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**COMMUNICATION**

**LEGUMES (ANGIOSPERMS: FABACEAE) OF BAGALKOT DISTRICT, KARNATAKA, INDIA**

Jagdish Dalavi, Ramesh Pujar, Sharad Kambale, Varsha Jadhav-Rathod & Shrirang Yadav

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Legumes (Angiosperms: Fabaceae) of Bagalkot District, Karnataka, India

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Abstract: Fabaceae Lindl. or Leguminosae is one of the largest families of Angiosperms. Due to adaptability in various climatic conditions, members of the family Fabaceae are worldwide in their distribution. Globally, Fabaceae is represented by 770 genera and 19,500 taxa. Bagalkot is one of the largest districts of northern Karnataka and falls under the Deccan Peninsular region of India. The study area (Bagalkot District) is a rain shadow region and remains dry and hot throughout the year. During floristic analysis of the District the authors recorded 157 species of legumes, which is communicated here in relation to habitat, life forms, distribution, classification and their importance.

Keywords: Deccan, Leguminosae, southern India, sub-family.

Editor: Anonymity requested.

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INTRODUCTION

Legumes are the third largest group of Angiosperms in terms of species number after Orchidaceae and Asteraceae and the second economically most important family after Poaceae (FAO 2016). Globally Fabaceae consists of 770 genera and over 19,500 species (LPWG 2017) in India, Fabaceae are represented by 147 genera, 805 species, 33 sub-species, 155 varieties and 14 forms (Sanjappa 1991, 1995; Dave 2004; Chaudhary & Khan 2005; Ansari 2008; Jabbar et al. 2010; Chavan et al. 2013; Gaikwad et al. 2014). Legumes are important food crops providing highly nutritious sources of protein and micronutrients. These micronutrients greatly benefit health and livelihoods, particularly in developing countries. They have been domesticated alongside grasses in different areas of the world since the beginning of agriculture and have played a key role in early agricultural development (Gepts et al. 2005; Hancock 2012; Yahara et al. 2013). Wild bean plants are also uniquely important as fodder and green manure in both temperate and tropical regions, and are used for their wood, tannins, oils and resins, in the manufacture of varnishes, paints, dyes and medicines and in the horticultural trading (LPWG 2017). Apart from socio-economic importance, legumes are equally beneficial for ecosystems and recycling by nitrogen fixation, improve soil porosity and structure, recycling of nutrients, decrease soil pH, reduction of soil compaction and in rotation with cereals they provide a source of slow-release nitrogen to sustainable cropping system (USDA 1998; Popelka et al. 2004). Many legumes play an important ecological role as they are major components of dry deciduous forests, ground cover and many are cultivated as major crops of the region and some have ornamental potential. In brief, legumes play a major role in socio-economic development of the region. Therefore, the present study focuses on the preparation of the database of legumes of Bagalkot District. While surveying this area it is observed that the flora of this district is dominated by the family Fabaceae. The probable reason of this high diversity may be adaptability to various habitats.

MATERIALS AND METHODS

Study area

Bagalkot is a district of northern Karnataka State separated from Vijayapura in 1997. The whole region falls under the Deccan Plateau and most of it comes under a rain shadow area. Due to low rainfall and hot & dry climatic conditions, the region is dominated by dry deciduous forests, scrub jungles, and vast seasonal grasslands. The district lies at 16.316°N, 76.000°E and 533m altitude and having a total area of 6,552km² (Dalavi et al. 2019). The district is divided into six sub-district regions, namely: Badami, Bagalkot, Bilgi, Hungund, Jamkhandi and Mudhol (Fig. 1). Rabakavi-Banahatti Guledgudda and Ilkal are newly divided taluk places. Major habitats of the districts are large rocky hills, gravelly slopes, sandy plains, perennial & seasonal lakes, marshy & saline areas, ditches, rivers, and black soil plains. Average rainfall recorded in the last decade ranges 337–819 mm and the average temperature reported ranges 17–42°C. June to September is the monsoon season and February to May is the actual summer season. Due to hot arid conditions the area is blessed with spiny and thorny forests interrupted with grasslands.

Data collection

A preliminary list of the species belonging to Fabaceae from Bagalkot District was prepared from all the available floras, revisions and checklists (Gamble 1935; Cooke 1958; Britto 1983; Singh 1988; Sharma & Balakrishnan 1993; Prasad & Singh 2002; Prajapati 2010; Kambhar & Katrahalli 2016; Dalavi et al. 2019). Herbarium studies were carried out by visiting some important herbaria namely BSI, CAL, MH, NGCPR and SUK, which was followed by extensive and intensive field tours throughout the district covering various habitats from June 2014 to January 2020. More than 90 tours were carried out and the data on habitat, distribution, phenology and local uses were recorded. Three to four herbarium specimens were prepared for each collected species by following standard procedures (Rao & Sharma 1990). Identifications were confirmed by using floras, revisions and all the available taxonomic literature (Gamble 1935; Cooke 1958; Matthew 1981; Sharma et al. 1984; Sharma & Balakrishnan 1993; Prasad & Singh 2002; Kanbhar & Katrahalli 2016). Problematic and notable species were identified by direct comparison with identified specimens deposited in BSI, SUK, CAL and digital herbaria such as Herbarium JCB (accessed from January 2014–December 2019), Kew Herbarium Catalogue (accessed from January 2017–March 2020) and JSTOR Global Plants (accessed from February 2017–December 2019). The nomenclature of plant species collected was updated using POWO (Plants of the world online Kew-science accessed from January 2015–December 2019) and Tropicos (tropicos.org accessed from January 2014–December 2019) and Tropicos (tropicos.org accessed from January 2014–December 2019).
from January 2017–January 2020). All leguminous taxa are grouped here according to the latest classification of Fabaceae (LPWG 2017) (Table 1). Charts and maps are provided for subfamily-wise classification and study area, respectively. Colour plates for important taxa are also provided for easy identification of species. Ethnobotanical information was collected by direct interaction with local people, ayurvedic practitioners and farmers.

RESULTS

Enumeration

A total of 157 taxa of Fabaceae have been reported from the Bagalkot District of Karnataka which measures about 15% of the total flora. All the legumes of the district belong to four subfamilies of Fabaceae, viz., Cercidoideae, Detarioideae, Caesalpinioideae and Papilionoideae; of which Papilionoideae or Faboideae is the largest subfamily with 45 genera and 106 species followed by Caesalpinioideae with 22 genera & 45 species, Cercidoideae with three genera & four species and Deratioideae with two genera & two species, respectively (Fig. 2). Crotalaria L. and Indigofera L. are the largest genera with 12 species each, followed by Rhynchosia Lour. with 10 taxa and Alysicarpus Desv. & Senna L. with nine species each. Fabaceae of the district consists of 48 tree species, eight shrubs, eight sub-shrubs, 74 herbs, and 18 climbers & creepers.

Endemism

Some plants are habitat specific and are endemic to peninsular India, viz., Alysicarpus gamblei Schindl., Crotalaria paniculata Willd., C. pusilla Roxb. ex Wight & Arn., C. vestita Baker found to be growing on rocky and sandy areas and are endemic to southern peninsular India (Dalavi et al. 2019). Alysicarpus gamblei Schindl. is only known from six localities of Karnataka and Maharashtra of which Bagalkot District has the highest population (Dalavi et al. 2019). Vigna indica Dixit et al. is also a dominant species of open areas and grasslands endemic to peninsular India. Mimosa prainiana Gamble a woody tree endemic to peninsular India which is also important member of dry forests of Bagalkot District.

Ethnobotany and economics

Many wild legumes are used as a source of medicine and food by local people. Pods of Vachellia nilotica (L.) P.J.H.Hurter & Mabb. are used to make tooth powder by drying and crushing the seeds; gum exuded from the stem is highly valued and used to cure many diseases and is edible, generally given to pregnant ladies in the form of small pieces mixed with dry fruits; tender branches are used as fodder for goats, timber is used in building and construction. Fresh flowers of Sesbania grandiflora

Figure 1. A—Position of Bagalkot District | B—Detailed map of study area.
Legumes of Bagalkot District

Powdered seeds of *cure skin problems like itching and inflammations.* Young pods of *Senna* *Dichrostachys cinerea* are eaten raw as well as after cooking. Leaf powder of *Pericarp (as per LPWG 2017).*

**Figure 2. Subfamily wise distribution of legumes of Bagalkot District (as per LPWG 2017).**

Economically important pulses viz., *Arachis hypogea* *L., Cajanus cajan* (L.) *Huth, Cyamopsis tetragonoloba* (L.) *Taub., Glycine max* (L.) *Merr., Lablab purpureus* (L.) *Sweet*, *Phaseolus vulgaris* *L., Pismum sativum* *L., Tamarindus indica* *L., Trigonella foenum-graecum* *L., Vigna aconitifolia* (Jacq.) *Marechal, Vigna mungo* *L.* *Hepper, Vigna radiata* *L.* *Wilezek and Vigna unguiculata* (L.) *Walp.* are cultivated on a large scale as vegetables. All crop legumes play an important role in the agro-economic development of the region. *Avinash & Patil (2018)* analysed that among the northern districts of Karnataka, Bagalkot is second largest producer of pulses and leguminous crops.

**Acacia auriculiformis** A.Cunn. ex Benth., *A. mangium* *Wulld., Adenanthera pavonina* *L., Albizia lebbek* (L.) Benth., *Dalbergia sissoo* *Roxb. ex DC., D. latfolia* *Roxb., Delonix regia* (Bojer ex Hook.) Raf., *D. elata* (L.) *Gamble, Cassia fistula* *L., C. javanica* *L., Senna siamea* *Lam.* *H.S.Irwin & Barneby, Citorea ternatea* *L., Parkia biglandulosa* *Wight & Arn., Pithecellobium dulce* (Roxb.) *Benth., Pongamia pinnata* (L.) *Pierre, Prosopis cineraria* (L.) *Druce, Samanea saman* (Jacq.) *Merr.* are extensively planted as garden and avenue plants throughout the district.

Wood of *Albizia lebbek* (L.) Benth., *Dalbergia latfolia* *Roxb., D. sissoo* *Roxb. ex DC., *Tamarindus indica* *L., Senegalia chundra* (Roxb. ex Rottler) *Maslin, Vachellia nilotica* (L.) *P.I.H.Hurter & Mabb.* is used in the construction of houses and farming equipment. *Guilandina bonduc* *L., Sesbania acauleata* (Schreb.) Pers. & S. *sesban* (L.) Merr. are used as bio-fencing plants along farm yards.

**Ecology**

Apart from the economic potential, some legumes are dominant weeds of the region like *Aeschynomene aspera* (L.), *A. indica* Burm.f., *Neptunia triqueta* Benth., etc., which grow along water bodies and spread throughout. *N. triqueta* if it enters into a pond ecosystem grows aggressively and forms a dense mat on the water surface and affects other biota. *Alysicarpus bupleurifolius* (L.) *DC., A. tetragonolobus* *Edgew., Cullen corylifolium* (L.) *Medik, Desmodium scorpiurus* (Sw.) *Desv. de DC., Prosopis juliflora* (Sww.) *DC., Senna occidentalis* (L.) *Link, S. tora* (L.) *Roxb., S. uniflora* (Mill.) H.S.Irwin & Barneby and *Rothisa indica* (L.) Druce grow in cultivated fields and have adverse effects on crop productivity. *Glicridia sepium* (Jacq.) *Stead.* is one of the invasive tree species rapidly encroaching the forest areas of the region and have negative effects on native flora and the natural ecosystem.

Legumes play some important ecological roles. They are the factories of nitrogen fixation being equipped with root nodules. The study area is an arid zone hence it lacks dense forests. The resulting soil erosion is due to minimum leaf litter which fails to keeps soil moisture constant, however, some legumes, viz., *Crotalaria hebecarpa* (DC) *Rudd., C. orixensis* *Rottler ex Wild., Indigofera linnaei* *Ali, I. linifolia* (L.f.) *Reitz., Tephrosia strigosa* (Dalzell) *Santapau & Maheshw., Eleotis rottleri* *Wight & Arn., E. sororia* (L.) *DC., and Rhynchosia capitata* (B.Heyne ex Roth) *DC. form a dense mat on soil surfaces and maintain the moisture.**

**CONCLUSION**

Due to adaptability to the various ecological and geographical conditions Fabaceae are the most dominant family of flora of Bagalkot District. Legumes like *Acacia Mill., Albizia Durazz., Bauhinia Plum ex L., Cassia L., Mimosa L., Mundulea* (DC) *Benth., Phanera* *Lour., Senegalia Raf., Vachellia Wight & Arn. are the
**Table. 1. Checklist of legumes of Bagalkot District as per latest classification LPWG (2017).**

| Name of taxon | Habit | Phenology | Habitat & Localities | Exsiccata |
|---------------|-------|-----------|----------------------|----------|
| **Sub-family: CERCIDOIDEAE (3 genera 4 species)** | | | | |
| 1 Bauhinia tomentosa L.* | Tree | Nov–May | Dry deciduous forest (Bd, Bi, G, M) | JVD-247, JVD-1204 |
| 2 Phanera purpurea (L.) Benth. | Tree | Nov–Mar | Deciduous forests/planted (Bd, Bg, G, H, I) | JVD-1389 |
| 3 Phanera variagata (L.) Benth. | Tree | Oct–May | Planted as avenue tree (Bg, J, M, N) | JVD-1390 |
| 4 Piliostigma racemosum (Lam.) Benth. | Tree | Mar–Sept | Deciduous and scrub forest (Bd, Bg, G, H, I, M) | JVD-22 |
| **Sub-family: DETARIOIDEAE (2 genera, 2 species)** | | | | |
| 5 Hardwickia binata Roxb. | Tree | Aug–Jan | Deciduous forests/planted (Bd, Bg, Bi, G, J, M) | JVD-1391 |
| 6 Tamarindus indica L.* | Tree | Apr–Sept | In forest/planted (Throughout year) | JVD-261 |
| **Sub-family: CAESALPINIOIDEAE (22 genera, 45 species)** | | | | |
| 7 Acacia auriculiformis Benth.* | Tree | Jan–Aug | Planted and escaped in wild (Bd, Bg, Bi, J, N, R) | JVD-1392 |
| 8 Acacia mangium Willd. * | Tree | Jun–Aug | Planted and escaped in wild (Bd, Bg, Bi, J, N) | JVD-1393 |
| 9 Adenanthera pavonina L. | Tree | Dec–Apr | Planted (Bd, Bg, I, J, M, R) | JVD-1394 |
| 10 Albizia amara (Roxb.) Boiv. | Tree | Apr–Aug | Deciduous and scrub forest (Throughout district) (Bd, Bg, Bi, H, J, M) | JVD-172, JVD-1285 |
| 11 Albizia lebbeck (L.) Benth. | Tree | Apr–Aug | Dry deciduous forests and along road sides. (Throughout district) (Bd, Bg, Bi, H, I, J, M, R) | JVD-241 |
| 12 Cassia fistula L. | Tree | Feb–Apr | Along roadsides (Throughout district) | JVD-302 |
| 13 Cassia javanica L. * | Tree | Mar–Jul | Planted (Bd, Bg, J, N, R, T) | JVD-1395 |
| 14 Caesalpinia pulcherrima (L.) Sw. * | Tree | Throughout year | Dry deciduous forests and along roadsides (Throughout district) | JVD-249 |
| 15 Chamaecrista absus (L.) H.S. Irwin & Barneby | Herb | Aug–Feb | Open forests and wastelands (Throughout district) | JVD-303, JVD-847 |
| 16 Chamaecrista mimosaoides (L.) Greene * | Herb | Jul–Nov | Gravelly slopes (Bd, Bg, Bi, G, J, M, N, T) | JVD-1397 |
| 17 Chamaecrista pumila (Lam.) K. Larsen. | Herb | Jun–Aug | Dry deciduous forests and along road sides. (Throughout district) (Bd, Bg, Bi, H, J, M, R) | JVD-241 |
| 18 Delonix regia (Hook.) Raf. * | Tree | Jan–June | Planted and also escaped (Throughout district) | JVD-1398 |
| 19 Delonix elata (L.) Gamble * | Tree | Sept–Dec | Dry deciduous forests (Throughout district) | JVD-1399 |
| 20 Dichrostachys cinerea Wight et Arn. | Tree | Jun–Aug | Dry deciduous forests (Throughout district) | JVD-19, JVD-908, JVD-1291 |
| 21 Guilandina bonduc L. | Shrubs | Jun–Feb | Cultivated, found along roadsides and open places (Bd, Bg, G, J, M, R) | JVD-250 |
| 22 Lysiloma latissilium (L.) Benth. * | Tree | Throughout year | Planted along roadside and as fodder plant (Throughout district) | JVD-1383 |
| 23 Mimosa hamata Willd. | Shrub | Jul–Oct | Deciduous forests (Throughout district) | JVD-311, JVD-930, JVD-911, JVD-1209, JVD-1224 |
| 24 Mimosa prainiana Gamble | Shrubs | Jul–Oct | Deciduous forest (Throughout district) (Singh 1988 Op. cit.) | JVD-1385 |
| 25 Mimosa pudica L. * | Herb | Jul–Mar | Dry forests and wastelands (Throughout district) | JVD-173 |
| 26 Neptunia triquetra Benth. | Herb | Nov–May | Stagnant water bodies (H) (Singh 1988 Op. cit.) | JVD-1387 |
| 27 Lobiobia cariaria (Jacq.) Schltdl. * | Shrubs | Throughout year | Open areas (Throughout district) (Bd, Bg, T) | JVD-1385 |
| 28 Parkia biglandulosa Wight & Arn. | Tree | Nov–May | Planted (Bd, Bg, J, M, N) | JVD-1386 |
| 29 Parkinsonia aculeata L. * | Tree | Mar–Oct | Planted (Bd, Bg, J, M, N) | JVD-1387 |
| 30 Peltophorium pterocarpum Aucp. Non K.Heyne. (DC.) K.Heyne * | Tree | Jul–Jan | Planted and escaped in forest (Ba, I, L, M, N, T) | JVD-171, JVD-1296 |
| Name of taxon                                      | Habit       | Phenology | Habitat & Localities                                      | Exsic cata |
|--------------------------------------------------|-------------|-----------|----------------------------------------------------------|------------|
| 31 Pithecellobium dulce (Roeb.) Benth. *          | Tree        | Throughout year | Dry deciduous forests and along roadsides (Throughout district) | JVD-314    |
| 32 Prosopis cineraria (L.) Druce.                 | Tree        | Sept–Apr  | Wastelands, dry deciduous forests and along roadsides (Throughout district) | JVD-316    |
| 33 Prosopis juliflora (Sw.) DC. *                 | Tree        | Sept–Apr  | Dry deciduous forests and along roadsides (Throughout district) | JVD-317/JVD-1268 |
| 34 Samanea saman (Jacq.) Merr. *                  | Tree        | Apr–Aug   | Planted (Bd, Bg, Bi, J, N)                               | JVD-1395   |
| 35 Senegalia chundra (Roeb. ex Rottl.) Maslin     | Tree        | Aug–Jan   | Dry deciduous forests (Throughout district)              | JVD-94     |
| 36 Senegalia rugata (Lam.) Britton & Rose         | Tree        | Aug–Jan   | Dry deciduous forests (Throughout district)              | JVD-232    |
| 37 Senegalia polyacantha (Will.) Siegler & Ebinge | Tree        | Aug–Apr   | Dry deciduous forests and along roadsides (Throughout district) | JVD-237    |
| 38 Senna alexandrina Mill.                       | Sub-shrubs  | Nov–Jun   | Open areas and wastelands (H, i)                         | JVD-1388   |
| 39 Senna auriculata (L.) Roeb.                    | Tree        | Jul–Feb   | Deciduous forests and open areas (Throughout district)   | JVD-159    |
| 40 Senna italica Mill. subsp. micrantha (Brennan) | Tree        | Jul–Feb   | Deciduous forests and open forests (Bd, Bi, G, H, I)     | JVD-264/JVD-874/JVD-875 |
| 41 Senna sophera (L.) Roeb. *                     | Sub-shrubs  | Oct–Feb   | Open areas and wastelands (Throughout district)          | JVD-1400   |
| 42 Senna occidentalis (L.) Link *                 | Herb        | Jul–Feb   | Open forests and wastelands (Throughout district)        | JVD-68     |
| 43 Senna siames (Lam.) H.S.Irwin & Barneby *      | Tree        | Apr–Feb   | Open forests and wastelands (Throughout district)        | JVD-266    |
| 44 Senna surattensis (Burm.f.) H.S. Irwin & Barneby| Tree        | Sept–Apr  | Cultivated (Bd, J)                                      | JVD-1401   |
| 45 Senna toa (L.) Roeb. *                         | Herbs       | Jul–Apr   | Open areas and wastelands (Throughout district)          | JVD-267    |
| 46 Senna uniflora (Mill.) H.S.Irwin & Barneby *   | Herbs       | Sept–May  | Open areas and wastelands (Throughout district)          | JVD-1402   |
| 47 Vachellia ebenear (L.f.) P.J.H.Hurter & Mabb.  | Tree        | Aug–Feb   | Dry deciduous forests and along roadsides (Throughout district) | JVD-1403   |
| 48 Vachellia farnesiana (L.) Wight & Arn. *       | Small tree  | Aug–Feb   | Dry deciduous forests (Throughout districts)              | JVD-233    |
| 49 Vachellia horrida (L.) Kyal. & Boatwr.         | Small tree  | Jul–Jan   | Dry deciduous forests (Throughout district)              | JVD-204    |
| 50 Vachellia leucophloea (Roeb.) Maslin           | Tree        | Aug–Feb   | Dry deciduous forests and along roadsides (Throughout district) | JVD-236    |
| 51 Vachellia nilotica (L.) P.J.H. Hurter & Mabb.  | Tree        | Aug–Mar   | Dry deciduous forests and planted along roadsides (Throughout district) | JVD-08     |

**PAPILIONOIDEAE (46 genera, 106 species)**

|                                        | Habit       | Phenology | Habitat & Localities                                      | Exsic cata |
|----------------------------------------|-------------|-----------|----------------------------------------------------------|------------|
| 52 Abrus precatorius L.                | Climber     | Sept–Jun  | Dry deciduous forests (Bd, Bi, Bg, G, J, M)              | JVD-07/JVD-1211 |
| 53 Alysicarpus bupleurifolius (L.) DC.  | Herb        | Aug–Nov   | Grasslands and Open areas (Bd, Bg, G, J, M, R)           | JVD-242    |
| 54 Alysicarpus gambleri Schindl.        | Herb        | Aug–Nov   | Rocky hills and sandy plains (Bd)                        | JVD-835    |
| 55 Alysicarpus hamosus Edgew.           | Herb        | Sept–Nov  | Gravelly plains and Grasslands (Throughout district)     | JVD-318/JVD-831 |
| 56 Alysicarpus longifolius (Rottl. ex Spreng.) Wight & Arn. | Herb       | Sept–Mar  | Open areas and weed of cultivated fields (L, M)           | JVD-1404   |
| 57 Alysicarpus monilifer (L.) DC.       | Herb        | Aug–Dec   | Gravelly plains and Grasslands (Throughout district)     | JVD-244/JVD-914/JVD-1230 |
| 58 Alysicarpus ovalifolius (Schum.) Leonard | Herb      | Sept–Dec  | Along cultivated fields and wastelands (Bd, Bg, Bi, G, I, J) | JVD-1405   |
| 59 Alysicarpus scariosus (Spreng.) Thwaites | Herb      | Aug–Dec   | Seasonal grasslands and wastelands (Bd, I)               | JVD-871/JVD-876 |
| 60 Alysicarpus tetragonolobus Edgew.    | Herb        | Jul–Dec   | Grasslands and Open areas (Bd, Bg, Bi, G, M)             | JVD-245    |
| 61 Alysicarpus vaginalis (L.) DC.       | Herb        | Sept–Dec  | Gravelly plains and Grasslands (Throughout district)     | JVD-246    |
| 62 Arachis hypogaea L. *                | Herb        | Nov–Mar   | Cultivated farms (Throughout district)                   | JVD-1380   |
| Name of taxon                     | Habit                  | Phenology      | Habitat & Localities                                                                 | Exsiccata |
|---------------------------------|------------------------|----------------|--------------------------------------------------------------------------------------|-----------|
| Aeschynomene aspera L.          | Herb                   | Throughout year| Along water bodies (KS)                                                              | JVD-238   |
| Aeschynomene indica L.          | Herb                   | Throughout year| Along water bodies (Bd, Bg, J, R)                                                   | JVD-239   |
| Butea monosperma (Lam.) Taubert | Tree                   | Dec−May        | Dry deciduous forests and along roadsides (Bd, Bg, J, L, M)                         | JVD-248   |
| Cajanus cajan (L.) Millsbaugh   | Shrub                  | Aug−Apr        | Cultivated (Throughout district)                                                   | JVD-1381  |
| Cajanus scarabaeoides (L.) Thouars. | Creeper                | Jul−Dec        | Grasslands, Wastelands and Open areas (B, J, l, M)                                  | JVD-301   |
| Canavalia ensiformis (L.) DC. * | Climber                | Throughout year| Dry deciduous forests (Bd)                                                        | JVD-218   |
| Cicer arietinum L. *            | Herb                   | Oct−Mar        | Cultivated as pulse (Throughout district)                                           | JVD-1382  |
| Crotalaria annua J. Graham      | Climber                | Aug−Oct        | Dry deciduous forests and along roadsides (Bd)                                       | JVD-118   |
| Crotalaria ternatea L. *        | Climber                | Jun−Jan        | Dry deciduous forests and along roadsides (Throughout district)                    | JVD-305   |
| Crotalaria bifora L.f.          | Twining herb           | Sept−Jan       | Grasslands and open areas (Bd, G, H, I)                                            | JVD-878   |
| Crotalaria hebecarpa (DC.) Rudd. * | Herb                  | Jul−Jan        | Grasslands and open areas (Throughout district)                                   | JVD-306   |
| Crotalaria hirsuta Wild.        | Herb                   | Sept−Dec       | Rare on gravelly slopes (Bd, C)                                                    | JVD-1417  |
| Crotalaria juncea L.            | Herb                   | Sept−May       | Grasslands and open areas (Throughout district)                                   | JVD-167   |
| Crotalaria medicaginea Lam.      | Herb                   | Oct−May        | Grasslands and sandy plains (Bd)                                                    | JVD-1405  |
| Crotalaria oxiensis Wild.       | Herb                   | Jun−Jan        | Grasslands and open areas (Bd, Bg, J, L)                                           | JVD-307   |
| Crotalaria palida Aiton. Var. palido | Herb                | Sept−Apr       | Grasslands and open areas (Throughout district)                                   | JVD-308   |
| Crotalaria paniculata Wild.     | Herb                   | Nov−Apr        | Rare on gravelly slopes (Bd)                                                       | JVD-1428  |
| Crotalaria pellita Bertero ex DC. | Herb                  | Aug−Dec        | Grasslands and open areas (Bd, L)                                                   | JVD-208   |
| Crotalaria pusilla DC.          | Herb                   | Jul−Jan        | Grasslands and open areas (Bd, G, H, I)                                            | JVD-309   |
| Crotalaria retusa L.            | Shrub                  | Aug−Mar        | Grasslands and open areas (Bd)                                                      | JVD-310   |
| Crotalaria vestito Baker.       | Herb                   | Jul−Dec        | Open areas and seasonal grasslands (Bd)                                             | JVD-240   |
| Cullen corylifolium (L.) Medik. | Herb                   | Oct−April      | Weed of cultivated fields (Throughout district)                                    | JVD-1429  |
| Cymopsis tetragonoloba (L.) Taub. | Herb                  | Oct−May        | Cultivated (Throughout district)                                                   | JVD-920   |
| Dalbergia lanceolaria L.f.      | Tree                   | Mar−May        | Dry deciduous forests (Throughout district)                                        | JVD-251   |
| Dalbergia latifolia Roxb.       | Tree                   | Feb−May        | Dry deciduous forests (Throughout district)                                       | JVD-252   |
| Dalbergia sissio Roxb.          | Tree                   | Dec−May        | Planted and escaped (Throughout district)                                        | JVD-1430  |
| Deguello scandens Aubl. *       | Climber                | Nov−May        | Dry deciduous forest (Bd)                                                          | JVD-1431  |
| Desmodium scorpiurus (L.) DC. * | Herb                   | Jul−Dec        | Grasslands, Wastelands and Open areas (Throughout district)                        | JVD-253   |
| Grona triflora (L.) H.Ohashi & K.Ohashi | Herb | Sept−Jan       | Grasslands, Wastelands and Open areas (Throughout district)                        | JVD-157   |
| Eleiotis rotleri Wight & Arn.   | Herb                   | Jun−Oct        | Rare in gravelly plains and seasonal grasslands (Bd)                                | JVD-175   |
| Eleiotis sororia (L.) DC.       | Herb                   | Jul−Nov        | Rare in gravelly plains and seasonal grasslands (Bd, G, H, I)                      | JVD-254   |
| Erythrina suberosa Roxb.        | Tree                   | Nov−Apr        | Deciduous forests (Bd, J, M)                                                        | JVD-255   |
| Flemingia strobilifera R.Br.    | Herb                   | Nov−Mar        | Deciduous forests (Bd)                                                              | JVD-198   |
| Gliricidia sepium (Jacq.) Walp. * | Tree                  | Dec−Apr        | Open areas (Throughout district)                                                   | JVD-1406  |
| Glycine max (L.) Merr. *        | Herb                   | Oct−Apr        | Cultivated (Throughout district)                                                   | JVD-1407  |
| Indigiostrum parviflorum (B.Heyne ex Wight & Arn.) Schrire | Sub-shrubs | Oct−Apr | Open areas and sandy plains (Bd, L)                                             | JVD-1434  |
| Indigofera arnotti (Kuntze) Peter G.Wilson | Herb | Aug−Feb | Open areas and scrubs (Bd, Bg, G, I, J, M)                                         | JVD-1278  |
| |||||
| Name of taxon | Habit | Phenology | Habitat & Localities | Exsiccata |
|---------------|-------|-----------|----------------------|-----------|
| Indigofera aspalathoides Vahl ex DC. | Herb | Sept–Apr | Open areas and scrubs (Bd) | JVD-864 |
| Indigofera coccoidea DC. | Herb | Aug–Feb | Sandy plains (Throughout district) | JVD-1430 |
| Indigofera cordifolia Heyne ex Roth. | Herb | Aug–Oct | Grasslands, gravelly plains and wastelands (Bd, G, H) | JVD-860 |
| Indigofera calutia (Burm.) Merr. | Herb | Jun–Dec | Grasslands, gravelly plains and wastelands (Bd) | JVD-210, JVD-1246 |
| Indigofera glabrous (L.) Druce | Herb | Aug–Feb | Open areas and weed of cultivated fields (Throughout district) | JVD-888 |
| Indigofera linifolia (L.f.) Retz. | Herb | Jun–Dec | Grasslands, gravelly plains and wastelands (Throughout district) | JVD-161, JVD-851 |
| Indigofera linnaei Al. | Herb | Jun–Feb | Grasslands, gravelly plains and wastelands (Throughout district) | JVD-257 |
| Indigofera tinctoria L. | Shrub | Oct–Jan | Open areas and scrubs (Bd) | JVD-1435 |
| Indigofera trifoliata L. | Herb | Jul–Feb | Grasslands, gravelly plains and wastelands (Bd, Bg, L, I, M) | JVD-258 |
| Indigofera trita L.f. | Herb | Jun–Jan | Grasslands, gravelly plains and wastelands (Throughout district) | JVD-259, JVD-861 |
| Lablab purpureus (L.) Sweet. | Climber | Aug–Dec | Cultivated fields (Throughout district) | JVD-260 |
| Macroptilium lathyroides (L.) Druce | Sub-shrubs | Jul–Feb | Open areas and along railway track (L) | JVD-1436 |
| Macrotyloma uniflorus (Lam.) Verdc. | Climbing shrub | Jan–Jul | Dry deciduous forest (Bd) JVD-1438 |
| Macrotyloma uniflorus var. laxiflora (Camb.) Baker | Sub-shrubs | Dec–Apr | Cultivated fields (Bd) | JVD-1439 |
| Pongamia pinnata (L.) Pierre | Tree | Mar–Sept | Open areas and along roadsides (Throughout district) | JVD-315 |
| Pseudanthos thurberi var. lutea (Willd.) A.Chev. | Herb | Jul–Jan | Dry scrub forests and grasslands (Bd, M) | JVD-318 |
| Pterocarpus marsupium Roxb. | Tree | May–Oct | Dried deciduous forests (Bd, Bg, L, I, M) | JVD-319 |
| Pycnospora lutescens (Poir.) Schindl. | Twining herb | Apr–Oct | Dried deciduous forests (Bd) | JVD-320 |
| Rhynchosia aurea | Sub-shrubs | Oct–Apr | Deciduous forest (Bd) | JVD-1247 |
| Rhynchosia cana (Willd.) DC. | Sub-shrubs | Dec–Apr | Cultivated fields (Bd) | JVD-1297 |
| Rhynchosia capitata (B.Heyne ex Roth) DC. | Creeping herbs | Sept–Jan | Sandy plains (Bd) | JVD-1298 |
| Rhynchosia hirta (Andrews) Meikle & Verdc. | Climbing shrub | Jan–Jul | Dry deciduous forest (Bd) | JVD-1438 |
| Rhynchosia minima DC. | Climber | Jul–Jan | Grasslands and open areas (Bd) | JVD-155, JVD-1202 |
| Rhynchosia minima var. laxiflora (Camb.) Baker | Climber | Throughout year | Open areas and weed of cultivated fields (Bd, Bg, L, J) | JVD-1412 |
| Rhynchosia rothii Benth. ex Alcich. | Climber | Oct–May | Dry deciduous forest (Bd) | JVD-1413 |
| Rhynchosia ruibens (Willd.) DC. | Sub-shrubs | Jul–Feb | Open areas and gravelly slopes (Bd) | JVD-262 |
| Rhynchosia suaveolens (L.f.) DC. | Shrubs | Nov–Mar | Gravelly slopes of deciduous forest (Bd) | JVD-1415 |
| Rhynchosia viscosa DC. | Climber | Throughout year | Deciduous forests (Bd) | JVD-1416 |
| Rothia indica (L.) Druce | Herb | Sept–Apr | Sandy plains (Throughout district) | JVD-828, JVD-1132, JVD-1286, JVD-913 |
| Sesbania aculeata (Schreb.) Pers. | Sub-shrubs | Sept–Jan | Dry deciduous forests and along roadsides (Bd, L, M) | JVD-269 |
| Sesbania grandiflora (L.) Poir. | Tree | Sept–Feb | Cultivated as fodder and vegetable plant (Throughout district) | JVD-1370 |
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| Name of taxon | Habit | Phenology | Habitat & Localities | Exsiccati |
|---------------|-------|-----------|----------------------|----------|
| Sesbania sesban (L.) Merr. | Tree | Sept–Dec | Common along cultivated fields (Throughout district) | JVD-1371 |
| Smithia conferta Sm. var. conferta | Herb | Oct–Dec | Wet grasslands (Bd) | JVD-1418 |
| Stylosanthes fruticosa Mohlenbr | Herb | Throughout year | Open areas and wastelands (Throughout district) | JVD-268 |
| Stylosanthes hamato (L.) Taub. * | Herb | Throughout year | Open areas and wastelands (Throughout district) | JVD-202 |
| Taverniera cuneifolia (Roth) Arn. | Herb | Dec–Jul | Weed of cultivated fields (R, T) | JVD-1419 |
| Tephrosia hookeriana Wight & Arn. | Sub-shrubs | Oct–May | Open grasslands (Bd) | Singh 1988 Op. cit. |
| Tephrosia pumila (Lam.) Pers. | Herb | Jul–Dec | Open areas and wastelands (Bd) | JVD-263 |
| Tephrosia purpurea (L.) Pers. | Sub-shrubs | Jul–Dec | Open areas and wastelands (Throughout district) | JVD-098 |
| Tephrosia strigosa (Dalzell) Santapau & Maheshw. | Herb | Jul–Dec | Open areas and wastelands (Bd, L, M) | JVD-1420 |
| Tephrosia subtiliflora Baker | Herb | Aug–Jan | Open areas and wastelands (Bd) | JVD-1425 |
| Tephrosia uniflora Pers. | Herbs | Oct–Jun | Open areas and wastelands (Bd) | Singh 1981 Op. cit. |
| Tephrosia villosa (L.) Pers. | Sub-shrubs | Jul–Jan | Open areas and wastelands (Bd, G, H, I, J, M) | JVD-265 JVD-919 JVD-1213 |
| Teramnus labialis (L.f.) Spreng. | Twining herb | Aug–Jan | Open areas and along cultivated fields (Bd, L) | JVD-1209 |
| Trigonella foenum-graecum L. | Herb | Throughout year | Cultivated as vegetable crop (Throughout district) | JVD-1411 |
| Vigna indicus T.M.Dixit, K.V.Bhat & S.R.Yadav | Climber | Jul–Jan | Open areas and wastelands (Throughout district) | JVD-1145 |
| Vigna acconitifolia (Jacq.) Marechal | Creeping herb | Aug–Jan | Cultivated and escaped in wild (Throughout district) | JVD-1421 |
| Vigna mungo (L.) Hepper | Creeping herb | Aug–Jan | Cultivated (Throughout district) | JVD-1422 |
| Vigna trilobata (L.) Verdcourt | Creeping herb | Jul–Jan | Open area sand wastelands (Throughout district) | JVD-270 |
| Vigna radiata (L.) Wilezek | Creeping herb | Jul–Jan | Open areas and wastelands (Throughout district) | JVD-332 |
| Vigna unguiculata (L.) Walp. * | Creeping herbs | Jul–Jan | Open areas and wastelands (Throughout district) | JVD-1423 |
| Zornia gibbosa Span. | Herb | Jul–Jun | Open areas and grasslands (Throughout district) | JVD-334 |

Bd—Badami | Bg—Bagalkot | Bi—Bilgi | C—Cholachgudda | G—Guledgudda | H—Hungund | I—Ilkal | J—Jamkhandi | KS—Kudal Sangam | L—Lokapur | M—Mudhol | R—Rabkavi | T—Tental. | (*) —non-native species (which are either introduced or invasive)

dominant components of dry deciduous forests of the district while species of Alysicarpus Desv., Crotalaria L., Indigofera L., Rhynchosia Lour., Senna Mill., Tephrosia Pers. are the dominant herbaceous legumes of the region. Kambar & Katrahalli (2016) reported 126 species of legumes which is the dominant family from Gadag District (adjoining district of Bagalkot), while Seetharam et al. (2000) in flora of Gulbarga District (region of northeastern Karnataka) also reported Fabaceae as the most dominant family. Rain shadow area and arid climatic conditions are favourable for farming several leguminous crops. Apart from this many leguminous trees are a source of timber and economically important products and many others are used as medicinal and ornamental plants.

The present work will be helpful to the forest officials, policy makers, teachers, students and local people for study and sustainable utilizations of legumes of Bagalkot District.

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Image 1. A—Bauhinia tomentosa L. | B—Piliostigma racemosum (Lam.) Benth.—C. Hardwickia binata Roxb.—D—Tamarindus indica L. | E—Adenanthera pavonina L.f.—F—Albizia amara (Roxb.) Boivin | G—Albizia lebbeck (L.) Benth. | H—Cassia fistula L. | I—Cassia javanica L. | J—Delonix elata (L.) Gamble | K—Dichrostachys cinerea (L.) Wight & Arn. | L—Guilandina bonduc L. | M—Libidibia coriaria (Jacq.) Schltdl. | N—Mimosa hamata Willd. | O—Mimosa pudica L. | P—Parkinsonia aculeata L. | Q—Samanea saman (Jacq.) Merr. © A–C—S.R. Yadav & D–Q—Jagdish Dalavi.
Image 2. A—Senna italica Mill. subsp. micrantha (Brenan) Lock | B—Vachellia farnesiana (L.) Wight & Arn. | C—Vachellia horrida (L.) Kyal. & Boatwr. | D—Abrus precatorius L. | E—Alysicarpus gamblei Schindl. | F—Alysicarpus hamosus Edgew. | G—Alysicarpus longifolius (Rottler ex Spreng.) Wight & Arn. | H—Alysicarpus monilifer (L.) DC. | I—Alysicarpus scarlosus (Spreng.) Thwaites | J—Alysicarpus tetragonolobus Edgew. | K—Butea monosperma (Lam.) Kuntze | L—Cajanus scarabaeoides (L.) Thouars | M—Cicer arietinum L. | N—Clitoria ternatea L. | O—Crotalaria bifora L.f. | P—Crotalaria hebecarpa (DC.) Rudd. | Q—Crotalaria hirsuta Willd. | R—Crotalaria juncea L. © A–J, L–R—Jagdish Dalavi & K—S.R. Yadav.
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Image 3. A—Crotalaria medicaginea Lam. | B—Crotalaria pallida Alton. | C—Crotalaria paniculata Willd. | D—Crotalaria pellita Bertero ex DC. | E—Crotalaria pusilla B.Heyne ex Roth | F—Crotalaria retusa L. | G—Cullen corylifolium (L.) Medik. | H—Eleotris rotleri Wight & Arn. | I—Flemingia strobilifera (L.) W.T.Alton | J—Glicidio sepium (Jacq.) Steud. | K—Grona triflora (L.) H.Ohashi & K.Ohashi | L—Indigofera arnottii (Kuntze) Peter G.Wilson | M—Indigofera astragalina DC. | N—Indigofera coerulea Roxb.— | O—Indigofera colutea (Burm.f.) Merr. | P—Indigofera glandulosa J.C. Wendl. | Q—Indigofera linifolia (L.f.) Retz. | R—Indigofera linnaei Ali | S—Indigofera tinctoria L. © A–S—Jagdish Dalavi.
Image 4. A—Indigofera trifoliata L. | B—Macroptilium lathyroides (L.) Urb.—| C—Mucuna pruriens (L.) DC. | D—Mundulea sericea (Willd.) A.Chev. | E—Pongamia pinnata (L.) Pierre | F—Pseudarthria viscosa (L.) Wight & Arn. | G—Pterocarpus marsupium Roxb.—| H—Pycnospora lutescens (Poir.) Schindl. | I—Rhynchosia cana (Willd.) DC. | J—Rhynchosia capitata (B.Heyne ex Roth) DC. | K—Rhynchosia hirta (Andrews) Meikle & Verdc. | L—Rhynchosia rufescens DC. | M—Rhynchosia suaveolens (L.f.) DC. | N—Sesbania aculeata (Schreb.) Pers. | O—Stylosanthes fruticosa (Retz.) Alston | P—Taverniera cuneifolia (Roth) Arn. | Q—Tephrosia purpurea (L.) Pers. | R—Tephrosia villosa (L.) Pers. | S—Vigna indica T.M. Dixit, K.V. Bhat & S.R. Yadav. | T—Zornia gibbosa Span. © A–H—S.R. Yadav & I–T—Jagdish Dalavi.
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