



## Impact of the Aridity Gradient on the Physico-chemical Parameters of the Needles of *Pinus halepensis* Mill. in the Western Algeria

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**Abstract:** In Algeria, pinewoods are mainly concentrated in arid and semi-arid areas where climatic and edaphic conditions have an effect on the phenology, physiognomy and growth of trees. The objective of this study is to see whether the aridity gradient has an effect on the needles of Aleppo pine. For realized this work, some characteristics of 50 samples of Aleppo pine needles collected from five stations in two areas of western Algeria (semi arid and arid) were studied. Analysis of the results showed a significant difference in the specific characteristics of needles in each zone, namely morphology, water content, chlorophyll rate and yield, which are more important in the semi-arid zone. On the other hand organic and mineral content, the pH and conductivity remain homogeneous between the two zones. The principal component analysis (PCA) confirmed the significant differences between the parameters measured in the two study areas, highlighting the imprint of the bioclimatic stage on the *Pinus halepensis* Mill in each zone.

**Keywords:** *Pinus halepensis* Mill., Needles, Drought, Physico-chemical parameters

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