بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من 15-25 مئوية ورطوبة نسبية من 20-40%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

STUDIES ON RANGE PLANTS IN WADI MAGID AND WADI MEHGUN IN THE NORTH WEST COAST OF EGYPT

By

Mohamed Helmy El-Metwally El-Morsy

B. Sc., Agric. (Agronomy), Al-Azhar University, 1982
M.Sc. Agric. (Agronomy), Cairo University, 1998

THESIS
Submitted in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY
In
Agriculture Science (Agronomy)

Department of Agronomy
Faculty of Agriculture
Cairo University

2002

APPROVAL SHEET

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Supervisors : Prof. Dr. *K. I. Abdel-Gawad*, Dr. *A. M. Soliman* and Dr. *H. M. Abd El-Aziz*
Department : *Agronomy*

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ABSTRACT

This study was carried out in Wadi Magid, Wadi Mehgun and Sidi-Barrani during winter 1998/99 to fall 2000 in North West Coast of Egypt to classify and identify the range plants in the previous location. Results showed that species in escarpment site (main canals of the wadi) had the highest value for all traits in winter in both years such as abundance, density, cover, fresh and dry forage yield, CP %, E.E %, NFE %, and potassium %. Whereas, species in ridge site had the highest percentage of fiber, ash, and sodium %. Generally, escarpment site was the best for desirable traits in both wadis. In Wadi Magid 33plant species belongs to 17 families were found, whereas in Wadi Mehgun 40 plant species belongs to 18 families.

In Sidi-Barrani results showed 25 plant species belong to 15 families. Species in the fenced area of spring season in both years had the highest figure of most studied characteristics such as frequency, abundance, density, cover, fresh and dry forage yields, CP %, EE %, NFE %, and potassium %.

Key Words:

Range plants, frequency, abundance, density, cover, fresh and dry forage yields, CP, EE, NFE, fiber, ash, sodium, potassium, Wadi Magid, Wadi Mehgun, North West Coast of Egypt, season and site.

K. Abdel-Gawad

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INTRODUCTION

Although Egypt is considered as a part of the arid region and despite the fact that the natural plant cover of Egyptian deserts is quite low and scattered, the flora in the North West Coast is relatively rich and diverse. The North West Coast Region of Egypt extends 480 km along the Mediterranean Sea from west of Alexandria to Libyan border with depth of about 25km inland.

The natural range is considered the basic source of animal feedstuff in the Egyptian deserts. Due to poor management and environmental impacts, the native ranges are deteriorated and seriously depleted.

The palatability, nutritive value and utilization of the natural range differ according to plant species, stage of growth and forage sites. Range sites and soil types have a definite correlation. It is agreed that detailed rangelands survey will be made consistent with the needs of soil information for range conservation. Range fencing is also used as one of the most important methods of germplasm resources conservation and improvement of degraded rangelands.

Range production depends on various factors as climate, soil, botanical composition, vegetation structure and type and intensity of management, e.g. grazing patterns and stocking rates, fire and wild life. Climatic factors such as precipitation, light, temperature, relative humidity and edaphic factors such as soil topography, soil texture and fertility are the most important factors affecting natural plant distribution, and among them they are responsible for the amount of moisture which the vegetation will receive.

Classification of range condition is a scientific method of determining "Where a range area is, in relation to what it can and should

be ". To make this type of range classification, there are several basic steps that are necessary. Among them, the following two steps are so important. The first one is the survey of the vegetation. Recognition of existing plants must lead to classifying these plants into groups. Without knowledge about the plants on the range, no real appraisal can be made of native rangelands. The second step is the selection of range sites.

This work was aimed at:

1- Surveying and classifying different rangeland types of studied areas, and using such classification in the proper future.

2- Determining the chemical composition of different rang plants and areas their importance for grazing.

3-Comparing rangelands protected against animal grazing through fencing with unprotected ranges.

REVIEW OF LITERATURE

Vegetation Study

The vegetation survey and plant identification of any area are of great importance for range investigation because they may help in studying individual plant species including evaluation of range improvement. Also, to understand succession stages of native range plants for range improvement and to understand succession stage of plant communities development. Moreover, they may help to know the response of vegetation to different levels of grazing intensity at various stages of depletion.

The detailed vegetation study based on the description and investigation of plant communities or vegetation segments must be firstly recognized in the field. Natural plant communities which are in equilibrium with local site factors increase their dry matter production to the possible maximum values under these conditions.

Many workers in Egypt and abroad have studied the relationship between vegetation and the type of habitats. Also, yield measurements and plant identification were recorded under different range sites. The following range sites were chosen to be reviewed to throw light on the vegetation under different conditions.

North West Coast of Egypt

Migahid *et al.* (1955) studied the types of habitats and vegetation at Ras-El-Hikma They concluded that on gentle slopes, three types of vegetation might be distinguished as, rock, sand-plain and sand dune communities. The total cover on rocky ridges was relatively small, not exceeding 2-5%. The plants were stunted and developed poorly. The first community type was found on the steep upper part of the slope, where soil was shallow and the substratum was rocky. It was similar to the

vegetation developing on summit (ridge) in density, vigor and floristic composition. The second and third types were found on the more flat parts of the slope.

Migahid and Ayyad (1959a,b, and c) studied the vegetation in some of the major types of habitat at Ras El-Hekma. They mentioned that the dominant perennial species gave the community in every habitat its physiognomy. During the rainy season the ephemerals appear and the deciduous perennials flourish. This condition represents one aspect of the vegetation. The other aspect prevails during the rainless period, when the ephemeral disappears and the deciduous perennials shed their foliage.

Ayyad (1969) studied the vegetation at Ras El-Hikma and found the variation in vegetation composition within the same physiographic position was possibly attributed to many edaphic factors, such as soil texture, water holding capacity, organic matter and salt content. It was also evident that the magnitudes of these edaphic factors varied from one site to another on the same type of landform to the extent that caused variation in vegetation composition.

El-Ghonemy (1973) in the vicinity of the beach of Sidi Abdel-Rahman the north facing slope of the sand dune ridge, found that along the dune ridge side, there was a distinct vertical zonation in the soil chemical properties. This is demonstration not only in the form of total salinity but also, the major essential requirements for plant growth. The plants being unable to tolerate equally the salt content in the soil, or were of same nutritional requirements, a vertical zonation has been shown by the natural vegetation along the dune ridge side.

Matruh and Sidi-Barrani

Girgis and Desouky (1977) studied the vegetation of the wadis of Mersa Matruh; the vegetation of cliffs is characterized by *Capparis aegyptia*. *Theymelaea hirsuta* is the most abundant species in slopes and

gullies. Stepped runnels were dominated by *Jasonia candicans*. *Hammada scoparia*, *Jasonia candicans* and *Atriplex halimus* dominated the plant cover of wadi beds. Wadi terraces were occupied by *Lycium europaeum*. The ecological conditions within the various habitat types were briefly described.

Ibrahim (1995) conducted an ecological study on some range plants of the North West Coast. He found that the accompanied plant species within every association differed due to location. The *Artemisia herba-alba* association was the highest in Sidi-Barrani followed by *Asphodelus microcarpus*, *Hammada scoparia*, *Thymelaea hirsuta* and *Salsola deliileana* whilst in El-Negiala the most important was *Thymelaea hirsuta* followed by *Asphodelus microcarpus*, *Hammada scoparia*, *Salsola deliileana* and *Artemisia herba-alba*. *Thymelaea hirsuta* as well as *Asphodelus microcarpus* were the richest in plant species and *Salsola deliileana* the poorest. *Thymelaea hirsuta* appeared the most adapted association for the different environmental conditions in NorthWestern coast of Egypt while *Salsola deliileana* was the lowest.

Reiad *et al.* (1996a) studied the productivity of some range communities. They found that 14 families of 24 and 26 species were involved in *Thymelaea* association at Sidi-Barrani and El-Negila locations, respectively, the majority of these plants were annuals. Various vegetative measurements varied in conformity to both locations and season of growth and the highest averages were recorded at Sidi-Barrani due to favorable environmental conditions.

Reiad *et al.* (1996b) found 29 species representing 13 families and 11 species representing 9 families of *Artemisia herba-alba* community at Sidi-Barrani and El-Negiala locations, respectively. The highest density, cover, abundance and fresh yield were in winter season at Sidi-Barrani and spring at El-Negiala.