



Faculty of Science - University of Benghazi

Libyan Journal of Science & Technology

journal home page: www.sc.uob.edu.ly/pages/page/77

Analysis and diversity of family Fabaceae in Flora of Libya

Rania F. M. Ali*, Ensaf H. Dakeel, Fatma M. Al-Wishish

Department of Potany, Faculty of science, University of Omar Al Mukhtar, Al Baida, Libya.

Highlights

- Analysis of Fabaceae and study three subfamily, genera and species have been conducted.
- Determining the life forms of the Fabaceae family.
- Study of some traditional uses of some species in this family such as uses of medicinal, cultivated, ornamental and poisonous.

ARTICLE INFO

Article history:

Received 22 August 2019

Revised 01 October 2019

Accepted 05 October 2019

Available online 21 October 2019

Keywords:

Fabaceae-Flora of Libya- Life forms- diversity-sub-family

Address of correspondence:

E-mail address: Raniafarag2012m@gmail.com

R. F. Ali

ABSTRACT

Fabaceae is one of the most diverse families in the world, known for its environmental and economic potential. The total number of species is 216 and 52 genera. It has many traditional uses, including 37 medicinal species, and 33 species of poisonous, and ornamental represented by 9 species, all the taxa belongs to three subfamilies (Papilionoideae, Caesalpinioideae and Cercidoideae) in Libya. The life form characterized by a high proportion of Therophytes (annuals) with 66.7% followed by Hemicryptophytes with 15.3%, Phanerophytes represented by 11.1% and Chamaephytes with 6.9%.

1. Introduction

Libya is located in a North African, between 19° 30' 22" S. and 32° 56' 08" N. long and 9° 23' 16" W., 25° 08' 51" E., covering an area of 1760000 km² (Fig. 1). It is bounded by the north by the Mediterranean Sea, east by Egypt, south by Sudan, Chad and Niger and Tunisia and Algeria in west (Nafea, 2015; Feng *et al.*, 2013). The coastal belt extending from the Tunisian to the Egyptian boundaries, according to (Boulos, 1972). In Libya, approximately 94% to 96% of the territory is desert and it is one of the world's driest countries (Holdridge, 1974). It's desert climate in the summer is very warm, with severe variations in day/night temperature and mild winters. Rainfall varies from light to insignificant.

The name 'Fabaceae' comes from the defunct genus *Faba*, now included in *Vicia*. The word "faba" comes from Latin and seems to mean merely "bean." Leguminosae is an older name that is still valid (Amen *et al.*, 2015). The fruits of these plants is referred to as legumes. This family's plants are discovered all over the globe, growing in many distinct settings and climates. The family Fabaceae is the third biggest family of Angiospermae lies after Orchidaceae and Asteraceae in the world (Lewis *et al.*, 2005). It is cosmopolitan family comprise of 730 genera and 19,400 species, in Flora of Libya the family is represented by 201 species and 42 genera with a few more cultivated species (Fawzi, 1994; Jafri and El-Gadi, 1980).

The family is economically important, with food plants providing extremely nutritious protein sources and micro-nutrients that can benefit health and livelihoods and are considered to be important sources of non-animal protein, including *Glycine max* (Soybean), *Phaseolus* (beans), *Pisum sativum* (Pea), *Cicer arietinum*, *Medicago sativa*, *Arachis hypogaea* (Peanut), *Ceratonia siliqua* (Carob), and *Glycyrrhiza glabra* (licorice). A number of species are

also weedy pests in different parts of the world, including *Cytisus scoparius*, *Ulex europaeus*, *Pueraria lobata*, and a number of *Lupinus* species (Stevens, 2008). Clovers (*Trifolium* and *Medicago* spp.) are commonly cultivated as forage plants or to improve soil fertility. *Indigofera tinctoria* and *Haematoxylum campechianum* are major sources of dyes. Fabaceae are rich in alkaloids. In addition to their medicinal value for some species and related species are the source of rotenone, which is used as a poison and insecticide. The legume family also is rich in timber species and also planted as ornamentals. The present study aimed to analysis and update of Fabaceae in the Flora of Libya.



Fig. 1. Map of Libya.

2. Materials and methods

The obtained information about Fabaceae was gathering from available literatures deals with Flora of Libya (Mimosaseae, Caesalpinoideae, and Fabaceae), (Jafri and El-Gadi, 1980; Jafri and El-Gadi, 1978), medicinal, poisonous and ornamentals plants.

3. Results and Discussion

Fabaceae comprise with 216 species of 52 genera (Appendix), classified into three subfamilies (Papilionoideae, Caesalpinoideae and Cercidoideae), (Legume Phylogeny 2017). Table 1, one endemic species, *Medicago Cyrenaica*, endemic in Al Jabal Al Akhdar and near endemic *Astragalus pseudotriginus*, to Algeria and Sahara Libya (Jafri, S. and El-Gadi, A., 1980).

Table 1

Subfamilies and number of genera and species of Fabaceae in Libya

Subfamily	No. Genera	No. Species
Caesalpinoideae	8	14
Cercidoideae	1	1
Papilionoideae	43	201

The largest Genus *Astragalus* with 25 species follows by *Trifolium* with 23 species, *Medicago* 21 species, *Lotus* with 17 species, *Vicia* and *Lathyrus* with 13 species each one, *Ononis* with 12 species, the rest genera less than 10 species for each genus and 26 species represented by one genus each, Table 2.

Table 2

The representation of species in genus

Genus	No. of species	Genus	No. of species	Genus	No. of species
<i>Astragalus</i>	25	<i>Hipocrepis</i>	6	<i>Calicotome</i>	2
<i>Trifolium</i>	23	<i>Melilotus</i>	6	<i>Coronilla</i>	2
<i>Medicago</i>	21	<i>Acacia</i>	5	<i>Dorycnium</i>	2
<i>Lotus</i>	17	<i>Anthyllis</i>	4	<i>Ebenus</i>	2
<i>Lathyrus</i>	13	<i>Lupinus</i>	4	<i>Genista</i>	2
<i>Vicia</i>	13	<i>Argyrolobium</i>	3	<i>Indigofera</i>	2
<i>Ononis</i>	12	<i>Hedysarum</i>	3	<i>Onobrychis</i>	2
<i>Trigonella</i>	8	<i>Senna</i>	3	<i>Pisum</i>	2
<i>Crotalaria</i>	6	<i>Alhagi</i>	2	26 gnus	1
Total					216

Fabaceae in Flora of Libya comprise a few more cultivated plants are represented by 22 species, such as *Cicer arietinum* (Humus), *Lens culinaris* (Adas), *Phaseolus vulgaris* (Fasulia) and *Vicia faba* (Ful) that considered food and source of plant protein and has economic importance (Simpson et al., 1986), see Table 3.

The life forms of Fabaceae represent by 24 species of Phanerophytes (11.1%), 15 species of Chamaephytes (6.9%), 33 species of Hemicryptophyte (15.3%), a high proportion of the annual herbs (Therophytes) with 144 species (66.7%) was very clear. (Raunkiaer's, 1934), Fig. 2.

Table 3

Cultivated species from Fabaceae in Flora of Libya

	Scientific name	Vernacular name
1	<i>Acacia cyanophylla</i> Lindley	Sunt, Sent
2	<i>Acacia farnesiana</i> (L.) Willd.	Sweet Acacia, Ban, Talha
3	<i>Acacia Karroo</i> Hayne	Sunt shawki, Talha
4	<i>Anthyllis barba-jovis</i> L.	-
5	<i>Arachis hypogea</i> L.	Cacauia, Kakawea
6	<i>Bauhinia variegata</i> L.	-
7	<i>Caesalpinia gilliesii</i> (Hook.) Dietr.	-
8	<i>Cicer arietinum</i> L.	Horns, Humus
9	<i>Crotalaria juncea</i> L.	-
10	<i>Delonix regia</i> (Bojer) Rafin.	Gui mohar
11	<i>Lablab purpureus</i> (L.)	Lablab
12	<i>Lathyrus odoratus</i> L.	-
13	<i>Lathyrus sativus</i> L.	-
14	<i>Lens culinaris</i> Medic.	Adas
15	<i>Lupinus albus</i> L.	-
16	<i>Parkinsonia aculeata</i> L.	Sayasban
17	<i>Phaseolus vulgaris</i> L.	Fasulia
18	<i>Pisum sativum</i> L.	Basilia, Bazalia
19	<i>Prosopis juliflora</i> (Swartz) DC.	-
20	<i>Senna occidentalis</i> L.	Sanamaki
21	<i>Vicia faba</i> L.	Ful, Auen.
22	<i>Vigna unguiculata</i> (L.)	Lubia

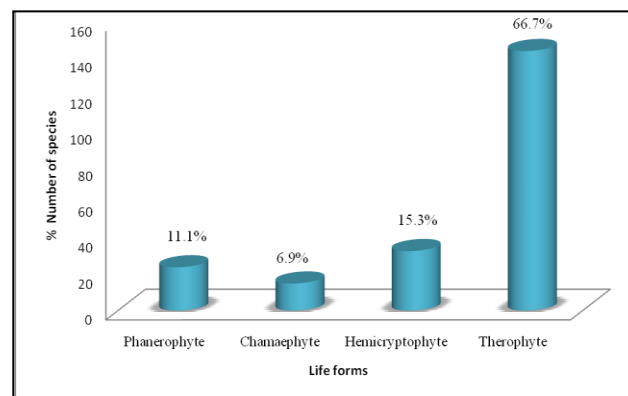


Fig. 2. Percentage number of species and life forms in Fabaceae

There are 37 species of Fabaceae has used in medicinal and traditional purposes, 17.1% of total number of Fabaceae with different plant parts, whole plant, roots, stems, leaves, flowers, fruits, seeds or buds (Kotb, 1985; Boulos, 1983; El-Mokasabi, 2014), see Table 4. Some plants in this family have harmful effects and considered poisonous plants represented by 33 species with 15.3% such as *Anagyris foetida*, *Lupinus varius*, *Spartium junceum*, *Astragalus* spp., *Melilotus albus*, *Senna* spp. and *Caesalpinia gilliesii* (El-Gadi, and Hossain, 1986). The ornamental plants of this family represented by 9 species with 4.2% include: *Spartidium saharae* and *Vicia monantha* (El-Gadi and Siddiqi, 1988), *Lathyrus odoratus* and *Lablab purpureus* (Jafri and El-Gadi, 1980), *Spartium junceum* (Boulos, 1983) and *Ceratonis siliqua* (Alaib et al., 2016), *Caesalpinia gilliesii* and *Senna occidentalis* (Jafri and El-Gadi, 1978), and *Bauhinia variegata* (Fawzi, 1994).

Table 4

Medicinal plants of Fabaceae and plant parts used

	Scientific name	Used part	References
1	<i>Acacia farnesiana</i> (L.) Willd.	Bark, fruits, pods, flowers leaves and gum	Kotb, 1985
2	<i>Acacia nilotica</i> (L.) Delile	Stem bark	Boulos, 1983
3	<i>Alhagi graecorum</i> Boiss.	Whole plant	Boulos, 1983; El-Mokasabi, 2014
4	<i>Anagyris foetida</i> L.	Leaves, branches and root	Boulos, 1983
5	<i>Anthyllis vulneraria</i> L.	Flowering branches	Boulos, 1983
6	<i>Arachis hypogea</i> L.	Bean, peanut butter and peanut oil	Kotb, 1985
7	<i>Astragalus hamosus</i> L.	Buds	Kotb, 1985
8	<i>Astragalus spinosus</i> (Forsk.)	Leaves	El-Mokasabi, 2014
9	<i>Astragalus tribuloides</i> Del.	The whole plant	Kotb, 1985
10	<i>Bauhinia variegata</i> L.	Bark, root, gum, leaves, seeds and flowers	Kotb, 1985
11	<i>Ceratonia siliqua</i> L.	Entire pods or seed	Boulos, 1983
12	<i>Cicer arietinum</i> L.	Seed	Boulos, 1983
13	<i>Coronilla scorpioides</i> (L.)	Leaves and seed	Boulos, 1983
14	<i>Crotalaria aegyptiaca</i> Benth.	Green plant	Boulos, 1983
15	<i>Crotalaria juncea</i> L.	Leaves, Roots and Seeds	Kotb, 1985
16	<i>Glycyrrhiza glabra</i> L.	Root	Boulos, 1983
17	<i>Lathyrus aphaca</i> L.	Ripe seeds	Kotb, 1985
18	<i>Lathyrus sativus</i> L.	Ripe seeds and oil	Kotb, 1985
19	<i>Lotus corniculatus</i> L.	The whole plant	Kotb, 1985
20	<i>Lotus tetragonolobus</i> L.	Whole plant, fruits	El-Mokasabi, 2014
21	<i>Lupinus albus</i> L.	Seeds, Stems and fruits	Kotb, 1985
22	<i>Medicago sativa</i> L.	The herb	Kotb, 1985
23	<i>Melilotus indicus</i> (L.)	Flowering branches and seed	Boulos, 1983
24	<i>Melilotus officinalis</i> (L.)	Leaves, Seeds and flowering tops	Kotb, 1985
25	<i>Ononis spinosa</i> L.	Root and flowering branches	Boulos, 1983
26	<i>Phaseolus vulgaris</i> L.	The bean and dried pods	Kotb, 1985
27	<i>Pisum sativum</i> L.	Seeds	Kotb, 1985
28	<i>Psoralea plicata</i> Delile	Leaves and fruit	Boulos, 1983
29	<i>Retama raetam</i> (Forsk.)	Root, branches and fruit	Boulos, 1983
30	<i>Senna alexandrina</i> Mill.	Legume and leaves	El-Mokasabi, 2014
31	<i>Senna italica</i> (Mill.) F.	Leaflet, Pods and seeds	Boulos, 1983
32	<i>Senna occidentalis</i> L.	Leaves, roots and seeds	Kotb, 1985
33	<i>Spartium junceum</i> L.	Flower and seeds	Boulos, 1983
34	<i>Tamarindus indica</i> L.	Fruit	Boulos, 1983
35	<i>Trigonella foenum-graecum</i> L.	Whole plant and seed	Boulos, 1983
36	<i>Vicia faba</i> L.	Flower and seed	Boulos, 1983
37	<i>Vicia sativa</i> L.	Whole plant and seed	Boulos, 1983

References

- Alaib, M., Elbakkosh, A., Yousef, B., Gadelmola, A. and Elmhafdi, A. (2016) 'Preliminary Investigation of the Vegetation of Wadi Belkaf-Bata Al-Jabal Al-Akhdar Libya', *Libyan Journal of Basic Science*, 4(1), pp. 20-27.
- Amen, M., Marzouk, M., Zaghloul, G. and Afifi, S., (2015) 'The genus *Machaerium* (Fabaceae) taxonomy, phytochemistry, traditional uses and biological activities', *Natural product research*, 29(15), pp. 1388-1405.
- Boulos, L. (1972) 'Our present knowledge on the Flora and Vegetation of Libya'. Bibliography: *Webbia* 26 (11), pp. 365-400.
- Boulos, L. (1983) *Medicinal plants of North Africa*. Reference publications: USA.

- Boulos, L. (1999) *Flora of Egypt (Azollaceae-Oxalidaceae)*. Vol. 1, Al-Hadara Pub., Cairo: Egypt.
- El- Gadi, A. and Hossain, A. (1986) *Poisonous plants of Libya*. National Book House: Benghazi.
- El- Gadi, A. and Siddiqi, M. (1988) *Ornamental plants of Libya*. The national Herbarium Botany Department, Faculty of Science., Tripoli University, Libya.
- El-Mokasabi, F. (2014) 'The State of the Art of Traditional Herbal Medicine in the Eastern Mediterranean Coastal Region of Libya', *Middle-East Journal of Scientific Research*, 21 (4), pp. 575-582.
- Fawzi M. (1994) 'Introduction to flowering plants taxonomy', Science faculty Al Tahady University (In Arabic).

- Feng, Y., Lei, J. and Xu, X. (2013) 'Composition and Characteristics of Libyan Flora', *Biol. Sci. Belgrade*, 65(2), pp. 651-657.
- Avinoam Danin (2003-2019) Flora of Israel (Online) Available at: <https://flora.org.il/en/plants/>.
- Holdridge, L. (1974) 'Determination of world plant formations from simple climatic data', *Science*, 105, pp. 367-368.
- Jafri, S. and El-Gadi, A. (1978) *Flora of Libya (Caesalpinaceae)*. Bot. Department, Faculty of Sci., Tripoli Univ., Libya.
- Jafri, S. and El-Gadi, A. (1978) *Flora of Libya (Mimosaceae)*. Bot. Department, Faculty of Sci., Tripoli Univ., Libya.
- Jafri, S. and El-Gadi, A. (1980) *Flora of Libya (Fabaceae)*. Bot. Department, Faculty of Sci., Tripoli Univ., Libya.
- Kotb, F. (1985) *Medicinal plants in Libya*. Arab Encyclopedia House Pub., Tripoli: Libya.

- Legume Phylogeny Working Group (2017) 'A new subfamily classification of the Leguminosae based on a taxonomically comprehensive phylogeny', *LPWG Phylogeny and classification of the Leguminosae*, 66(1), pp. 44–77.
- Lewis, G., Schire, B., Mackinder, B. and Lock, M. (2005) *Legumes of the World*, Roy Bot. Gard Kew.
- Nafea, E. (2015) 'Floristic Composition of the Plant Cover at Surt Region in Libya', *The Egyptian society for environmental science Catrina*, 11(1), pp. 93-101.
- Raunkiaer's, C. (1934) *Life forms of plants and statistical plant geography*. Arno Press, a New York Times Company, New York, pp 620.
- Simpson, B. and Ogorzaly M. (1986) *Economic Botany, Plants in our World*. McGraw-Hill, New York, NY, USA, 1986.
- Stevens, P. (2008) Angiosperm Phylogeny Website, Version 9, June 2008. <http://www.mobot.org/MOBOT/research/APweb>.

Appendix

The checklist of the scientific name, vernacular name, and life forms Fabaceae and its update

	Scientific name	Vernacular name	Life forms
Sub family: Papilionoideae			
1	<i>Alhagi graecorum</i> Boiss.	Agol, Haloboa	Hem
2	<i>Alhagi maurorum</i> Medik.	-	Hem
3	<i>Anagyris foetida</i> L.	Karrob Kelb, Aufni	Pha
4	<i>Anthyllis barba-jovis</i> L.	-	Pha
5	<i>Anthyllis henoniana</i> Coss.	Hosir, Rezdir	Ch
6	<i>Anthyllis tetraphylla</i> L.	Shacwet Erraie	Ther
7	<i>Anthyllis vulneraria</i> L.	-	Ther
8	<i>Arachis hypogea</i> L.	Cacauia, Kakawea	Ther
9	<i>Argyrolobium abyssinicum</i> Jaub. & Spach	-	Ther
10	<i>Argyrolobium saharae</i> Pomel	-	Pha
11	<i>Argyrolobium uniflorum</i> (Decne.)	Ergah, Kherta	Ch
12	<i>Astragalus annularis</i> Forsk.	-	Ther
13	<i>Astragalus asterias</i> Stev.	-	Ther
14	<i>Astragalus boeticus</i> L.	Grambushia, Keeshfishdei	Ther
15	<i>Astragalus caprinus</i> L.	Shacwit Erraie	Hem
16	<i>Astragalus crenatus</i> Schult.	-	Ther
17	<i>Astragalus epiglottis</i> L.,	-	Ther
18	<i>Astragalus eremophilus</i> Boiss.	-	Ther
19	<i>Astragalus fruticosus</i> Forsk..	-	Hem
20	<i>Astragalus graecus</i> Boiss.	-	Hem
21	<i>Astragalus hamosus</i> L.	-	Ther
22	<i>Astragalus hauarensis</i> Boiss.,	-	Ther
23	<i>Astragalus hispidulus</i> DC.	-	Ther
24	<i>Astragalus intercedens</i> Sam.	-	Ther
25	<i>Astragalus kahiricus</i> DC.	-	Hem
26	<i>Astragalus macrocarpus</i> DC.	-	Hem
27	<i>Astragalus peregrinus</i> Vahi,	-	Ther
28	<i>Astragalus pseudotrigonus</i> Batt.	Ekechchekir	Hem
29	<i>Astragalus schimperi</i> Boiss.	-	Ther
30	<i>Astragalus sinaicus</i> Boiss.	-	Ther
31	<i>Astragalus spinosus</i> (Forsk.)	-	Ch
32	<i>Astragalus stella</i> Gouan	-	Ther
33	<i>Astragalus taubertianus</i> Aschers.	-	Ther
34	<i>Astragalus tribuloides</i> Del.	-	Ther
35	<i>Astragalus trigonus</i> DC.	-	Hem
36	<i>Astragalus vogelii</i> (Webb) Bornm.	-	Ther
37	<i>Biserrula pelecinus</i> L.	-	Ther
38	<i>Bituminaria bituminosa</i> (L.) C.H.Stirt.	-	Hem
39	<i>Calicotome spinosa</i> (L.)	-	Pha
40	<i>Calicotome villosa</i> (Poirot)	Gondale, Gandole	Pha
41	<i>Cicer arietinum</i> L.	Horns, Humus	Ther

Continued			
42	<i>Coronilla repanda</i> (Poir.)	-	Ther
43	<i>Coronilla scorpioides</i> (L.)	-	Ther
44	<i>Crotalaria aegyptiaca</i> Benth.	-	Ch.
45	<i>Crotalaria arenaria</i> Benth.	-	Ch
46	<i>Crotalaria juncea</i> L.	-	Ther
47	<i>Crotalaria microphylla</i> Vahl,	-	Ther
48	<i>Crotalaria saharae</i> Coss.	Afarfar, Foula	Ch
49	<i>Crotalaria thebaica</i> (Del.)	-	Ch
50	<i>Dorycnium hirsutum</i> (L.)	-	Hem
51	<i>Dorycnium rectum</i> (L.)	-	Hem
52	<i>Ebenus armitagei</i> Schweinf.	-	Ch
53	<i>Ebenus pinnata</i> Ait.	-	Hem
54	<i>Genista acanthoclada</i> DC.	Lihyat el Sheikh	Ch
55	<i>Genista microcephala</i> Coss.	Kherta, Khesma, Shedida	Pha
56	<i>Glycyrrhiza glabra</i> L.	Sus, Erg	Hem
57	<i>Hedysarum coronarium</i> L.	-	Hem
58	<i>Hedysarum glomeratum</i> F.G.	-	Ther
59	<i>Hedysarum spinosissimum</i> L.	-	Ther
60	<i>Hippocrepis bicontorta</i> Loisel	-	Ther
61	<i>Hippocrepis ciliata</i> Willd.	-	Thero
62	<i>Hippocrepis cyclocarpa</i> Murb.	-	Ther
63	<i>Hippocrepis multisiliquosa</i> L.	-	Ther
64	<i>Hippocrepis scabra</i> DC.	-	Hem
65	<i>Hippocrepis unisiliquosa</i> L.	-	Ther
66	<i>Hymenocarpus circinatus</i> (L.)	-	Ther
67	<i>Indigofera semhaensis</i> Vierh.	-	Ther
68	<i>Indigofera sessiliflora</i> DC.	-	Ther
69	<i>Lablab purpureus</i> (L.)	Lablab	Ther
70	<i>Lathyrus annuus</i> L.	-	Ther
71	<i>Lathyrus aphaca</i> L.	-	Ther
72	<i>Lathyrus cicera</i> L.	-	Ther
73	<i>Lathyrus clymenum</i> L.	-	Ther
74	<i>Lathyrus gorgonei</i> Parl.	-	Ther
75	<i>Lathyrus hierosolymitanus</i> Boiss.	-	Ther
76	<i>Lathyrus marmoratus</i> Boiss.	-	Ther
77	<i>Lathyrus ochrus</i> (L.)	Garfala	Ther
78	<i>Lathyrus odoratus</i> L.	-	Ther
79	<i>Lathyrus pseudocicera</i> Pamp.	-	Ther
80	<i>Lathyrus sativus</i> L.	-	Ther
81	<i>Lathyrus saxatilis</i> (Vent.)	-	Ther
82	<i>Lathyrus setifolius</i> L.	-	Ther
83	<i>Lens culinaris</i> Medic.	Adas	Ther
84	<i>Lotononis platycarpus</i> (Viv.)	-	Ther
85	<i>Lotus conimbricensis</i> Brot.	-	Ther
86	<i>Lotus corniculatus</i> L.	-	Hem
87	<i>Lotus creticus</i> L.	-	Hem
88	<i>Lotus cytisoides</i> L.	-	Ch
89	<i>Lotus edulis</i> L.	-	Ther
90	<i>Lotus gebelia</i> Vent.	-	Hem
91	<i>Lotus glinoides</i> Delile	-	Ther
92	<i>Lotus halophilus</i> Boiss.	Nafal, Gum al-Ghazzal	Ther
93	<i>Lotus jolyi</i> Batt.	-	Hem
94	<i>Lotus longesiliquosus</i> R. Roem.	-	Hem
95	<i>Lotus ornithopodioides</i> L.	-	Ther
96	<i>Lotus parviflorus</i> Desf.	-	Ther
97	<i>Lotus pedunculatus</i> Cav.	-	Hem
98	<i>Lotus peregrinus</i> L.	-	Ther
99	<i>Lotus polyphyllus</i> Clarke	-	Hem
100	<i>Lotus suaveolens</i> Pers.	-	Ther
101	<i>Lotus tetragonolobus</i> L.	-	Ther
102	<i>Lotus uliginosus</i> Schkur.	-	Hem

Continued			
103	<i>Lupinus albus</i> L.	-	Ther
104	<i>Lupinus angustifolia</i> L.	-	Ther
105	<i>Lupinus micranthus</i> Guss.	Ful Olo. Termis	Ther
106	<i>Lupinus varius</i> L.	Termis	Ther
107	<i>Medicago arabica</i> (L.)	-	Ther
108	<i>Medicago coronata</i> (L.)	-	Ther
109	<i>Medicago cyrenaica</i> Maire	-	Ther
110	<i>Medicago disciformis</i> DC.	-	Ther
111	<i>Medicago doliata</i> Carmign.	-	Ther
112	<i>Medicago falcata</i> L.	-	Hem
113	<i>Medicago hypogaea</i> E. Small	-	Ther
114	<i>Medicago laciniata</i> (L.)	Aouinet el hanes	Ther
115	<i>Medicago littoralis</i> Rohde	Nefal	Ther
116	<i>Medicago lupulina</i> L.	-	Hem
117	<i>Medicago marina</i> L.	Nefal	Hem
118	<i>Medicago minima</i> (L.)	Nefal	Ther
119	<i>Medicago murex</i> Willd.	-	Ther
120	<i>Medicago orbicularis</i> (L.)	Nefal	Ther
121	<i>Medicago polymorpha</i> L.	-	Ther
122	<i>Medicago rigidula</i> (L.)	-	Ther
123	<i>Medicago rugosa</i> Desr.	-	Ther
124	<i>Medicago sativa</i> L.	Gadb, Safsafa, Berseem	Hem
125	<i>Medicago secundiflora</i> Durieu.		Ther
126	<i>Medicago tornata</i> (L.) Mill.	Nefal	Ther
127	<i>Medicago truncatula</i> Gaertn.	Nefal	Ther
128	<i>Medicago turbinata</i> (L.)	-	Ther
129	<i>Melilotus albus</i> Medik.	-	Ther
130	<i>Melilotus indicus</i> (L.)	-	Ther
131	<i>Melilotus italicus</i> (L.)	-	Ther
132	<i>Melilotus messanensis</i> (L.)	-	Ther
133	<i>Melilotus officinalis</i> (L.)	-	Hem
134	<i>Melilotus sulcatus</i> Desf.	-	Ther
135	<i>Onobrychis caput-galli</i> (L.)	Hadeeda	Ther
136	<i>Onobrychis crista-galli</i> (L.)	-	Ther
137	<i>Ononis angustissima</i> Lam.	-	Ch
138	<i>Ononis hispida</i> Desf.	-	Ch
139	<i>Ononis natrix</i> L.	Shedida	Ch
140	<i>Ononis ornithopodioides</i> L.	-	Ther
141	<i>Ononis pendula</i> Desf.	-	Ther
142	<i>Ononis reclinata</i> L.	-	Ther
143	<i>Ononis serrata</i> Forsk.	-	Ther
144	<i>Ononis sicala</i> Guss.	-	Ther
145	<i>Ononis spinosa</i> L.	-	Hem
146	<i>Ononis vaginalis</i> Vahl	-	Ch
147	<i>Ononis variegata</i> L.	-	Ther
148	<i>Ononis viscosa</i> L.	-	Ther
149	<i>Phaseolus vulgaris</i> L.	Fasulia	Ther
150	<i>Pisum elatius</i> M.	-	Ther
151	<i>Pisum sativum</i> L.	Basilia, Bazalia	Ther
152	<i>Psoralea plicata</i> Delile	-	Pha
153	<i>Retama raetam</i> (Forsk.)	-	Pha
154	<i>Scorpiurus muricatus</i> L.	-	Ther
155	<i>Spartidium saharae</i> (Coss. et Dur.)	-	Pha
156	<i>Spartium junceum</i> L.	Olig; Olik	Pha
157	<i>Trifolium alexandrinum</i> L.	-	Ther
158	<i>Trifolium angustifolium</i> L.	-	Ther
159	<i>Trifolium arvense</i> L.	-	Ther
160	<i>Trifolium campestre</i> Schreb.	-	Ther
161	<i>Trifolium cherleri</i> L.	-	Ther
162	<i>Trifolium dasyurum</i> C. Presl.	-	Ther
163	<i>Trifolium fragiferum</i> L.	-	Hem

Continued			
164	<i>Trifolium hirtum</i> All.	-	Ther
165	<i>Trifolium isthmocarpum</i> Brot.	-	Ther
166	<i>Trifolium lappaceum</i> L.	-	Ther
167	<i>Trifolium leucanthum</i> M.	-	Ther
168	<i>Trifolium micranthum</i> Viv.	-	Ther
169	<i>Trifolium nigrescens</i> Viv.	-	Ther
170	<i>Trifolium purpureum</i> Lois.	-	Ther
171	<i>Trifolium resupinatum</i> L.	-	Ther
172	<i>Trifolium scabrum</i> L.	-	Ther
173	<i>Trifolium squamosum</i> L.	-	Ther
174	<i>Trifolium stellatum</i> L.	-	Ther
175	<i>Trifolium strictum</i> L.	-	Ther
176	<i>Trifolium subterraneum</i> L.	-	Ther
177	<i>Trifolium suffocatum</i> L.	-	Ther
178	<i>Trifolium tomentosum</i> L.	-	Ther
179	<i>Trifolium uniflorum</i> L.	-	Hem
180	<i>Trigonella anguina</i> Delile	Ahazas, Nefel	Ther
181	<i>Trigonella coerulescens</i> (Bieb.)	-	Ther
182	<i>Trigonella foenum-graecum</i> L.	Helba	Ther
183	<i>Trigonella gladiata</i> Stev.	-	Ther
184	<i>Trigonella laciniata</i> L.	-	Ther
185	<i>Trigonella maritima</i> Delile	Kherta, Garat	Ther
186	<i>Trigonella monspeliaca</i> L.	-	Ther
187	<i>Trigonella stellata</i> Forsk.	-	Ther
188	<i>Vicia ervilia</i> (L.)	-	Ther
189	<i>Vicia faba</i> L.	Ful, Auen.	Ther
190	<i>Vicia hybrida</i> L.	-	Ther
191	<i>Vicia lutea</i> L.	-	Ther
192	<i>Vicia monantha</i> Retz.	-	Ther
193	<i>Vicia narbonensis</i> L.	-	Ther
194	<i>Vicia pannonica</i> Crantz	-	Ther
195	<i>Vicia parviflora</i> Cav.	-	Ther
196	<i>Vicia peregrina</i> L.	-	Ther
197	<i>Vicia sativa</i> L. 1. var. <i>amphicarpa</i> Boiss 2. var. <i>cordata</i> (Wulf. ex Hoppe) Arch. 3. var. <i>nigra</i> L. 4. var. <i>sativa</i> 5. var. <i>segetalis</i> (Thuill.) Ser. 6. var. <i>macrocarpa</i> Moris	Jilban	Ther
198	<i>Vicia sicula</i> (Rafin)	-	Hem
199	<i>Vicia tetrasperma</i> (L.)	-	Ther
200	<i>Vicia villosa</i> Roth	Jelbana-Hmam	Ther
201	<i>Vigna unguiculata</i> (L.)	Lubia	Ther
Sub family: Caesalpinioideae			
1	<i>Acacia farnesiana</i> (L.) Willd.	Sweet Acacia, Ban, Talha	Pha
2	<i>Acacia Karroo</i> Hayne	Sunt shawki, Talha	Pha
3	<i>Acacia nilotica</i> (L.) Delile	Gharad, Tamat	Pha
4	<i>Acacia saligna</i> (Labill.) Wendl.f.	Sunt, Sent	Pha
5	<i>Acacia tortilis</i> (Forssk.) Hayne	Absor, Abzec, Taiha.	Pha
6	<i>Caesalpinia gilliesii</i> (Hook.) Dietr.	-	Pha
7	<i>Ceratonia siliqua</i> L.	Kharob	Pha
8	<i>Delonix regia</i> (Bojer) Rafin.	Gui mohar	Pha
9	<i>Parkinsonia aculeata</i> L.	Sayasban	Pha
10	<i>Prosopis juliflora</i> (Swartz) DC.	-	Pha
11	<i>Senna alexandrina</i> Mill.	Sanamaki	Pha
12	<i>Senna italica</i> (Mill.) F.	Agerge, Agerer, Senha	Ch
13	<i>Senna occidentalis</i> L.	Sanamaki	Pha
14	<i>Tamarindus indica</i> L.	Tammar hindi	Pha
Sub family: Cercidoideae			
1	<i>Bauhinia variegata</i> L.	-	Pha

Ph=Phanerophytes, Ch=Chamaephytes, Hem=Hemicryptophytes and Ther=Therophytes,