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First determination of physicochemical characteristic of the *Daphne gnidium* L. soil habita in Tessala Mountain (NW of Algeria)

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ABSTRACT

Background: *Daphne gnidium* L. is a plant common in Tessala mountains. **Objective:** write In our study, we have characterized the physicochemical parameters of the soil habitat of this plant like Texture, structure, pH, Conductivity, limestone, organic matter and moisture. **Results:** Our results showed that the lumpy structure is dominant in the majority of soils, the slightly alkaline pH is in the majority of samples, the results of the electric conductivity show unsalted soil samples, the humidity is higher in soil samples in the northern slope in comparison with those on the south side **Conclusion:** From our work we confirm that this plant require a lumpy structure, alkaline pH, low conductivity but is independent of the percentage of moisture and organic matter

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INTRODUCTION

Different studies have focused on the potential area of distribution of forest species. A survey of the ecology of wood species with physiographic, climatic and soil parameters has been trained as a research line in the Mediterranean area, with scarce international.

Tessala mountain situated in the Mediterranean area (NW of Algeria) was also included in different research by the distribution of soil characterize species; Bouzidi et al, 2009 shown that the distribution of soil characterize *Urginea pancration* Phil

The mountain range of Tessala (figure 1) is oriented south west to north east. It is characterized by peaks that reach average heights of 600 meters. Jebel Tessala rises to 1061m. The landscape gets a rough morphology with steep slopes accentuated by a marked gully. Indeed, these slopes are broken down by a big number of dry rivers and tributaries carrying the purposes and stony materials to deposit downstream at the Sidi Bel Abbes plain. From a geological point of view formations thrust sheets of the complex described by Cretan - Oligocene and predominantly calcareous formations. Some hard sandstone outcrops of limestone point from time to time with soles Triassic gypsum (Bouzidi et al., 2009).

The climate is semi -arid Mediterranean cool winter, with median annual rainfall of 335-400 millimeter. Mean yearly temperatures are between 8.33 and 26.11 C° C. The lowest average temperature in the coldest month ranged from 2° C and 4° C and mean maximum temperatures of the hottest month rarely exceed 30° C (ONA, 2014)

In our work we are interested in *Daphne gnidium* L. a common plant in tessala region and characterized its soil habitat

Methodology:

Sampling method:

We have taken a sample of soil with the depth of 30 cm in each stations, four station were taken from the north area of the mountain and another four were taken from the south area of the monatain giving us a totale of 8 satations

Physico- chemical analyzes of soil:

The texture of the soil is indicated by its size analysis. Its principle is based on the rate of sedimentation of dispersed particles and separated by destruction of their cement (lime and organic matter).

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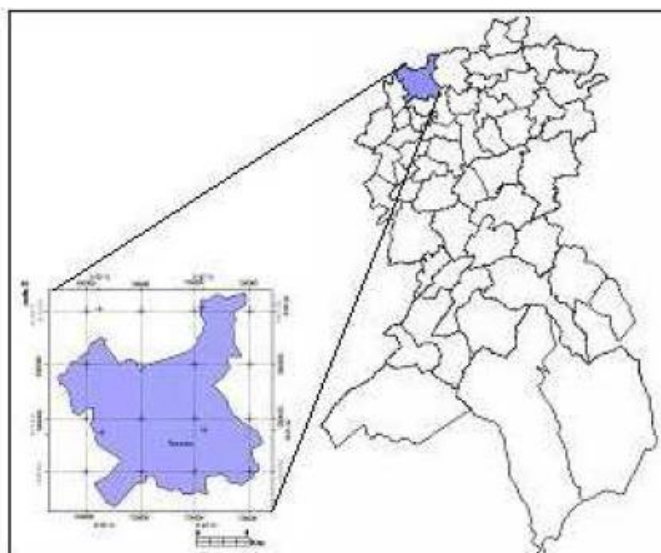


Fig. 1: localisation of Tessala mountains

Coarse silt is extrapolated by calculation from the results obtained (Baize 1988). These solutions are plotted the percentages of clay, silt and sand.

Determination of total limestone CaCO_3 characterized based on the reaction of calcium carbonate (CaCO_3) with hydrochloric acid (HCl), the total dosage of the limestone is carried out using the calcimeter according to Baize Bernard (1988).

The dose of active lime is carried out with a specific reagent (ammonium oxalate), which drives a fraction only of the total limestone. The selection is then assayed calcium.

The carbon in the organic material is oxidized by potassium dichromate in the presence of sulfuric acid. By recognizing of the total required for this dichromate oxidation, one can work out the percent of organic C in soil humus (Baize 1988).

For pH, the rule is to measure the electromotive force of an aqueous solution of stain (water / land ratio) using a pH meter. The electrical conductivity is measured using a conductivity meter according to the absorption of electrolytes in the aqueous extraction solution (Baize, 1988).

For moisture subjecting a sample of fine soil, saturated with water is measured by weighing before and after drying at 105°C .

Results:

Table 1: station location and physicochemical soil parameters

	S1	S2	S3	S4	S5	S6	S7	S8
Altitude (m)	793	810	932	992	820	850	865	910
Exposition	SW	S W	SE	SE	NE	NW	NE	NW
Slope (%)	12-25	5	10	25	40	25	30	16
structure	lumpy	lumpy	lumpy	lumpy	lumpy	lumpy	lumpy	lumpy
sand(%)	42,03	65,74	61	37,12	51	60,66	51,4	63
silt(%)	9	7,29	4,1	6,20	3,3	10,4	4,5	4,6
Clay (%)	8,5	10,1	6,9	24,52	7,9	9,47	6	2,7
pH	8,2	7,3	6,3	7,03	6,8	7,27	6,1	7,02
Organic matter (%)	3,31	2,41	11,91	6,04	6,1	2,99	4,1	9,03
Conductivity (ms)	0,11	0,37	0,37	0,24	0,13	0,14	0,11	0,21
Total limestone (%)	34,5	32	4,3	4,3	32,09	41	3,44	0,79
Limestone actif (%)	1,27	2,12	-	-	9,3	4,52	-	-
Moister (%)	9,51	9,84	57,65	9,12	19,41	30,42	12,11	8,2

Discussion:

The lumpy structure is dominant in the majority of soils, sandy texture and equilibrated

The slightly alkaline pH is in the majority of samples, different cations absorbed depends on the nature of the crop and climatic conditions (Djazoz, 1982) structure is also related to the amount of calcium present in the soil, and depends on the presence of the clay- humus complex (Huetz Delemps, 1980).

The organic matter content is really variable. The measure of organic matter depends on the historical period and type of group, but also on the abundance of coarse elements (Stambouli, 2010).

The total rate of limestone is very heterogeneous. This content is related to the nature of the bedrock.

The results of the electric conductivity show that soil samples are unsalted. The ratio of soluble salts in the soil is a function of the depth of the texture, evapotranspiration and moisture profile (Bendaanoun, 1981).

The humidity is higher in soil samples in the northern slope in comparison with those on the south side, this can be explained by exposure to humid northern slope wind from the sea that promotes increased water load into the territory, the south side is exposed to illumination and hot winds which causes evaporation of water. And the moisture content depends on the character of the land, its richness in organic matter and the time of sampling location (Aubert, 2003).

Conclusion:

Daphne gnidium L. plant is adapted on Tessala mounts soil's. our study show that this plant require a lumpy structure, alkaline pH, low conductivity but it is independent of the percentage of moisture and organic matter

This field gives us an idea on autoecology of *Daphne gnidium* in the mountains of Tessala another wider area of the Orani region, it will be interesting to better interpret the requirement of this plant relative to the soil.

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