

Study of the Mahorais « terroir » and the influence of environmental parameters on the quality of the essential oil of ylang-ylang.

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CONTEXT AND OBJECTIVES

The island of Mayotte is located in the Indian Ocean between northern Madagascar and East Africa. It is part of the archipelago of the Comoros. Mayotte is the only island of the archipelago to be a French collectivity. These islands are of volcanic origin.

Ylang-ylang is a tree belonging to Annonaceae family whose flowers produce the essential oil. This oil is then used in perfumery. Ylang-ylang is mainly produced in this geographical region because climatic conditions are favorable to its development. The Union of Comoros, Madagascar and Mayotte are the main sellers of essential oil on the world market. Nevertheless, the sector of Mayotte is declining for ten years. Therefore a labeling of the oil could help Mayotte to protect this culture.

The objectives of this study are to characterize the “terroir” of Mayotte and evaluate the impact of environmental parameters on the essential oils of ylang-ylang.



Flowers of ylang-ylang

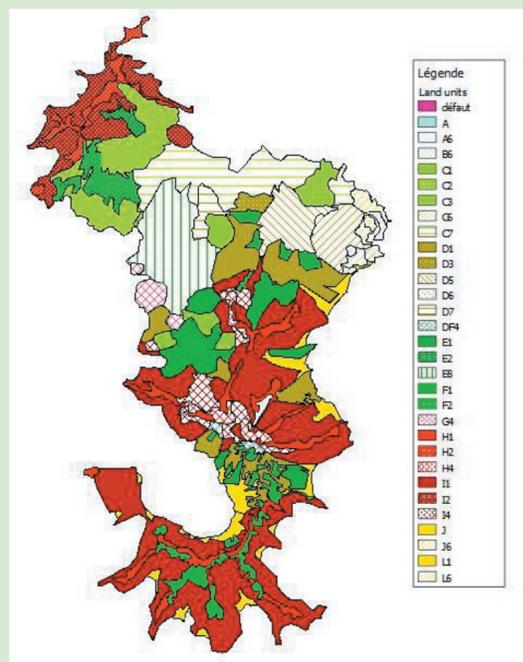
MATERIAL AND METHODS

The study was conducted on two levels of observation :

- Variability in plantations
- Variability between plantations

The characterization of terroir occurs in two steps : the study of human factors and the study of natural factors. The stages of this study are :

- Conducting semi-structured interviews.
- Participation in a distillation of flowers of ylang-ylang.
- Summary of existing statistical data on the sector of ylang-ylang.
- Mapping of the island and selection of land unit characteristics.



- Phase field : description plantations (altitude, slope, exposure, occupation) and collect soil samples.



- Send samples for chemical analysis (C, N, pH KCl, P, Na, Mg, K, Ca).

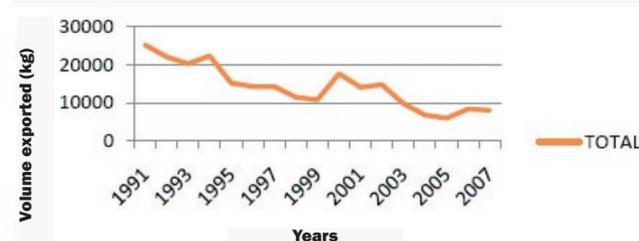
The study of impact of environmental parameters on the essential oils was made by statistical analysis :

- Principal component analysis (PCA)
- Hierarchical classification
- Histograms

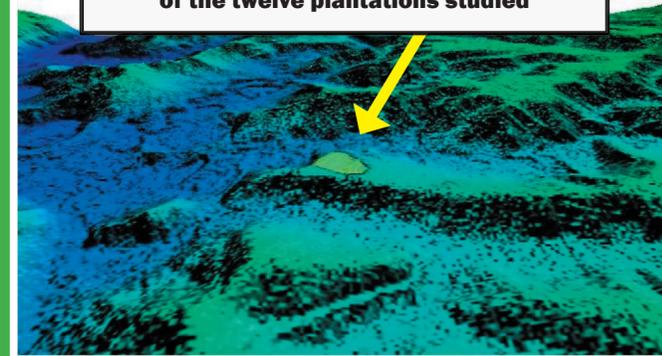


Galvanized steel still

Evolution of exports of essential oils of ylang-ylang



Visualization in three dimensions of one of the twelve plantations studied



RESULTS

The characterization of “terroir” of Mayotte reveals the importance of human factors. The study of natural factors reveals the diversity of environmental conditions in the island. The ylang-ylang plantations studied are heterogeneous in these plantations. However, variability between plantations is more pronounced. This observation was also reflected in the analysis of the composition of essential oils. The oils from a single plantation are homogeneous. The oils are different between two plantations. This difference is the result of changes in environmental conditions. However, a single parameter cannot explain the variations of essential oil of ylang-ylang. In fact the interaction of these parameters changes the composition of the oil.

CONCLUSION

A single parameter cannot explain the variation of essential oils. Therefore there is not a specific location where the oil would be favored in certain chemical compounds. In conclusion the geographical area of “terroir” of ylang-ylang may extend to the island of Mayotte and not to a specific land unit.

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