



Domestication of native aromatic plants

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INTRODUCTION

In Argentina there is a large number of wild plant species which are used with commercial purposes, among these the aromatic and medicinal plants being the most required. This implies a strong impact on natural plant resources because of overextraction, leading to environment modification and unrecovered loss of genetic resources. In Córdoba the marketing of aromatic native plants is widespread, mainly that of the so-called 'peperina', *Minthostachys mollis* (Kunth.) Griseb. It is popularly used in infusions due to its digestive properties. Also, it is used for liquor and mixed herb production.

Another genus of great interest because of its medicinal, insecticide and herbicide properties is *Tagetes* (Serrato & Quijano, 1994). Within this genus the species *Tagetes minuta* L. (suico), usually grown in warm regions of South America (Cabrera, 1963), is until now the least studied, although it shows an important economic potential.

A third species hard pressed due to its stimulating, digestive and carminative properties (Hieronymus, 1882; Domínguez, 1928) is the so-called 'tomillito de la Sierra', 'Sierra Thyme' (*Hedeoma multiflora* Benth.). Overcollection of this plant has been detected in the center-western area of the Córdoba province and also in San Luis.

In the Facultad de Ciencias Agropecuarias, Universidad Nacional de Córdoba (Faculty of Agricultural Sciences of the National University of Córdoba), from 1996 to nowadays research project is carry out, pointing out on conservation, domestication and culture improvement of native aromatic species.

Diffusion and transfer of research results, allows the productive development of demanding society sectors.

METHODOLOGY

Environments where all mentioned species grow were characterized and plants were *in situ* evaluated. Seeds of different sources (populations) were collected.

Sprouting tests were carried out with the collected seeds, culture behavior in different substrates being studied, which allowed to obtain seedlings, and to evaluate them in nursery gardens and in field conditions (Ojeda, 2004).

Tests were carried out in order to determine the culture management of different species.

Field assays tending to determine the variability present in each population were carried out, evaluating morphological, phenologic, cytological and biochemical characters.

Each character was statistically analyzed by ANOVA, and differences were determined among mean values by the LSD Fisher test. Multivariate analysis was used to determine relationships between characters and genotypes.

Diffusion of results was performed through lectures, workshops, adaptative experimental plant plots and debates conducted to producers, schools and interested public.

RESULTS AND DISCUSSION

There have been statistically significant differences among different selected 'peperina' families, by two evaluation cycles. Describer characters have been determined for 'peperina' according to performed field management (**figure 1**).



Figure 1 – *Minthostachys mollis* (Kunth.) Griseb. (peperina).

Sprouting behavior of *Tagetes minuta* has been determined on different substrates, and under salinity conditions. It was found that this species sprouts very well even at high levels of salinity. The study on variability among populations showed high differences at morphological level, and essential oils (**figure 2**).

In “tomillito de las sierras” was observed that in different substrates differences were kept among populations so much in germinative power as in seedlings growth (**figure 3**).



Figure 2 – *Tagetes minuta* (suico).



Figure 3 – *Hedeoma multiflora* Benth. (tomillito de la sierra).

A demonstrative pilot plant of native aromatics

was generated working together with a non-governmental organization (NGO). Workshops with producers, with poor neighbourhoods and in outlying schools were carried out by kitchen gardens and demonstrative plant plots, thus offering the evaluation of resources and the demonstration of sustainable management of native aromatic plants.

CONCLUSIONS

The results of evaluations carried out up to now allow the selection of materials. The latter characterization will be able to be offered to the medium like an adapted culture material and with appropriate production capacity for commercial use.

Note: This study was presented at the ‘I Reunión de Biotecnología aplicada a plantas medicinales y aromáticas’ (First Biotechnology Meeting on Medicinal and Aromatic Plants), Córdoba, Argentina, 2006.

REFERENCES

Cabrera A L. 1963. Flora de la Provincia de Buenos Aires. Part VI. Compuestas. Ed. Colección Científica del INTA, Buenos Aires, Argentina, 443 pp.

Domínguez J. A. 1928. Contribuciones a la Materia Médica Argentina. Trabajos del Instituto de Botánica y Farmacología, Ed. Peuser, Buenos Aires, Argentina, 433 pp.

Hieronimus G. 1882. *Plantae Diaphoricae Florae Argentinae*. Ed. Kraft; Buenos Aires, Argentina, 404 pp.

Ojeda M. 2004. Caracterización de poblaciones y avances en la domesticación de peperina *Minthostachys mollis* (Kunth.) Griseb. Ph. D. Dissertation, Universidad Nacional de Córdoba, Argentina, 134 pp.

Serrato C. M. A. & L. A. Quijano. 1994. Usos de algunas especies de *Tagetes*: Revisión bibliográfica (1984-1992). Proceedings of the I International Symposium and Second National Meeting on Traditional Sustainable Agriculture. CEICADAR. Colegio de posgraduados. Puebla, Mexico; pp 228-238.