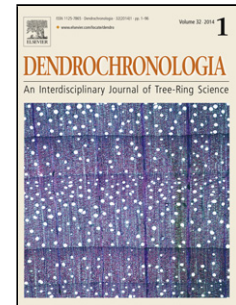


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Authors: Sondes Fkiri, Frédéric Guibal, Bruno Fady, Ali El Khorchani, Abdelhamid Khaldi, M. Larbi Khouja, Zouhair Nasr



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Tree-Rings to climate relationships in nineteen provenances of four black pines sub-species (*Pinus nigra* Arn.) growing in a common garden from Northwest Tunisia

Sondes Fkiri ^{a,b*}, Frédéric Guibal ^c, Bruno Fady ^d, Ali El Khorchani ^a, Abdelhamid Khaldi ^a, M. Larbi Khouja ^a, Zouhair Nasr ^a

^aNational Research Institute of Rural Engineering, Water and Forestry (INRGREF), BP 10, Ariana 2080, Tunisie

^bNational institute of agronomy Tunis, BP 48, Tunis 1082, Tunisia

^cInstitut Méditerranéen de Biodiversité et d'Ecologie (IMBE), Aix Marseille Univ, Univ Avignon, CNRS, IRD, Europôle méditerranéen de l'Arbois, BP 80, 13 545 Aix en Provence Cedex 4, France

^dINRA, UR629, Ecologie des Forêts Méditerranéennes (URFM), Domaine Saint-Paul, 84 914 Avignon Cedex 9, France

Corresponding author *: sondesfkiri@gmail.com

Highlights:

- Results expose differences in radial growth response to climate between subspecies of black pines.
- Spring water deficit seems to be the main constraint on black pine radial growth in Northwest of Tunisia.
- Low temperature and high temperatures effects on radial growth may become predominant in January/February and May/June for some subspecies and provenances of black pine.
- Our results also reveal differences between provenances attributable to genetic effects which will be further investigated in other common gardens submitted to other bioclimates.

Abstract: In the Mediterranean region, the effects of climate change on tree growth have been more and more noticeable in recent decades. *Pinus nigra* is one of the most common mid-elevation pine in this region and one of the species most affected by increasing dryness. In Tunisia, in order to guide species selection for future reforestation of the Khroumirie Mountains, research studies are under way to improve knowledge of black pine ecology. The effects of interannual climate variations on radial growth were compared for 19 provenances of black pine in a 51-year-old common garden experiment in Souiniet (NW Tunisia, 492m) in a humid Mediterranean bioclimate. A significant positive correlation with April precipitation and a significant negative correlation with spring temperature were noted. A cool wet spring is beneficial to growth as it affects tree water balance at the onset of the growing season; in

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