Regional Workshop on Sandalwood
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Phytosociology of S. austrocaledonicum in New Caledonia

A phytosociological approach to *Santalum australocaledonicum* var. *pilosulum* In New Caledonia

Jacques Tassin
*& **Alexandre Lagrange***
(IAC-CIRAD)

Objectives :

-data on the phytosociology of a sclerophyll forest with *S. austrocaledonicum*

-methodological information to position *Santalum* within its floristic environment

1. Site

⇨ Ouen Toro Park (50 ha), in Noumea

⇨ A rather damaged sclerophyll forest with :

- highly perturbated spots invaded by *Schinus terebenthifolius* and *Leucaena leucocephala*
- virtually monospecific facies of *Acacia spirorbis*
- zones with mostly indigenous vegetation

2. Methods

- Sampling along four transects of 15 point plots (each with a 4 m radius)
- Species were noted in presence-absence
- *Correspondence Analysis* (COA) applied on data for species present in at least five point plots
- Niche-breadth of each species was calculated with ADE4 software

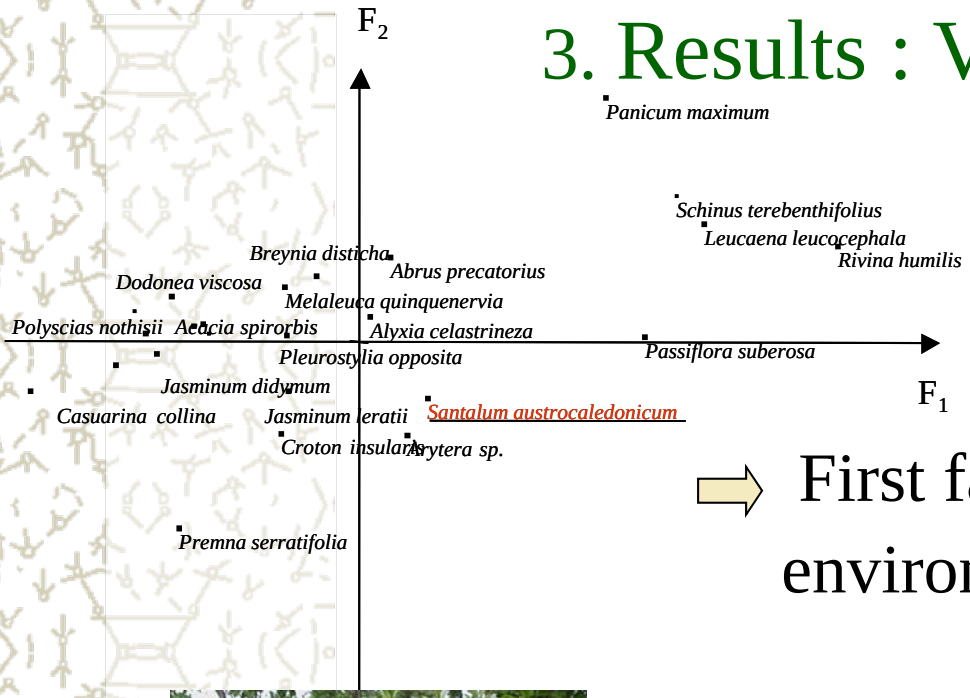
3. Results

- 46 species inventoried : 30 natives, 16 exotics

- 27 taken in account within the analysis

- Santal present in 25 % of the points (= 5/ha)

3. Results : Vegetation gradient.



⇨ First factor of COA represents the environment's openness-closure factor.

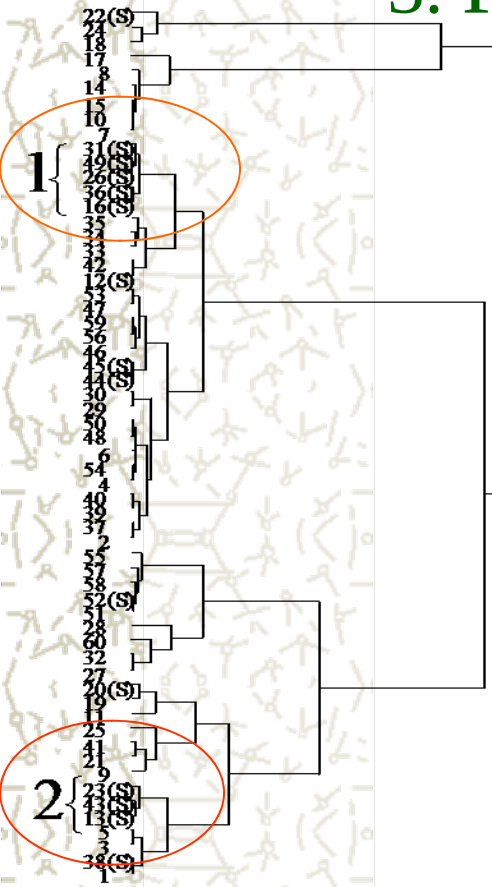
⇨ *Santalum* = the native species the best adapted to colonize perturbated areas

Sarcostemma viminale

3. Results : Environmental richness and composition.

- The plots that contained sandalwood were not richer or poorer in species than the other plots.
- There was not any plant which serves as a bioindicator for sandalwood plots.
- The highest habitat ranges of indigenous species are observed on species which have high levels of poly-morphism and architectural plasticity like sandalwood.

3. Results : Santalwood facies characteristics



- The hierarchical cluster analysis provided a ecological overview of sandalwood dispersion within the vegetation facies.
- Two floristic associations for sandalwood :
  - perturbated open woody-herbaceous facies.
  - perturbated closed facies, richer in indigenous species.

Dendrogram of the 60 samples. S: the presence of *S. austrocaledonicum* in the plot after HCA.

4. Discussion

⇨ *Santalum* = an indigenous pionner species in perturbated areas, but with a limited extension due to hemiparasitism

⇨ *Santalum* = a polymorph species with a high niche-breadth

⇨ A possible correlation between (*i*) morphologic and ecologic plasticity and (*ii*) genetic diversity inside of this population of Ouen-Toro