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Quality Estimation of the Western Algeria Forest Soils

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ABSTRACT

In recent years, there has been significant regression of the Aleppo pine forest massif in the semi-arid areas of Algeria which is the last barrier against desertification. Several studies on the effects of climate and anthropogenic practices have been undertaken to identify the limiting factors but no study in the region deals with the effects of soil properties. In this work, we studied the quality of soils in a pine forest of Aleppo, Western Algeria by comparing their physico-chemical and biological parameters in order to characterise these soils and to identify the main limiting and degrading factors of their quality. The results of this study showed that the forest soils in this area were alkaline but not salty with a presence of limestone. They had a balanced texture homogeneous moisture with the colour varying from reddish brown to reddish maroon. The C/N ratio was moderately low indicating that these soils release some nitrogen despite being rich in organic matter. Microbial activity in these soils was moderately low as a function of nitrogen availability to ensure good carbon mineralisation. This study has shown that the soils of Aleppo pine forests in semi-arid zones are fragile and generally characterised by heterogeneous properties that are very sensitive to the influence of environmental factors (climate and human). This may result in the deterioration of physico-chemical and biological quality of the soils over a long-term consequently changing them into arid soils.

Keywords: Soil properties, Aleppo pine, quality, degradation, forest, semi-arid

INTRODUCTION

The Mediterranean basin is one of the most important hotspots of global biodiversity, given its floristic richness of terrestrial plant communities and its high level of endemism (Médail and Quezel 1999; Myers *et al.* 2000; Médail and Myers 2004). According to Seigue (1985), the Mediterranean forest covers 65 million hectares of which 45 million of forests proper and 19 million hectares of forest formations have become a fragile natural environment disturbed by multiple uses, the origins of which date back to the beginning of the Neolithic period. However, the aggression the Mediterranean forest has undergone

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