Journal of Libyan Academy Bani Walid 2025
مجلة الأكاديمية الليبية بني وليد
e-ISSN: 3104-3860
Volume 1، Issue 4، 2025، Pages: 283-292
Website: https://journals.labjournal.ly/index.php/Jlabw/index

A taxonomic analytical study of the species in the plant environment of Wadi Al-Yageep ,Gharyan City :during spring 2024

Halima Saleh Ali Aboalgasem[1*], Milad Aboalkasem Ahmed Abusbiha [2]
Department of Biology, Faculty of Arts and Sciences, Mazda College, Gharyan University, Libya.
*Email: halima.abulqasem@gmail.com

دراسة تحليلية تصنيفية للأنواع في البيئة النباتية لوادي اليجيب بمدينة غريان خلال ربيع عام 2024

حليمة صالح علي أبوالقاسم[1*]، ميلاد أبوالقاسم أحمد أبوسبيحة [2]
قسم الاحياء، كلية الآداب والعلوم مزدة، جامعة غريان، ليبيا

Received: 11-09-2025	**Accepted:** 16-11-2025	**Published:** 09-12-2025

Abstract
This study focused on documenting flowering plant species in Wadi Al-Yaquib in Gharyan City. The plants were collected between March and May2024,dried, and transferred to the herbarium for classification.During field visits, 42 plant species were collected and classified, belonging to 40 genera distributed across 21 families. Of these, 34 genera were classified under 34 dicotyledonous species, representing 85% of the total, and distributed across 18 families.Also (6) genera were classified under () species of monocotyledonous plants. These species represent a percentage of 15% distributed over a number of three plant families .The analysis of the flora in relation to the total number of species and genera belonging to each family reveled that the family Asteraceae was the largest family in class dicotyledonous opsida. As a comparison between the current study and the previous studies, this study drew attention to a plant species potentially endangered due to environmental pressures and overgrazing.

Keywords: Plant diversity, Flowering plants, Plant taxonomy, Flora, Wadi Al-Yaquib.

الملخص
ركزت هذه الدراسة على توثيق الأنواع النباتية المزهرة في وادي اليعاقيب بمدينة غريان. تم جمع كل النباتات خلال الفترة ما بين مارس ومايو 2024، ثم جُففت ونُقلت إلى المعشبة لغرض التصنيف, ومن خلال الزيارات الميدانية جُمعت وصُنفت 42 نوعاً نباتياً تنتمي إلى 40 جنساً موزعة على 21 فصيلة, من بينها، صُنف 34 جنساً ضمن 34 نوعاً من ذوات الفلقتين ممثلةً نسبة 85% من المجموع الكلي لها وهي موزعة على 18 فصيلة.كما صُنفت 6 أجناس ضمن 8 أنواع من ذوات الفلقة الواحدة، والتي تمثل نسبة 15% موزعة على 3 فصائل نباتية وأظهرت نتائج تحليل الفلورا وفقاً لعدد الأنواع والأجناس التابعة لكل فصيلة أن فصيلة المركبة (الفصيلة النجمية) كانت الأكبر ضمن ذوات الفلقتين.وبالمقارنة بين هذه

الدراسة والدراسات السابقة، فقد لفتت النتائج الانتباه إلى وجود نوع نباتي مهدد بالانقراض نتيجة الضغوط البيئية والرعي الجائر.

الكلمات المفتاحية : التنوع النباتي، النباتات المزهرة، التصنيف النباتي، الفلورا، وادي اليعاقيب.

Introduction

The study of plant diversity in different regions of the world is important for understanding of the world is important for understanding the environmental and economic characteristics of these regions. Wadi-Al-Yaquib in Gharyan is one of the regions characterized by its plant diversity, where many different plant species exist that are adapted to the specific environmental conditions of the region. The study area is located at an elevation of 500–741 meters above sea level. It is bounded by the Mantros Mountains to the north, the Oulad Ben Yaqub area to the east, mountain ranges and the Al-Asabish city to the west, and Al-Yaquib Al-Ulya to the south. The region is dominated by Mediterranean climate, characterized by hot and dry summers and cold winters with average annual rainfall ranging from 150 to 280 mm/year.As the researchers have observed in recent periods, there has been a significant rise in temperatures. Especially in the summer season, reaching up to 44 degrees Celsius.These increase affects the vegetation cover, and the presence of highlands interspersed with valleys has a significant impact on the diversity cover, especially in the spring season.The fertile soil in the area plays a vital and major role in the diversity of plant species in the region.The soil in the study area is clay–sandy and has a mountainous terrain which has contributed to the diversity of flowering plants. However, in recent times, a decline has become apparent in some plant species that have not adapted to climate change and high temperatures. From this perspective, the study of Wadi-Ai-Yaquib came to assess and identify the plant species that can adapt to these changes, such as drought and high temperatures.

Research Problem

There is a lack of taxonomic information about the plants in Wadi Al- Yaquib, Gharyan City. This gap hinders biodiversity understanding and limits conservation efforts.

Objective of the Study

1. To identify and classify plants using scientific methods, and to document them in accredited herbaria, thereby building a reliable database for researchers and stakeholders.
2. To provide information that supports efforts to conserve the environment, protect endangered plant species, and ensure the sustainability of local ecosystem.

Importance of the Study

1- Environmental Knowledge: These studies contribute to understanding local biodiversity which helps identify dominant and endangered plant species

2- Supporting conservation efforts by identifying rare and threatened plants enables the adoption of measures to protect them and ensure their sustainability

3- Providing information for Sustainable Development: These studies help explore sustainable uses of plants, such as their use in traditional medicine or local industries,which enhances the local economy and improves livelihoods

4- Providing a Database for Future Research: These studies serve as an important reference for researchers and those interested in botany, contributing to the development of future research based on reliable information

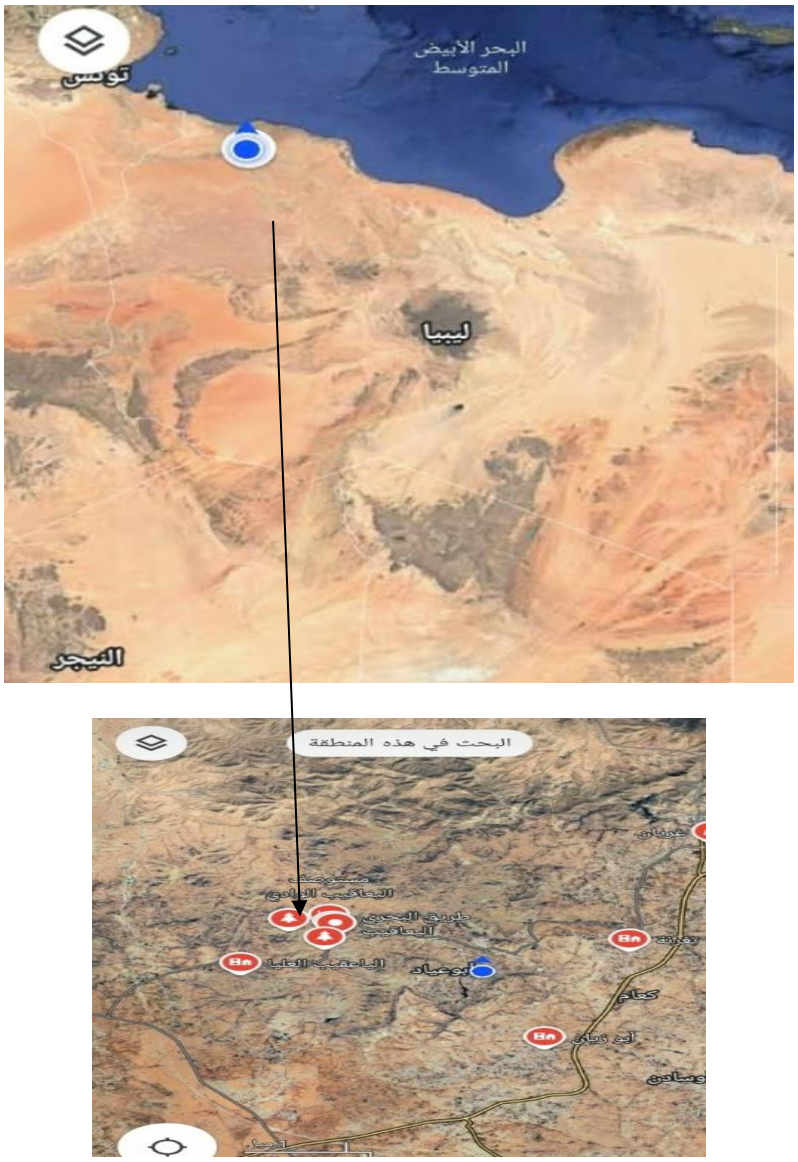
Study Hypothesis

The study hypothesises the following:

- The plant diversity in Wadi Al-Yaquib in Gharyan city reflects the impact of environmental and geological factors in the region,and taxonomic analyses can be used to identify pattens and changer in this diversity.

Study Area Delineation

- **Sampling Duration – March 1,2024 – May 29,2024**
- **Location: Wadi Al-Yaakeeb in, Gharyan**
-



Figure(1): Study area map

Figure: Topography and vegetation cover in the study area.

Figure: The image shows the study area.

Field tool.

Theoretical Part

The study employed a range of field and laboratory tools to ensure accurate collection and preservation of plant specimens using Study area map, Field equipment,digging tools Magnifying lens,diggingtools, Magnifying lens,Digital Camera, PlantPresses,PruningScissors, Blotting Paper, Labeling Tags, Plastic bags and Field notebook.

Practical Part

Plant samples were collected periodically and regularly from the study area during the spring of 2024, after 26 field visits to the study area. The samples were pressed using metal presses after removing dirt and debris, placed on blotting paper, and stored in a well-ventilated area. After being placed in plant presses, the dried specimens were mounted on herbarium sheets, and the specimens were fixed using adhesive, with a data label placed at the bottom right corner

of the sheet. Morphological characteristics were studied and examined using a microscope, and the plant specimens were assigned their taxonomic ranks using relevant references. Classification was done using Libyan flora and reference materials. The collected plants were preserved in the Gharyan University Herbarium.
(Al-Ratib,1994) (Al-Sharif, 1995) (Jafri and Elgadi, 1976 – 1989) (Zohary, 1972)
(Boulois ,1999-2002), Identification or definition means determining the toxon. Matching or similarity to another known unit or element is done through investigation with the help of books, publications, and plant references or by comparing it with a known plant (Dawoud, 1989)

Data analysis and results

Monocotyledons represent 15% of the total plants collected from the study area, distributed across several plant families. While dicotyledons represent 85% of the families that were collected and classified, in this study, the natural vegetation was classified as wild natural vegetation, which spreads in semi-arid areas with low water content, especially since the soil in the study area is clay, where it will retain some moisture for the growth and diversity of plants. The distribution of herbs is considered an ecological distribution that is controlled and dominated by climatic conditions rainfall and temperature as well as water requirements, since climate is one most important natural factor that directly and indirectly affects plant life the impact of prevailing climatic conditions on the distribution of major plant groups on the Earth's surface may appear stronger than the impact of any other factor.Fig (1)

Plant groups	Number of families	Number of genera	Number of species
Dicotyledons	3	6	8
Monocotyledons	18	34	34
Total	21	40	44

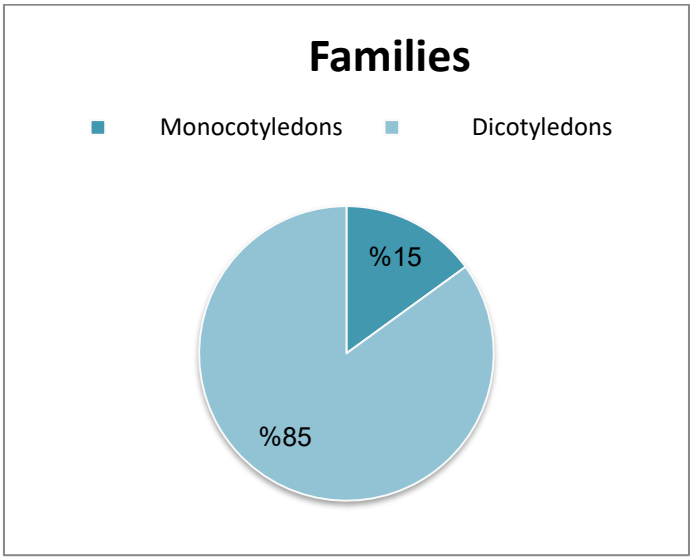


Fig: (1) Percentage distribution of plants

Climatic Environmental Criterion plant distribution is environmentally controlled and dominated by climatic conditions, as well as water requirements,plant serve as a mirror

reflecting climatic variations for each plant model that dominates in a specific climatic zone.The researchers noticed an increase in grass growth as the climate tends towards aridity in desert climates, plants are greatly reduced or even absent
(Challach ,Kafaf ,1982)

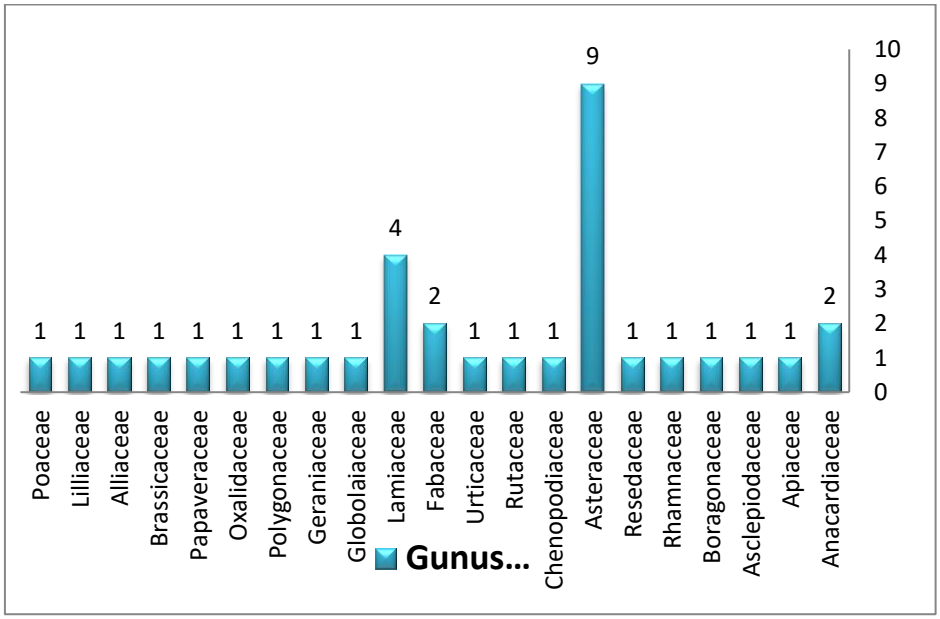


Fig:(2) Number of

It was evident from this study that there was a clear variation in the number of genera for the families collected from Wadi Al-Yaakeeb the composite family Astraceae) contained the largest number of genera(9), the Lamiaceae family comprised(4), (3) genera for the Liliaceae Family, (3) genera for the Poaceae Family (2) genera for the Ailiaceae Family 2 Fabaceae, and 2 (3) genera for the Anacardiaceae Family while the rest of the families had only one genus each, thus the study showed the dominance of the composite family in terms of the number of genera in the study area, as shown in Fig(2).

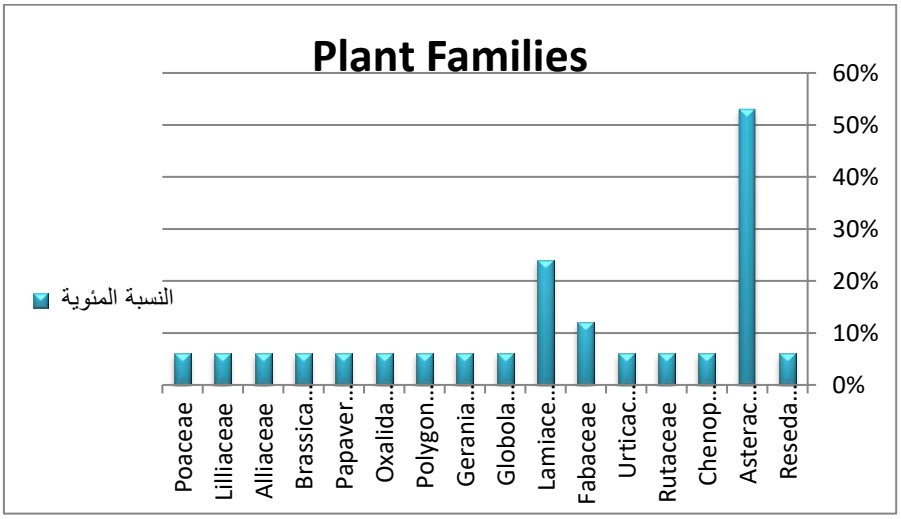


Fig3: The percentage of plant species:

Compared to previous studies, the dominance of the composite family over other families is consistent. It is the most dominant and adaptable family in these environmental conditions, representing 53% of the families. According to these varying proportions, the researchers find that the family ratios increase according to their tolerance to the prevailing environmental factors. The classification of pants was based on their water requirements into four types. Xerophytes are characterized by low water requirements. Mesophytes require moderate amounts of water. Tropophytes are plants that can adjust their water requirements according to the available amount in the soil. Hydrophytes are plants that thrive in water during their growth period. (Hossam, Nour,2023) Fig (2)

Formula for calculating percentage

$$\text{Percentage} = (\text{Part}/\text{Whole}) \times 100$$

The world has turned to using fork medicine instead of synthetic drugs to avoid tue side effects caused by these industries, and reliance on medicinal plant species has become more beneficial and safer in treating many diseases Therefore,this study focused on this aspect, and the plants used in folk medicine were identified as shown in the following table (2) (AL-kadi ,1992) (Safia ,1995). **Table (2)**

Table(2) The plants used in folk medicine were identified

Families and species names	Local name	Habit	Part Used	Medicinal use
Asteraceae Helichrysum stoechas	Ushbat al-arnab	Herbs	Roots	Kidney stones and pain relief
Asteraceae Artemisia campestris L	Sheikh	Herbs	Leaves	Worms and intestinal parasites
Urticaceae Urtica urens L	Harig	Herbs	Leaves	Tretment for anemia
Lamiaceae **Teucrium polium L**	Jaada	Herbs	Leaves	Tretment for blood pressure
Lamiaceae **Marrubiumalysson L**	Rupee	Herbs	Steem	Lowering blood sugar
Globulariaceae Globularia alypum Linn	Zariqa	Herbs	Leaves	Colic and acute inflammation
Lamiaceae **Ajugaivaschreber L**	Shandqura	Herbs	Leaves	Treament for nausea and indigestion
Geraniaceae Lavandula multifida L	Khzama	Herbs	Leaves	Analgesic and diuretic
Fabaceae **Retama raetam (forsk) webb**	Retam	Tree	Steem	Gum infection
Chenopodiaceae Chenopodium foliosummoench)(	Afina	Herbs	Leaves	Intestinal worms and amoebas
Alliaceae Allium roseum L	Alqazul	Herbs	Seeds	Chronic respiratory inflammation

Comparing the Collections of the current study with those of previous studies

When comparing the plant species collected in this study with those collected in previous studies in the region, it was found that in the study of the northern part of the Gharyan region (Abuhadra –Al-Ahmar,2008), 387 species of flowering plants were collected, belonging to 260 genera under 58 families, which include 32 orders.

In a taxonomic study conducted in the mountains of Sudad Al–Qawasim in Gharyan city in 3018, 320 plant species were collected from 214 genera under 44 families. All previous studies showed consistency with the current study in that the Compositae family is dominant in the region, which is consistent with all previous studies (Salem, Hanya, 2025).

Conclusion

The study revealed that dicotyledonous plants dominate monocotyledonous plants in the region with a significant relative difference. The Compositae family is the most dominant in terms of the number of species. Most of the collected wild plants are medicinal herbs and are used in folk medicine by locals. They are also consumed by pastoral, as they are consumed by animals during uncontrolled grazing and overgrazing. Notably, the plant Bougraoun (local name) was observed to have appeared in the region for the first time 8 years ago, suggesting it may be threatened with extinction. No rare or new plant species were identified in the study area.

Recommendations

This study highlights the importance of protecting and sustaining plant diversity in Wadi Al-Yaquib, Gharyan City, and emphasizes the urgent need for coordinated conservation efforts. The study recommends the following:

- Protect rare plants from overgrazing and preserve them from random collection, which could eradicate their origins.
- Increase field studies of regional plants by researchers in this field.
- Enhance field research on local plant species conducted by experts in the field
- Enhance international cooperation to exchange knowledge and expertise in plant taxonomy and vegetation cover.
- Establish regular monitoring programs to track changes in vegetation cover and the impacts of climate change
- Train and qualify research and field personnel in plant taxonomy and vegetation cover
- Enhance collaboration with local communities, farmers, and other stakeholders to ensure vegetation cover protection.
- Utilize modern technologies, such as scubas, remote sensing and geographic information Systems in studying and analyzing vegetation cover.

Total (3) table of plants Collcted and Classified During the Study

	Monocotyledons		
Families	***Scientific Name***	***Local Name***	***Numbur***
Alliaceae	*Allium roseum L*	*Qazoul*	*1*
	Allium negrianum	*Kurrat*	*2*
Lilliaceae	*Androcymbiumgramineum*	*Karshid*	*3*
	Muscari comosum L	*Keitoot*	*4*
	Scilla peruuiana L	*Basila*	*5*
Poaceae	*Cynodondactylon L*	*Najm*	*6*
	Stipa capensis thumb	*Bahma*	*7*

	Stipa tenacissima L	*Halfaya*	*8*
	Dicotyledons		
Families	*Scientific Name*	*Local Name*	
Anacardiaceae	*Pistacia lentiscu L*	*Batoom*	*1*
Anacardiaceae	*Rhus tripartitac*	*Ajdari*	*2*
Apiaceae	*Ferulatingitanal*	*Kalakh*	*3*
Asclepiodaceae	*Periplocaangutifolia*	*Halab*	*4*
Asteraceae	*Cardunelluspinnatus*	*Khershof*	*5*
Asteraceae	*Chamomilaurea*	*Flih*	*6*
Asteraceae	*Chrysanthemumcoronortum L*	*Qahwan*	*7*
Asteraceae	*Centaurea africana*	*Shabram*	*8*
Asteraceae	*Helichrysum stoechas*	*Ushbat Al-Arnab*	*9*
Asteraceae	*Launaearesedi folia (L)*	*Adida*	*10*
Asteraceae	*corzonera undulate*	*Qeez*	*11*
Boragunaceae	*Echium plantaginiium L*	*Hanna Aqrab*	*12*
Brassicaceae	*Brassica tournefortiiGouan*	*Aslooz*	*13*
Chenopodiaceae	*Chenopodium foliosum (moench)*	*Afina*	*14*
Brassicaceae	*Diplotaxismuralts (L)*	*Ai-Hara*	*15*
Asteraceae	*Artemisia campestris L*	*Sheeh*	*16*
Asteraceae	*Cynara cardunculus L*	*Shoak al-Bal*	*17*
Urticaceae	*Urtica urens L*	*Hareeq*	*18*
Resedaceae	*Reseda arabica*	*Deilkhrouf*	*19*
Rhamnaceae	*Ziziphus lotus (L)*	*Sidr*	*20*
Rutaceae	*Ruta chalepensis*	*Figel*	*21*
Brassicaceae	*Enarthrocarpusclavatus*	*Shaltam*	*22*
Brassicaceae	*Eruca sativa mill*	*Jarjeer Bari*	*23*
Papaveraceae	*Papaver kybridum L*	*Buqraun*	*24*
Polygonaceae	*Polygonum eyuisetiforme*	*Qardhab*	*25*
Oxalidaceae	*Rumex vesicarius L*	*Hamiydha*	*26*
Lamiaceae	*Teucrium polium L*	*Jadda*	*27*
Lamiaceae	*Marrubiumalysson L*	*Roubia*	*28*
Globulariaceae	*Globularia alypum Linn*	*Zariqa*	*29*
Lamiaceae	*Gymnocarpsdecanderforsk*	*Qajrood*	*30*
Lamiaceae	*Ajugaivaschreber L*	*Shandqoura*	*31*
Geraniaceae	*Lavandula multifida L*	*Khzama*	*32*
Fabaceae	*Retama raetam (forsk) webb*	*Rathm*	*33*
Fabaceae	*Calicotomevillosa (poir) Link*	*Qandoul*	*34*

المراجع العربية

الرطيب، فتحي بشير .(1994). *دليل فصائل النباتات الليبية* (الطبعة الأولى). القاهرة: الدار الدولية للنشر والتوزيع؛ طرابلس: مكتبة طرابلس العلمية العالمية.

الشريف، عبد الرزاق الصادق .(1995). *النجيليات في ليبيا*. فاليتا، مالطا: منشورات.ELGA

الشلش، علي حسين، &الخفاف، عبد علي .(1982) .*الجغرافية الحياتية*. البصرة: مطبعة جامعة البصرة، وزارة التعليم العالي والبحث العلمي، جامعة البصرة.
الغزاوي، فتحي مصطفى .(1986) .*علم النبات* (الجزء الأول). الكويت: دار تراث العلم.
القاضي، ع. م.، &محمد، وصفية .(1992) .*استعمالات بعض النباتات في الطب الشعبي الليبي* (الجزء الأول). بنغازي: دار الكتب الوطنية.
داود، داود محمود .(1979) .*تصنيف أشجار الغابات*. الموصل: كلية الزراعة والغابات، جامعة الموصل.
حسام، نور .(2023) .*دراسة التصنيف البيئي للنباتات الطبيعية شرق محافظة واسط*.
ملاحظة: إذا كانت **رسالة جامعية أو بحثًا غير منشور**، يُفضّل إضافة الجهة العلمية ونوع العمل (رسالة ماجستير/دكتوراه).
سليم، هنية، &عادل .(2025) .*دراسة فلورا النباتات الليبية بمدينة الخمس*. ليبيا.
ملاحظة: يُفضّل تحديد **الجهة الناشرة أو الجامعة** ونوع العمل لتحسين الدقة وفق APA.
منخي، سعدية عاكول، &وحيد، حسام كنعان .(2020) .*جغرافية الأقاليم النباتية* (الطبعة الأولى). مكتبة نور الحسن.

المراجع الأجنبية

Boulos, L. (1983). *Medicinal plants of North Africa*. Reference Publications..
Jafri, S. M. H., & El-Gadi, A. (1982). *Euphorbiaceae* (No. 89). In S. M. H. Jafri & A. El-Gadi (Eds.), *Flora of Libya*. Al-Fateh University, Faculty of Science, Department of Botany.
Zohary, M. (1972). *Flora of Palaestina: Part two, Platanaceae to Umbelliferae*. The Israel Academy of Sciences and Humanities

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.