

Intraspecific variability of *Quercus suber* L. acorn morphology in Northwestern Tunisia



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Keywords

NWFP

Scale



Context

As part of the study of the phenology of cork oak (bud burst, flowering, fruiting, litter fall) in Northwest Tunisia and the impact of climate change (increase in temperature and decrease in precipitation) on these different phenophases, their sensitivity to prolonged dryness, frost, parasitic attacks. Because it determines the length of the growing season and the role it plays in both the carbon budget and the water balance, its study is essential



Objective

The cork oak forest suffers from serious problems of natural regeneration following anthropic action and overgrazing. As a result, we are witnessing continuous aging and disappearance of the oak grove. The object of the investigation is to study the variation of the size of the acorns of *Quercus suber* collected from different sites according to an altitudinal gradient in Kroumirie (North-West of Tunisia) in order to make the right choice of acorns for a plantation successful and adapted from cork oak.



Results

Analysis of variance showed significant differences between trees within the same stand for three morphological traits of acorns. The exception was observed in Ouchtata's stand and the greatest variability in Mejjen Essaf's stand.

Likewise, it showed differences between the stands for the three morphological traits. Ain Drahem's stand, at high altitude, has the shortest acorns. The longest are from Bellif at low altitude. The ouchtata's stand has at low altitude the highest mass and diameter.

The correlation is negative and very highly significant between altitude and length, altitude and diameter. However, R^2 is positive between length and mass. It is small between length and diameter ($R^2 = 0.235$) and the mass but highly significant.



Recommendations

This study should serve as a guide for the selection of trees producing fruit with the desirable morphological characteristics for the regeneration of natural forests of cork oak forests. So, as the Bellif forest is well known for its large-diameter trees, it is recommended to use the acorns collected from this forest.

Physico-chemical analyzes will be developed to recommend acorns in the food industry to serve as flour for bread making, confectionery. In fact, bringing light on the use of acorns for edible purposes could limit the waste of a nutritious and healthy food source and ensure sustainable development and food security.



Impacts and weaknesses

These parameters are insufficient to choose the best with high germination. You have to go to the lab and do some analysis like lethal dose of germination, water content. *Quercus suber* trees produce acorns with different maturation patterns (annual and biennial). Thus, special attention must be paid to understanding these models and the regeneration processes of oak.



Future developments

Our study has shown morphological differences concerning the acorns at the stationary and inter-stational level in Tunisia. This diversity is probably caused by genetic variability and/or station conditions (soil type, soil richness in mineral elements), exposure, soil moisture, or even a combination of these two factors that will be identified later. Molecular and chemical analyzes will be done in the laboratory.



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Further information

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About INCREDIBLE Project

INCREDIBLE project aims to show how Non-Wood Forest Products (NWFP) can play an important role in supporting sustainable forest management and rural development, by creating networks to share and exchange knowledge and expertise. 'Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin' (INCREDIBLE) promotes cross-sectoral collaboration and innovation to highlight the value and potential of NWFPs in the region.



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