INTRODUCTION

The western Egyptian Desert is a part of Libyan Plateau. It is a limestone, having a number of closed - in depressions embracing the oases. Such oases derive their water from deeply seated beds of water-bearing rock, mostly sandstone. The water rises under artesian pressure to the level of floor through dug wells, or through tectonic cracks.

Because of its elevated position, the plateau is subjected to strong winds which together with run-off, cause intensive erosion. Consequently, the soils are in general eroded and very shallow in contrast to the depressions where one can meet with the so-called "original desert soil, a mixture of residual alluvial and eolian deposits. A part from the closed - in depressions and the inland sand dunes, because of the ecological features of this plateau, elevation, strong winds, high evaporation rates, very deep water table, and their shallow layer of soil, the balance under which plants live is precarious.

The landscape of such Western Desert plateau is distinguished into two main physiographic feature, the northern coastal strip plain and the southern table land. The North Western Mediterranean Coastal Belt extends from Alexandria westward to El-Sallum for about 500 km, and

from the seashore inwards for about 15 to 25 km. Such Belt is considered the richest part of Egypt in flowering nature plants, and that is related mainly to its relatively high rainfall. The number of species in this strip belt forms about 50% of total number of species of Egyptian flora, which is estimated to be about 1800 to 2000 species (Oliver, 1938 and Tackholm, 1941). Thus, it is considered as one of the most richness area with natural flora in Egypt. Most of this flora is annual weeds that flourish during rainy season (winter season), giving the area a temporary gay grassland aspect.

Many workers have contributed considerable information and data about the general reconnaissance of the narrow North Western Mediterranean Coastal Belt area and details of some sectors therein. Among those workers Oliver (1938 & 1946 a&b) made general studies on the eastern part of this strip at Burg El Arab. Montasir (1943) studied the flora of Burg El Arab also, while Hassib (1950) work on some plant communities inhabiting the area. Tadros and Atta (1958 a) studied the plant communities of barley field and uncultivated desert areas in the coastal strip of the Western Desert. The same authors (1958 b) studied the sociology and ecology of the halophilous plant communities of Mareatis. In addition Migahid et al. (1955) and Migahid and Ayyad (1959) studied the vegetation of Ras El Hekma. The series of

studies which carried out by Tadros and El Sharkawi (1960 a, b and c) added more information about the vegetation of Fuka and Ras El Hekma area with detailed studies of the soil properties and the seasonal changes of the soil moisture.

Many other workers studied the vegetation of Maryut area (Among them Ayyad, 1970; Girgis, 1970 and Baghdadi et al., 1988).

In spite of the very extensive studies on the narrow of Coastal Western strip, very little is known about the ecology, habitat and the vegetation distribution of the southern tableland. This may be due to the very poor vegetation distribution in such very drought tableland, in addition to the other stress enviromental factors.

Plant life in the desert primarily means struggle for water, wherever water exists the desert disappears. Merely the fact that the desert plants mostly grow at considerable distance from one another and not in closed communities appears to indicate that plant life is finally determined by the amount of water available in the soil. Thus, when studying the problems of cultivating the desert it will be necessary to take as basis this factor limiting mass production. We can say

that the Egyptian desert does not possess a truly natural vegetation. The vegetation of the desert is a semi-culture vegetation and is characterized by a negative selection over a very long period (Mothes, 1961). The good fodder plants are suppressed or completely disappear in wide areas and new plants have emigrated. In this connection, the destructive effect of over-grazing is witnessed in all parts of the Egyptian deserts (Girgis, 1971). This selective process, together with the extreme drought, leave the natural vegetation in a deteriorated conditions.

It must be noticed that the study of the indicator species of the area might be used as an index for the prevailing environmental conditions. The possibility of using plants as indicators of geological formation, depth of mineralization of ground water, habitat conditions, soil and climate attributes, and land-use practices, is implied in the early workers of Hilgard (1860) Chamberlin (1877), Shantz (1911) and Clements (1920). The study of the indicator species in any uncultivated area may help in the proposal of the possible reclamation system, as this indicator reflect the environmental prevailing factors in this area.

In this connection, Aldous and Shantz (1924) suggested that the natural vegetation is the product of

all growth conditions within a given area, and hence an index of environmental factors influencing its growth. Marks (1950) showed significant correlation between the vegetation of the lower Colorado Desert and salt content as well as soil moisture-holding capacity. Lemee (1955) states that soil indicators make a quick assessment of the physio-chemical properties of soil. Lewis (1961) shows that plant species are considered better indicators of zonation than physical factors such as tides, water level, or soil. Snead and Tasnif (1966) used indicator plants to determine boundaries of landforms on aerial photographs. Holroyd (1970) demonstrated that flag trees could be used to determine the direction of the prevailing winds. The "indicator geobotany" was the interested work of Viktrov (1955).

Long (1955) reported observations on the vegetation of the north western coast of Egypt, and he stated that plant species may indicate the nature of soil and sub-soil. Long (1955), Tadros (1956), Kassas and Imam (1954 & 1959) and Kassas and Girgis (1965) reported some correlation between the soil factors and the growing vegetation in many areas. In addition, Girgis (1971) in his study of plant indicators in the Egyptian deserts showed a number of plants that are indication of habitat conditions, land forms, salinity, geological formation, cultivation, ground water and grazing. Kassas (1952) and

Kassas & Imam (1954) reported some correlation between certain plant indicators and ground water. It could be stated that natural vegetation indicators are very valuable for having chosen the reclaimed desert areas.

From the different forementioned information, it was thought advisable to carry out an investigation on the natural vegetation distribution and the ecological prevailing factors in some part of the western poor vegetation Egyptian desert. The chosen area was extended in Cairo-Alexandria Desert Road from km 30 to 70 (on the left side of this road). As it was mentioned before, quantitative ecological and eco-physiological data on the growing natural species in this area are very limited. Therefore, the aim of this work was contributed to the ecology and eco-physiology of the different natural growing plant species to classify the range of the environmental condition within which such species can survive and adapt theirselves in the main communities. It must be mentioned that this chosen area was under the reclamation and cultivation activities by the private sectors which began from the end of 1986 season. Accordingly, our study was extended from 1986 till 1989, to get some clue information about the changes in the vegetation communities under the variable environmental conditions, the cultivated and non-cultivated area.