Genetic diversity of *Tetraclinis articulata* revealed by ISSR markers

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Context

Preservation of natural resources remains the most current concern under climate change. In addition, the assessment of genetic variability is the first step in evaluating the long-term conservation status of species in natural conditions (González-Astorga et *al.,* 2004).

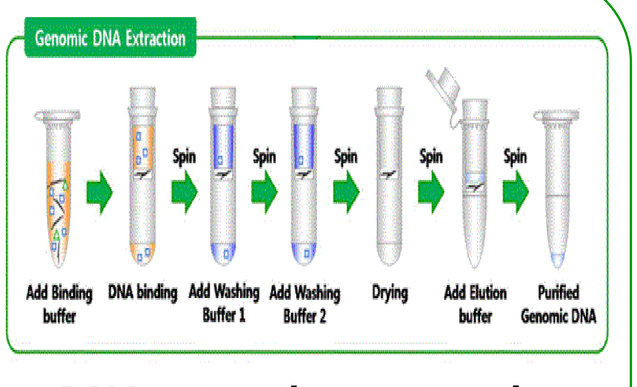
Tetraclinis articulata (Vahl) Masters, endemic to North Africa and southern Spain, is a multifunction coniferous, suffering from perpetual decline. So, as a natural and genetic resource, its preservation remains important and urgent.

Objective

The aim of this study is to evaluate the genetic diversity of *T. articulata* by Inter-simple sequence repeats (ISSR) and develop innovative conservation management plans.

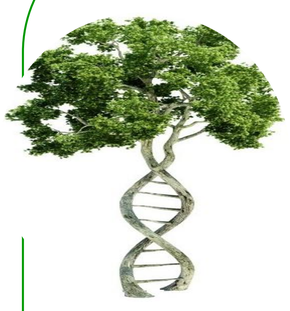
Sample collection and DNA extraction

49 « Tree Plus » from 5 provenances



DNA extraction protocole

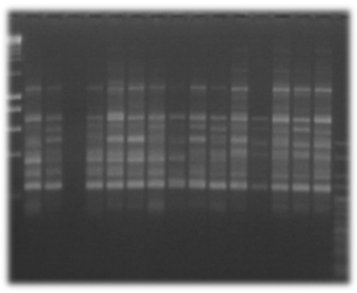
DNA amplification for ISSR and data analysis



DNA pure

PCR-ISSR

Electrophoresis in agarose gel



GelCompare (v2.5)
GenAlex (v 6.5)
Popgen (v 1.32)

Genetic diversity and genetic differentiation

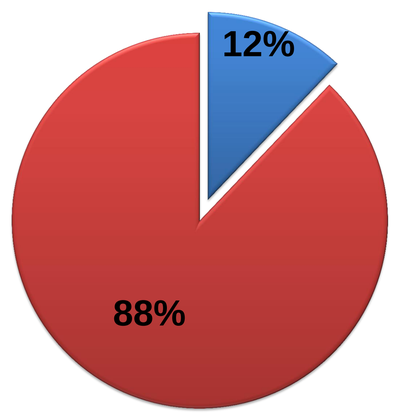
Pop	Ouj.	Ess.	Oulm.	Fez-B	Mar.
PB%	61.48	78.28	76.02	55.12	59.12

PB%: % of Polymorphic Bands at population level

PB%	Gst	Nm
99.59	0.137	3.12

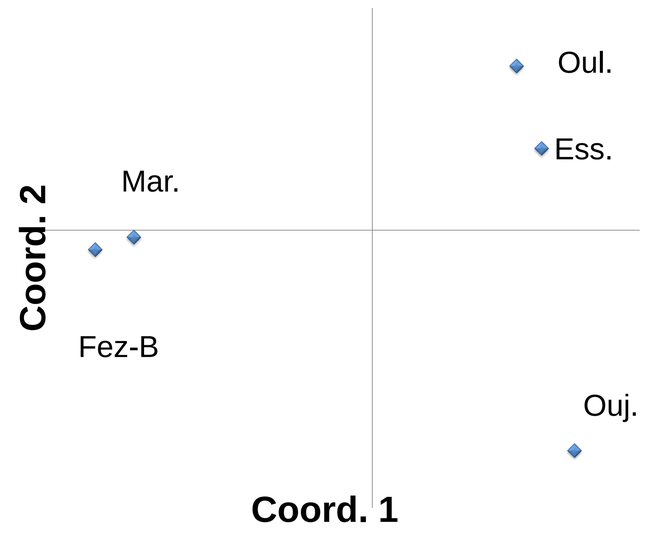
PB% : % of Polymorphic Bands at species level
Gst : Genetic differebiation index
Nm : Gene flow

Pourcentages of Molecular Variance



Inter-population: 12%
Intra-population: 88%

Principal Coordinates (PCoA)



Conclusions

- Gst and Nm are slightly similar to results found with *Thuja sutchuenensis* Franch but in general, geographically widespread species tend to maintain high genetic diversity (Liu *et al., 2013).*
- The AMOVA results are confirmed by the high level of Nm. Geographic isolation is one major factor influencing genetic differentiation by limiting the amount of gene flow via both pollen and seeds (Pfeifer et *al*., 2006).
- The present work strengthens the use of ISSR markers to assess genetic diversity of coniferous. The results must be supported by an important number of samples covering the whole range of Moroccan *T. articulata to* spot genetic diversity pools and to establish conservation plans in their regional provenances.

References

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-Pfeifer , M. and Jetschke, G. 2005. Influence of geographical isolation on genetic diversity of *Himantoglossum hircinum* (Orchidacea). Folia Geobot. 41:3-20