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STUDY OF THE QUALITY AND FERTILITY OF THE SOILS OF THE PLAIN OF BOUNAMOUSSA EL TARF ALGERIA

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ABSTRACT

The quality of natural land in the world has deteriorated greatly in recent years due to several urban, industrial, and natural factors (such as erosion) exerted on these lands. To this end, the proposed study concerns the region of El Tarf, which is located in the extreme northeast of Algeria. The latter suffers from a real threat to the natural environment, which is the plain of Bounamoussa, and precisely to the fertility and quality of these soils, which are drained and irrigated by the waters of Oued Bounamoussa, which crosses this entire plain. The analysis of the points of the samples taken at the level of the plain of Bounamoussa, which are the soils of the communes of Ben M'Hidi, the commune Asfour, and the commune Bouhadjar, has highlighted the existence of high values in electrical conductivity with potentials of alkaline hydrogen, which become a risk of salinization of the soils and which degrade the quality and fertility of the soils of this plain and generate poor yields in the cultivation practices and on the harvest of the farmers. To this end, we suggest controlling the factors that degrade this plain, especially by analyzing the irrigation water, which leads us to a proposal for a water treatment plant to remedy the problems posed.

KEYWORDS:
Plain, Soil, Fertility, Irrigation, Salinization

INTRODUCTION

Soils are now the subject of growing interest. They are at the centre of major global issues such as food security, water supply, climate change, and biodiversity protection. They are the "keystone" of the functioning of our agroecosystems and the basis on which our landscapes and activities are based. Let this keystone crumble, and all the services our ecosystems provide are in danger of collapsing [1].

Soil is a living and dynamic entity necessary for the functioning of terrestrial ecosystems [2-3]. In addition, the soil is considered a resource because it stores nutrients for plants (whether cultivated or not) and is where roots grow and do their work [4-5].

The soil feeds plants with water and nutrients. However, it is a non-renewable resource on a human scale and is under pressure from urban and industrial activities that consume more and more agricultural land [6-7].

Soil not disturbed by humans is fertile [8-9]. Soil fertility is the ability of the soil to grow crops and harvest crops on a regular and repeated basis. It is the result of various components (chemical, physical, and biological) of the soil that is involved in the supply of water and nutrients to plants. Its improvement or maintenance is mainly done by the contribution of fertilizers (organic or mineral). The main effects of this input are to correct the pH of the soil, ensure a sufficient reserve of assimilable mineral elements, and ensure good soil quality [10-11].

Unfortunately, several factors can degrade soil fertility, such as the erosion process (water and wind) and the major anthropogenic factors through intensive agriculture, the use of heavy machinery, massive deforestation, overgrazing, industrial pollution, chemical contamination, irrigation, and urbanization, and this degradation may worsen the condition and quality of land and agricultural and environmental practices, [12].

The Bounamousa plain is located in the northeast of Algeria and is characterized by vegetable, industrial, fodder, and arboreal crops as well as cattle breeding [13]; to study the fertility of the plain of Bounamoussa, the characterization of these soils is the main subject of this study. To this end, a study of the physico-chemical characteristics of the soils, which mainly affect their topsoil, was conducted to determine the fertility and quality of this plain.

MATERIALS AND METHODS

The plain of Bounamoussa is presented as an alluvial plain [14]. It is located in the northeast of Algeria, in the territory of the willaya of El Tarf. The