e-ISSN 2795-3276
p-ISSN 2795-3270

10.5281/zenodo.14245655 Vol. 07 Issue 10 Oct - 2024 Manuscript ID: #01658

The effect of human activities on the deterioration of the Artemisia herba alba plant in the Sultan area, northern eastern part of Libya

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Abstract

The study was conducted in the Sultan area on the coastal strip of the Saluq plain, which is one of the most important grazing areas in the northeastern part of Libya. The area has a long history of overuse, as this area is characterized by intense human pressure on rainfed agriculture, grazing and urban expansion. The study aimed to assess the current status of wormwood and the impact of grazing animals on it. The study area is located between the green belt and the city of Ajdabiya, where human activities are active. According to statistics obtained from the Agriculture and Livestock Sector in Sultan Municipality, the number of sheep and goats reached 224,675 heads, the number of camels 1,508 heads, the number of horses 94 heads, and the number of cows 60 heads (Agriculture and Livestock Sector, Zueitina Sultan). This area has been greatly affected by various human activities, such as intensive plowing, overgrazing, intensive agricultural operations, and others to remove the vegetation cover, for the prposeof planting and exploiting it for various purposes, and many land trampling operations. Which affects the plant environment in the region (Al-Amrouni 2005).

***How to cite*:** El-Mograby, A. S., & El-Barasi, Y. M. (2024). The effect of human activities on the deterioration of the Artemisia herba alba plant in the Sultan area, northern eastern part of Libya. *GPH-International Journal of Biological & Medicine Science*, *7*(10), 74-86. https://doi.org/10.5281/zenodo.14245655

Introduction:

Libya is located in of North Africa. Its area is 1,760,000 square kilometers (Abu Luqma et al., 1965) and consists mainly of desert (more than 90%) and overlooks the Mediterranean coast. The coastal strip and the Green Mountain contribute about 50% of the total vegetation in the whole of Libya. The temperatures are also very high with an annual average of 27 degrees Celsius. Rainfall in the northern part of Libya ranges between 100-500 mm/year, while the southern part only reaches 10 mm/year.

Libya is known for its diverse terrain of plateaus, mountains, valleys and desert, which in turn is reflected in the nature and diversity of the vegetation cover. Medicinal aromatic plants are among the most important plants that humans have explored and known for their health properties and medical benefits. Civilizations of different cultures and habitats have been interested in using medicinal plants in treatment, in addition to other uses. Vegetation is one of the basic components of ecosystems and supports their continuity, especially in stabilizing the soil and protecting it from erosion and reducing desertification, in addition to its effective contribution to preserving soil moisture and increasing its properties. underground storage. It has multiple medical and aromatic uses and is a source of energy, and its uses go beyond basic needs because it is an inexpensive fodder source. (Al-Daik, 2018)Due to the lack of information about the study area in terms of plant diversity and human activities that affect the vegetation cover, this study aims to fill the gap in information and the initial inventory of flowering plants that grow and spread there, identify them and prepare a list of them to know their distribution, density and endangered species. As a result of the depletion of natural resources, the future of many areas has become at risk due to the diversity and spread of various human activities, which has led to a serious imbalance in the ecosystem and thus to the deterioration of its resources and decline in its productivity. For this reason, the interest of the world's countries and societies in environmental affairs has increased, and it has become a feature of the modern era, especially since these ecosystems have limited tolerance, they are very weak in absorbing the changes that occur in them, and lack the inherent flexibility (Ali, S. I. Jafri, S.M.H. and El-Gadi).

Despite the important role played by natural pastures in Libya from the economic, environmental and social aspects, their area is decreasing at alarming rates as a result of agricultural expansion and desert encroachment, in addition to the continuous deterioration in their productivity due to environmental changes. Climatic conditions "recurrent droughts and fluctuations in rainfall levels" as well as the exploitation of negative human behavior lead to higher climate temperatures, which increases drought, which is why people are searching for more fertile areas. Although it is an important agricultural, pastoral and settlement area (Al-Amrouni 2005), the vegetation cover in various desert areas is characterized by characteristics that are compatible with drought conditions, and one of the most important characteristics of the vegetation cover is the spacing of plants from each other. The vegetation cover is often characterized by a permanent structure of spaced perennial plants such as shrubs and trees. After weeks of rain. The goal of surveying and monitoring pastures is to evaluate the sources of vegetation cover or renewable natural resources at one time, and it is considered one of the main characteristics of pasture management. Protecting natural

pastures preserves endangered plants and encourages their growth, reproduction and development (Lajail, Khamis Idris 1985). The aim of this study is to demonstrate the importance of the medicinal plant wormwood in our country and how to use it in the right ways to treat health problems such as digestive disorders.

Figure 1: Overgrazing is practiced intensively in this sensitive ecosystem.

Materials and Methods

2.1 Study Area

This study was conducted in Sultan area, located about 40 km southeast of Ajdabiya city. The area is considered a marginal pre-desert area. It is located on the northeastern coast of Libya, and thus dominates within the large coastal plain that extends from the north of Benghazi city to the desert. The area is characterized by flat lands, absence of valleys, low rainfall, and some sand dunes (Al-Amrouni 2005). The soil is generally shallow, and dry soils are deposited on top of the parent limestone rocks, and are characterized by a sandy, loamy texture that tends to be alkaline (Ali, S. I. Jafri, S.M.H. and El-Gadi). The physiology of the area consists mainly of a flat, open plain, with many waterways that sometimes run during good rainy seasons and end at the sea in the west. The soil is generally dry, shallow, deposited on top of the parent limestone rocks, and is characterized by a sandy, loamy texture that tends to be alkaline. (El-Moghrabi 2018)

Based on the UNCCD aridity index obtained from the ratio of mean annual precipitation (MAP) to potential evapotranspiration (PET) values, the study area is classified as arid (MAP: PET = 0.08), characterized by extreme summer temperatures and sporadic water precipitation. Precipitation is unreliable, both in terms of occurrence and distribution. The rainfall regime is monotypic, and occurs primarily during the winter months. The average annual precipitation was 162 mm per year, and the average relative air humidity throughout the year was 66%. The minimum temperature was 9 °C, and the maximum was 20 °C.

Figure 2: Map showing the geographical location of the study area (Sultan area)

Materials and methods of research:

The presence of wormwood in the study area was identified by distributing a questionnaire to the residents of the study area.

Applied aspect:

It includes displaying and analyzing the questionnaire data for a sample of 200 individuals taken from the Sultan area, and in order to achieve the goal of this study, the Statistical Package for Social Sciences (IBM) SPSS Statistics 25 software was used as a tool to analyze the study data.

Statistical description of the study sample:

1. Description of the sample according to gender:

Table (1): percentage distribution of sample by education level

Sex		**frequency**	**percent**
	male	**93**	**46.5%**
	female	**107**	**53.5%**
	total	**200**	**%100**

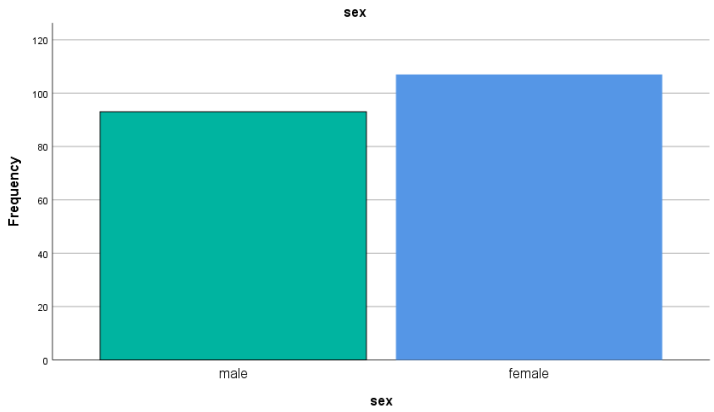


Table (2): percentage distribution of sample by age

		frequency	percent
Age	20-18	7	3.5%
	40-21	67	33.5%
	+40	126	63%
	total	200	%100

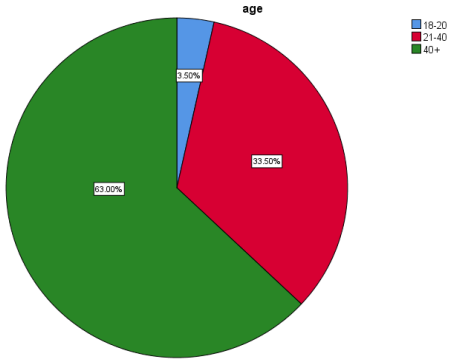


Table (3): percentage distribution of sample by marital status

Marital status		frequency	percent
	single	29	14.5%
	married	142	71%
	divorced	13	6.5%
	widow	16	8%
	total	200	%100

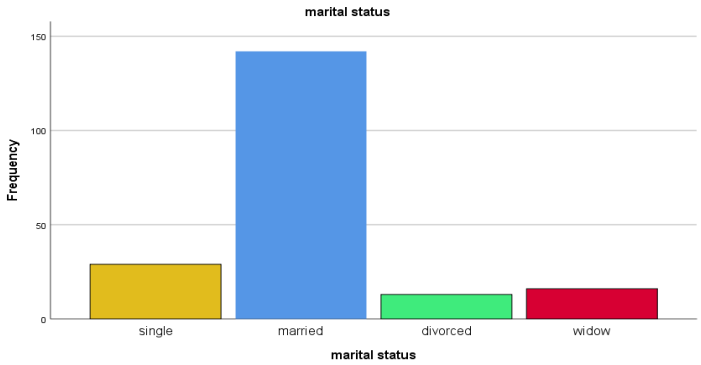


Table (4): percentage distribution of sample by educational level

		frequency	percent
Educational Level	**llliterate**	**18**	**9%**
	primary	**42**	**21%**
	middle	**49**	**24.5%**
	secondary	**42**	**21%**
	high	**49**	**24.5%**
	total	**200**	**%100**

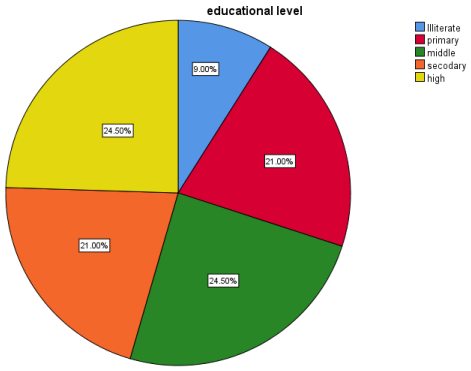


Table (5):percentage distribution of sample by a question(do you know *Artemisia herba alba?)*

		frequency	percent
do you know *Artemisia herba alba*	**yes**	**196**	**98%**
	no	**4**	**2%**
	total	**200**	**%100**

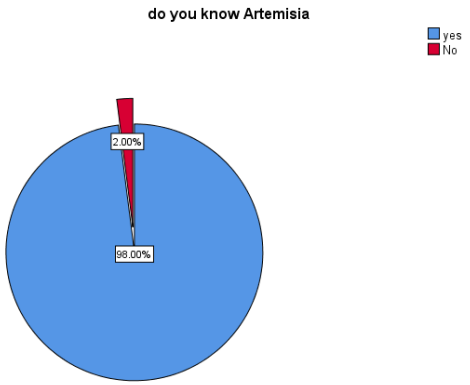


Table (6):percentage distribution of sample by a question (what kind of knowledge do you ***Artemisia herba alba***?)

what kind of knowledge do you *Artemisia herba alba*?		**frequency**	**percent**
	Herbalists	**72**	**36%**
	media	**4**	**2%**
	Doctors	**12**	**6%**
	Practicing people	**112**	**%56**
	total	**200**	**%100**

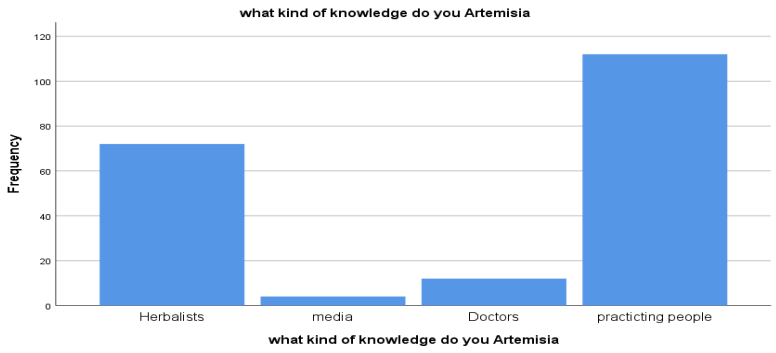


Table (7): percentage distribution of sample by a question(Is *Artemisia herba alba* on increase?)

Is *Artemisia herba alba* on increase		**frequency**	**percent**
	yes	**186**	**93%**
	no	**14**	**7%**
	total	**200**	**%100**

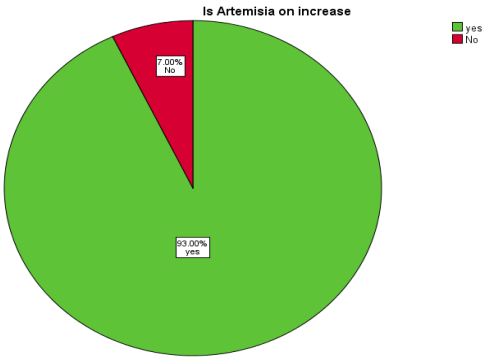


Table (8):percentage distribution of sample by a question (what is the use of *Artemisia herba alba?)*

		frequency	**percent**
what is the use of *Artemisia herba alba*	Deworming	**91**	**45.5%**
	Antimicrobial	**40**	**20%**
	Loss of appetite	**31**	**15.5%**
	Sleep disorders	**9**	**4.5%**
	Anemia	**19**	**9.5%**
	Epileptic seizures	**7**	**3.5%**
	Other uses	**3**	**1.5%**
	Total	**200**	**%100**

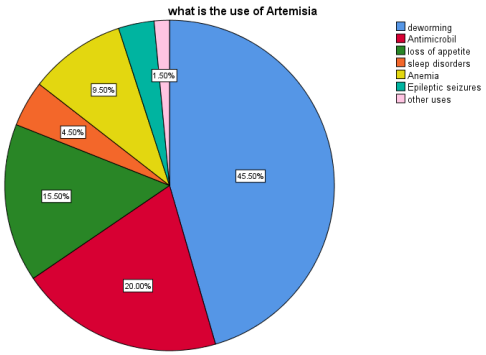
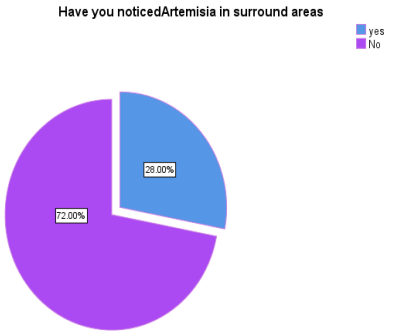


Table (9): percentage distribution of sample by a question(Have you noticed Artemisia herba alba in surround areas)

		frequency	**percent**
Have you noticed *Artemisia herba alba* in surround areas	**yes**	**56**	**28%**
	no	**144**	**72%**
	total	**200**	**%100**



Table(10):percentage distribution of sample by a question (what is the cause of *Artemisia herba alba* deficiency?)

		frequency	**percent**
what is the cause of *Artemisia herba alba*deficiency?	Urban expansion	**12**	**6%**
	plowing	**104**	**52%**
	overgrazing	**17**	**8.5%**
	woodcutting	**14**	**7%**
	Medical uses	**53**	**26.5%**
	total	**200**	**%100**

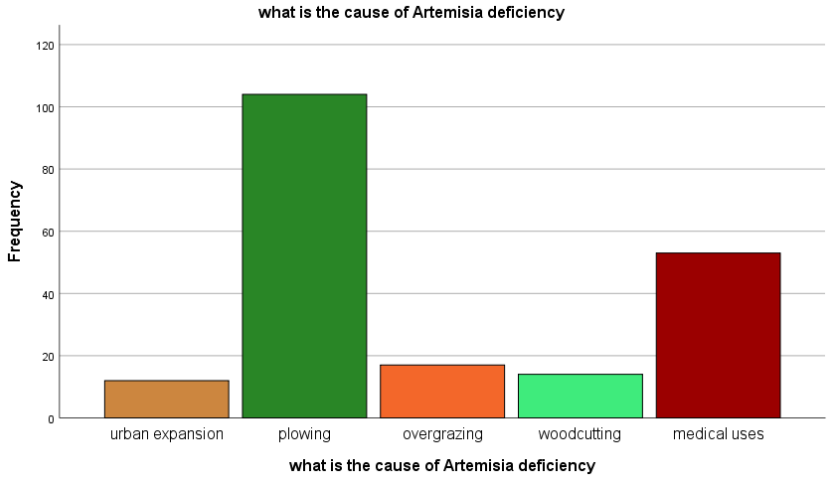


Table (11):percentage distribution of sample by a question (Have you noticed other plants?

	Plant species	**frequency**	**percent**
Have you noticed other plants?)	Haloxylonscoparium	**7.5%**	**15**
	Emex spinosus	**1.5%**	**3**
	Thymelaea hirsute	**3%**	**6**
	Atriplex halimus	**14%**	**28**
	Asphodelus microcarpusSalzm	**71%**	**142**
	Other plants	**3%**	**6**
	total	**200**	**%100**

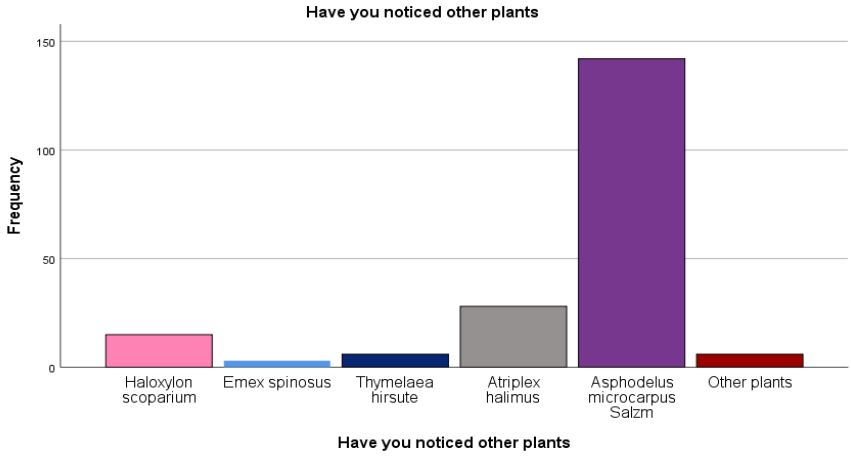
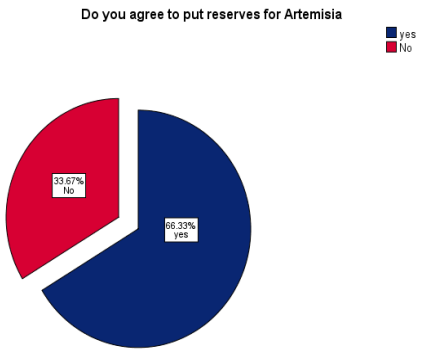


Table (12): percentage distribution of sample by a question(Do you agree to put reserves for *Artemisia herba alba*)

		frequency	**percent**
Do you agree to put reserves for *Artemisia herba alba*	**yes**	**132**	**66%**
	no	**68**	**34%**
	total	**200**	**%100**



Discussion and results:

This study aimed to evaluate the current status of Artemisia herba alba and the impact of grazing animals on it. Through previous studies, it was noted that annual plants are the most dominant plants in the study area, and their life cycle is linked to the rainy season. This was confirmed by (Cain, 1950), who confirmed that weather factors are one of the most important factors that directly affect the form of lifestyles. By comparing the forms of life in the study area with previous studies (Mograby, 2005) (Mograby& El-Baras, 2018) and (Al-Sheikhi, 2023) (El-Mograby& El-Baras, 2024)

The study area is a pastoral land, according to the residents, there is an unjust uprooting of Artemisia herba alba, which is the most important pastoral plant in Libya, in addition to its importance as a medicinal plant that is uprooted without supervision. The area of natural pastures is also decreasing at alarming rates as a result of agricultural and urban expansion and desert encroachment, in addition to the continuous decline in their productivity for reasons related to environmental conditions such as recurring droughts, fluctuations in rainfall rates and irrational exploitation of this natural resource. (Awda, 1996) and (Al-Amrouni, 2005) also mentioned that logging is considered one of the activities that negatively affect the natural vegetation cover in the region, as this process is done by removing dry parts of plants and using them in charcoal.

As for the positive activities, they are represented in afforestation operations and the construction of barrier dams, which are considered important and necessary methods in the process of preserving soil and enriching the seed balance, as this method is used with high efficiency on the plain slopes and branches of small valleys for the purpose of improving the vegetation cover and protecting the soil from water and air erosion. In general, human activities in the region show that there is a clear disturbance in the ecosystem and a deterioration in the natural vegetation cover, especially the Artemisia herba alba plant and soil erosion. The reason may be due to overgrazing, random and irregular grazing, which led to the formation of bare areas, a decrease in the species that are palatable for grazing and an increase in the species that are able to withstand grazing pressure. This is what was mentioned by (Kurochkina, 1989), who stated that land degradation begins With the decline in the species that are palatable to grazing and then their complete removal from the vegetation cover, and the continued loss of species from plant populations in these lands,

their productivity also declines due to the imbalance, which in turn leads to a decrease in the capacity of these resources and thus the deterioration and elimination of the ecosystem

Conclusion:

The main reasons that threaten the wormwood plant and the long history of human pressure in the study area are overgrazing and the increase in the number of animals of various types, such as sheep, goats and camels, in the pastures beyond the number and density allocated for that, which leads to a decrease in the level and efficiency of grazing lands. What is meant by this is the dwarfing of perennial shrubs and their small size, especially palatable plants such as Artemisia herba alba, and their extinction as a result of grazing on them and eating them before the time of flowering and fruiting, which caused their scarcity in the Sultan area.

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