Assessment of some range plants under the northwestern coast conditions

Nagi Hussien Baumi

This study was carried out during winter 2000 up to autumn 2002 seasons at North Western Coast (NWC) of Egypt. The NWC extends 480 km along the Mediterranean sea from west Alexandria to Libyan boundaries in the west side of about 15 to 20 km inland south the sea-shore. Changes in precipitation varied widely in quantities and distribution within the year and among years. These variations strongly affect the nature of the growing plant species, growth parameter production potentialities and chemical constituents of the natural range vegetation. Natural vegetation of the NWC of Egypt is considered the most if nJt the only important source of animal feed. And, grazing is the most important activity which represent the main economic source of many Bedouins along the North West Coast. This is why the ultimate targets of this study is to investigate the following aspects:1.To survey, identify, classify and categorize the behaviour, quantity and quality of the naturally growing plants in two locations [Halazien (HA) at Marsa-Matruh and Al-Aziziyya (AZ) at Sidi-B arrani].2.To study the effect of environmentally seasonal changes on range productivity and quality along the whole period of study.3.To assess the chemical composition of the different types of range plants and its area according to its importance as a reliable agrazing source in the range.4.Biological evaluation was considered for some of the selected plants of an acceptable palatability and according to its high quality of its chemical constituents. The following studied parameters of interest could be summarized as follows : 1.Location (L):Two locations were assigned in this study which represent both of edaphic and climatic factors in order to survey and, classify, categorize and select the naturally growing plants in the two locations under study [Halazien (HA) west Marsa-Matruh and Al-Aziziyya (AZ) West Sidi-Barrani].The two selected locations are widely varied in the quantities and distribution of precipitation and the other climatic and edaphic conditions.2.Site (S):There sites (Si, S2 and S3) were studied under each of the two selected locations. Each site was about 3km distance from the sea shore and down.Growing seasons : Measurements of the studied parameters were taken and recorded in winter, spring, summer and autumn seasons in order to investigate the effect of the variable prevailing climatic factors on the behaviour of the naturally grown plants in each of the studied locations and sites.The experimental design used was randomized complete block (RCBD) with 10 replications for each site under study location over 3 years. Studied parameters were the botanical composition, frequency, abundance, coverage, density, fresh and dry foliage production.Chemical contents of plants as crude protein, totalcarbohydrate, crude fiber, ether extract, total ash, sodium and potassium contents were studied.Physical and chemical characteristic of the soil, and the biological evaluation was conducted for some of the selected plants of acceptable palatability to assess its quality and chemical constituents. Results could be summarized as follows : I- Vegetation behaviors : Such survey clarified that the natural vegetation components of HA location was about 58 plant species belongs to 20 families out of the 58 plant species, 34 species were of annual and 24 species of perennial types. Among these species, 36 were palatable and 22 unpalatable.Results indicated a great difference between HA and AZ location in the botanical composition. These 43 species in AZ location belongs to 17 families which is still less by 3 families compared to HA location. Out of the surveyed 43 species, 22 were of perennial growth and 21 species of annual type. In AZ location there was 27 species of palatable nature and 16 species unpalatable.Generally, species in (HA)

location had the highest values as compared with those of Al-Aziziyya for all the investigated growth parameters such as frequency %, abundance %, coverage % anddensity (plant/m2).Vegetation of the studied site 1 and 2 (3, 6 km down) were of the highest values in vegetation parameters. Wet season (winter & spring) produced much higher values of the studied vegetative characteristics than the dry season (summer & autumn). II. Foliage productivity : Native plants in HA location were of higher fresh yield than that of AZ location this result was true in all seasons. Higher yield was obtained at site 2 (6 km down south sea-shore) which was obtained in spring than winter followed by autumn then summer.Plants of the highest fresh foliage yield were Anacyclus alexandrinus, Asphodelus microcarpus, Plantago cylindrica, Gymnocarpus decandrum, Paronychia argentea, Artemisia herba-alba, Hammada elegans, Zilla biparmata, Lycium shawii, Thymelaea hirsuta and Pituranthos tortuosus Generally, dry matter production was higher in HA location than that of AZ location during all seasons. The highest values were in wet season at site 2 (6 km down) followed by site 1 (3 km down), then site 3 (9 km down) in both of the studied locations (Halazien and Al-Aziziyya).The following plants were of the highest dry matter content: Hordeum leporinum, Anacyclus alexandrinus, Silyburn marianum, Gymnocarpus decandrum, Paronychia argentea, Asphodelus microcarpus, Artemisia herba-alba, Hammada elegans, Zillabiparmata, Lycium shawii, Thymelaea hirsuta and Pituranthos tortuosus.III. Chemical composition :- Crude protein content of plants grown in HA location significantly exceeded that of AZ location. Protein content was the highest in winter and spring seasons and in site 2 (6 km down). The highest CP content were detected in wet seasons than in dry seasons in the two studied locations. Also, HA location produced higher protein content than AZ location in all seasons. In the respective winter, spring, summer and autumn seasons, CP content was 9.08, 8.78, 8.04 and 8.07% at HA location, being 8.00, 7.57, 7.07 and 6.85 at AZ location.- Total carbohydrate percentage was significantly higher in the plant of grown under HA location through the whole year as compared with plants grown in AZ location. Also, site 2 (6 km down) followed site 1 (3 km down) was responsible for the production of highest total carbohydrates. Meanwhile the highest total carbohydrate was obtain in plants grow in spring and summer seasons compared to winter and autumn.- Crude fiber percentage was insignificantly affected by location. The highest crude fiber content was noticed in site 1 (3 km down) and in autumn followed summer, spring and winter seasons. The highest CF contents were higher in dry seasons than wet seasons in HA and AZ locations. Crude fiber contents were 34.39, 34.73% at HA location and 31.69, 34.16% at AZ location in the respective summer and autumn seasons. - Total ash percentage was higher in plants of HA location than AZ location. The highest total ash content were obtained in site 2 (6 km down the sea-shore), in autumn and winter seasons.- Ether extract percentage were not significantly effected within the two locations. Ether extract was the relatively higher in spring and winter season, and in site 2 (6 km down).- Sodium and potassium accumulation percentage were higher in HA location than AZ location. The highest sodium and potassium contents were obtained in site 2 (6 km down) and in summer and autumn seasons compared to winter and spring seasons.Climatic factors of HA location were better and exceeded that of AZ location. Also, soil of HA location were highest than that of AZ location in mineral percentage with specific chemical properties.IV.Biological Evaluation:The biological evaluation were determined on dry matter (DMD), organic matter (OM D) and crude protein disappearance (CPD). Many plants had good acceptable values of digestibility, some had moderate values and the remaining plants had low values. Good and moderate plants of biological evaluation could be used successfully in the rations of ruminant animals through an appropriate natural grazing management.- The Malva parviflora, Trigonella hamosa, Lygeum spartum, Anacyclus alexandrinus, Carduus getulus and Maresia pygmaea, plants proved to have the highest value of dry matter disappearance - Plants of the highest organic matter disappearance were Malva parviflora, Trigonella hamosa, Picris radicata, Anacyclus alexandrinus, Artmisia herba-alba, Silybum marianum and Piturarthos tortuosus- Plants of the highest crude protein disappearance were, Trigonella hamosa, Malva parviflora, Vicia manantha, Medicago sativa, Picris radicata, Silybum marianum and Bromus rubens.Such native plants recorded better results for the estimation digestibility coefficient and nutritive values which indicating the possibility for using such plants in animal rations under the circumstanced of the studied areas the (NWC) of Egypt as discussed summarized previously.