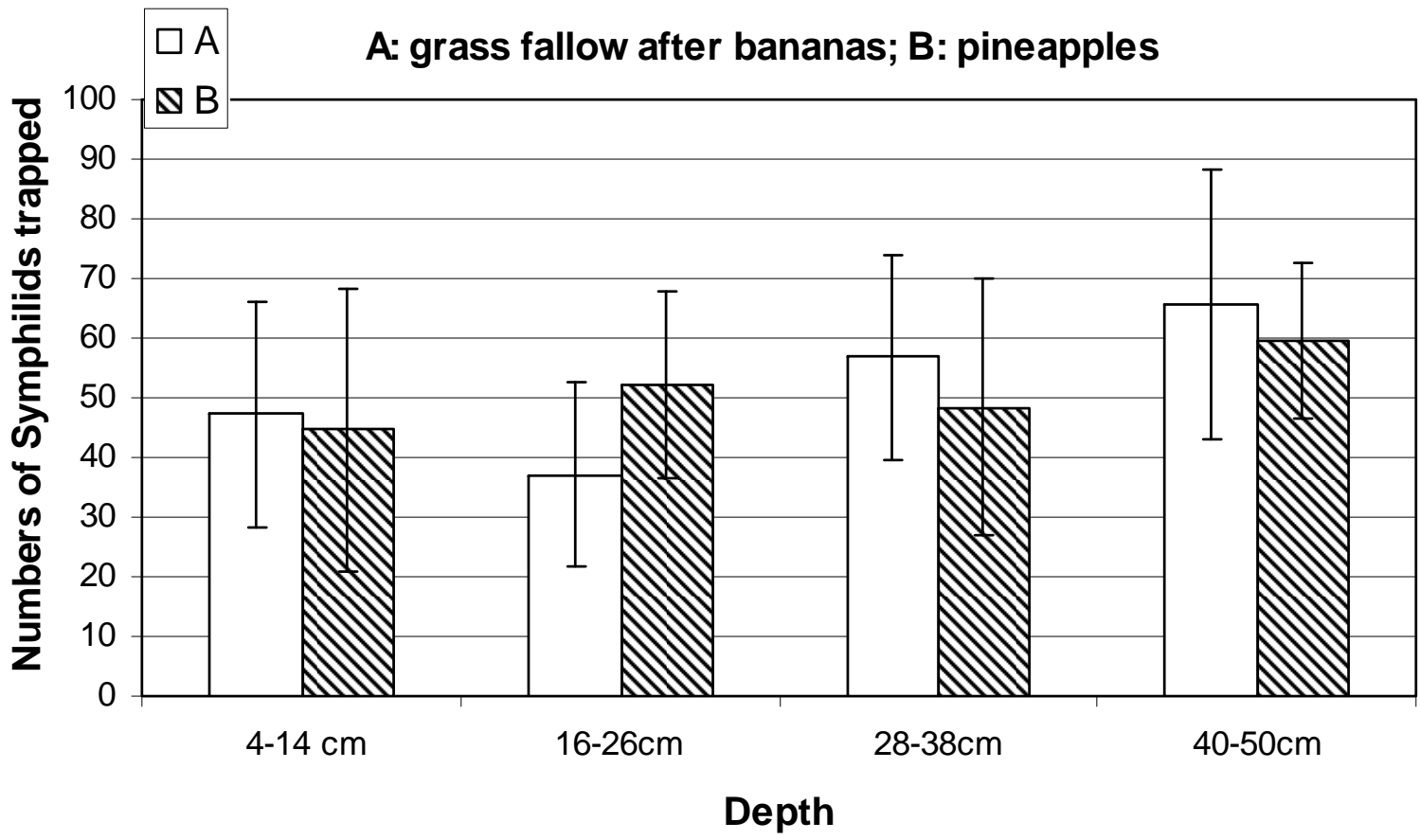
Floating extraction



Advantages and drawbacks of the 2 extraction methods



About the sampling



Statistical analyses

Statistical methods developed for nematodes have been adapted for symphyliids

The spatial distribution of the populations was evaluated using the “variance/mean” ratios (Ferris, 1984, Perry et al., 2006)

Variance > Mean indicates Symphyliid populations distributions follow a negative binomial law which characterizes aggregated populations

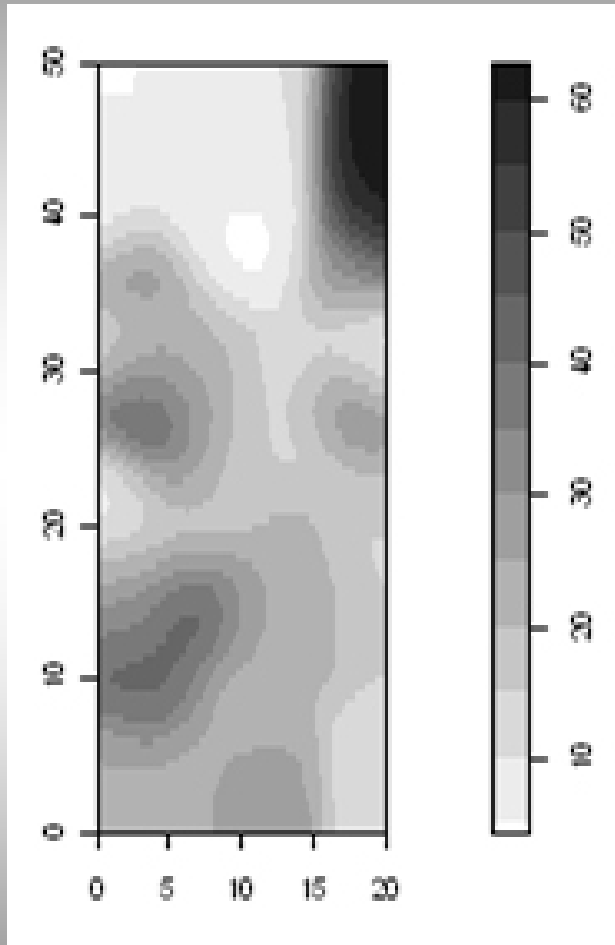
Spatial analyses

- **Spatial analyses based on Moran's and Geary's indices :**

Symphylid populations are **highly aggregated** and the range area for the development of symphylid populations appeared to be **4 to 6 meters wide**.

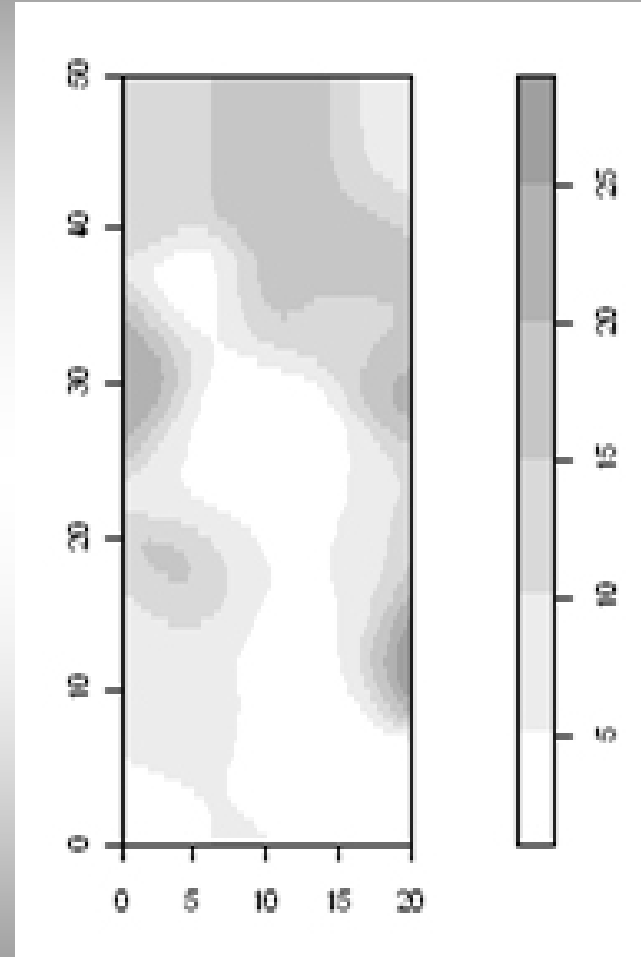
*Full paper : Soler et al., submitted to
Pest Management Science*

Maps of smoothed abundance data of symphylids



Mucuna pruriens cv utilis

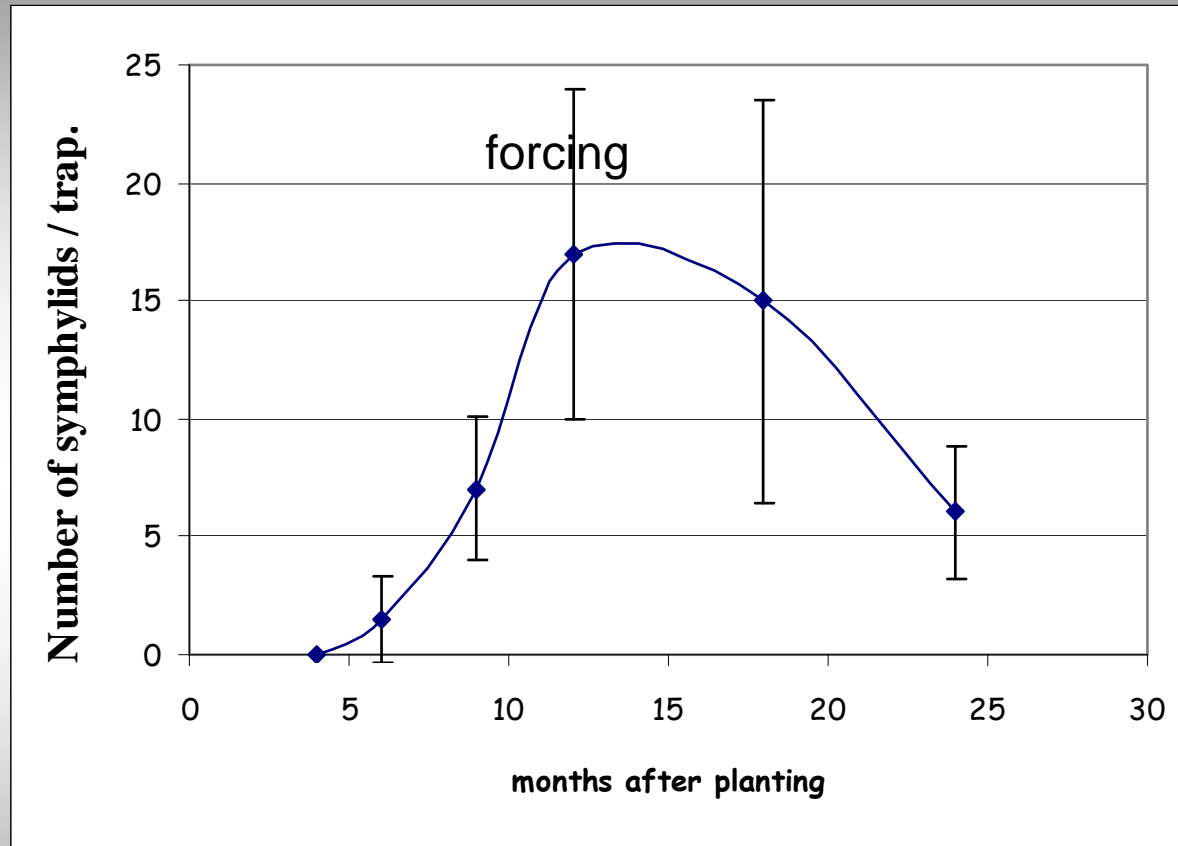
number of symphylids per sample



Grass fallow

Map scales in metres

Variations in symphyliid populations under MD2 pineapple



Plots included 300 plants on 6 ridges giving 50m² plots. Five traps with bait were placed with a minimum space of 4 m between 2 traps. Simple samplings were made 6 times at different periods of the year for each stage of development of the pineapple plants. Forcing at 12 months and Post harvest at 18 and 24 months.

Evaluation of rotation crops for pineapple



*Left : the trap is placed inside the plot with the potato baits. The traps are collected 3 days after and the operation is repeated during several times during the growth of the crop.
Right : partial view of the experimental site with Crotalaria spectabilis in front and Crotalaria juncea behind.*

Thank you for you attention

