

## ETHNOBOTANICAL STUDIES ON USEFUL SHRUBS OF DISTRICT KOTLI, AZAD JAMMU & KASHMIR, PAKISTAN

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### Abstract

The ethnobotanical data on the shrubs of District Kotli, Azad Jammu & Kashmir, Pakistan was documented during 2007-2008 and 38 species of 36 genera belonging to 25 families were found useful in every day life of local inhabitants as medicinal, fuel, shelter, fodder/forage and in making agricultural tools. Most of the shrubs were noticed having more than one ethnobotanical uses. Family Rhamnaceae was recorded unique among all the families in having comparatively the highest number of species i.e., 4.

### Introduction

Plants are essential ingredients of healthier life because they provide us medicines, which are both effective and safe, without any side effect. Plants play a vital role in our lives more than animals mainly due to their extraordinary array of diverse class of biochemicals with a variety of biological activities (Cotton, 1996; Buckingham, 1999).

Ethnobotanical information on medicinal plants and their uses by indigenous cultures is useful not only in the conservation of traditional cultures and biodiversity, but also for community health care and drug development. This information is utilized as a guide for drug development under the assumption that a plant which has been used by indigenous people over a long period of time may have an allopathic application (Farnsworth, 1993).

Azad Jammu & Kashmir, Pakistan is rich in plant diversity because of the diversified habitats, such as lakes, rivers, streams, springs, nullahs, meadows, steep mountain slopes and roads, waste lands cultivated fields, etc. The present study was carried out to document the ethnobotanical data on the useful shrubs of District Kotli, that lies in between longitude 73° 6' to 74° 7' East and latitude 33° 20' to 33° 40' North (Topo sheet No. 43<sup>G</sup> /15). It is about 700m-1400m above the mean sea level and is bounded on the Eastern side by Occupied Kashmir, Western side by Rawalpindi (Pakistan), Southern side by Mirpur and Northern side by District Poonch. The population is 0.558 million, according to census 1998. Its area is 1862sq.km. The annual rainfall is 1227.91 mm, maximum during July to August, i.e. 306.93 mm and 256.53 mm, respectively, while low during winter. Thus average monthly rainfall is 102.32 mm (Anon., 2006). Humidity is low during the day time as compared to night. January, February, August and September are more humid months than May and June. District Kotli is divided into Kotli, Sehnsa and Nikyal Tehsils.

The ethnobotany of Chikar and allied areas of District Muzaffarabad was investigated by Saghir *et al.*, (2001) and 53 plant species belonging to 48 genera of 33 families were found useful mostly as medicinal, fuel, fodder, fruit, timber and vegetables. Similarly, in the present ethnobotanical study, it was noticed that the local inhabitants largely depended upon the local flora for food and health.

## Material and Methods

The socioeconomic and ethnobotanic information of the people of 20 villages of District Kotli viz., Khanara, Mohra, Panagh, Jandrot and Karela of Tehsil Nikyal; Holar, Khori, Prandan, Sehr Mandi and Sarsawah of Tehsil Sensa and Seri, Andralla Kotera, Phalni, Bandli, Brooth, Dahana, Dana, Anda, Khajurla and Saney Baney of Tehsil Kotli, was recorded through interviewing and filling in questionnaire from drug dealers, shopkeepers, timber dealers, fuel wood sellers, local hakims and farmers but priority was given to local elderly people and hakims who were the real users having a lot of information about the plants and their traditional uses. The plants were classified according to their economic value in that area (medicinal, fodder, vegetables, fencing, fruit, fuelwood and ornamental).

Plant specimens collected from the area were dried, pressed and mounted properly. Some of them photographed (Figs. 1&2). They were identified with the help of Flora of Pakistan Nasir & Ali (1970-1989), Ali & Nasir (1990-1992), Nasir & Rubina (1995) and Ali & Qaisar (1992-2007). The plant specimens were submitted to Dr. Sultan Ahmad Herbarium, GC University, Lahore, Pakistan after pasting voucher numbers.

## Results

Ethnobotanical uses were enumerated for 38 species of shrubs belonging to 36 genera and 25 families of angiosperms. The data collected from the local inhabitants depicted that these shrubs were in use since their forefather's time as: medicinal, fodder/forage, fuel, fruit, ornamentation, etc. It was observed that most of the shrubs of medicines uses such as skin cracks, blisters, antispasmodic, expectorant, fever, tumors, dysentery, scabies, itching, diarrhoea, epilepsy etc., were also having other common uses. Hence as a whole, 11 species (28.94%) were having multi uses, 10 (26.31%) with two usage and the remaining 17 (44.73%) having single usage. The plants were arranged in the alphabetical order of botanical name followed by family, local name and traditional uses with flowering period (Table 1).

## Discussion

Almost all the species of shrubs recorded for their ethnobotanical uses were found medicinally important. This data matches with that of Basu (1991) on the medicinal uses of Indian plants as well as Shinwari *et al.*, (2006) on the medicinal plants of Pakistan. The medicinal plants are necessary for the preparation of various drugs and curing diseases as stated by Qureshi *et al.*, (2007b). There are 50,000 registered hakims (herbal healers) in Pakistan (William & Zahoor, 1999). It has been found that traditional herbal medicines are cheaper and often accepted by many people. The younger generation is often adopting the allopathic medicines, thus the traditional knowledge on the medicinal plants and the preparation of medicines from them is only confined to the old people. The treasure of traditional knowledge on the medicinal plants is, therefore under threat. Most of the shrubs in District Kotli were found multipurpose. A similar study was conducted by Sardar & Khan (2009) in Shakargarh, District Narowal, Pakistan and recorded somewhat similar results. It was also found that most of the palatable shrubs were over grazed due to the wild and domestic grazers. People destroyed the forests very badly and exploited extensively the important shrubs for medicinal, fuel, thatching and other uses. It looked as if people were not plant lovers.

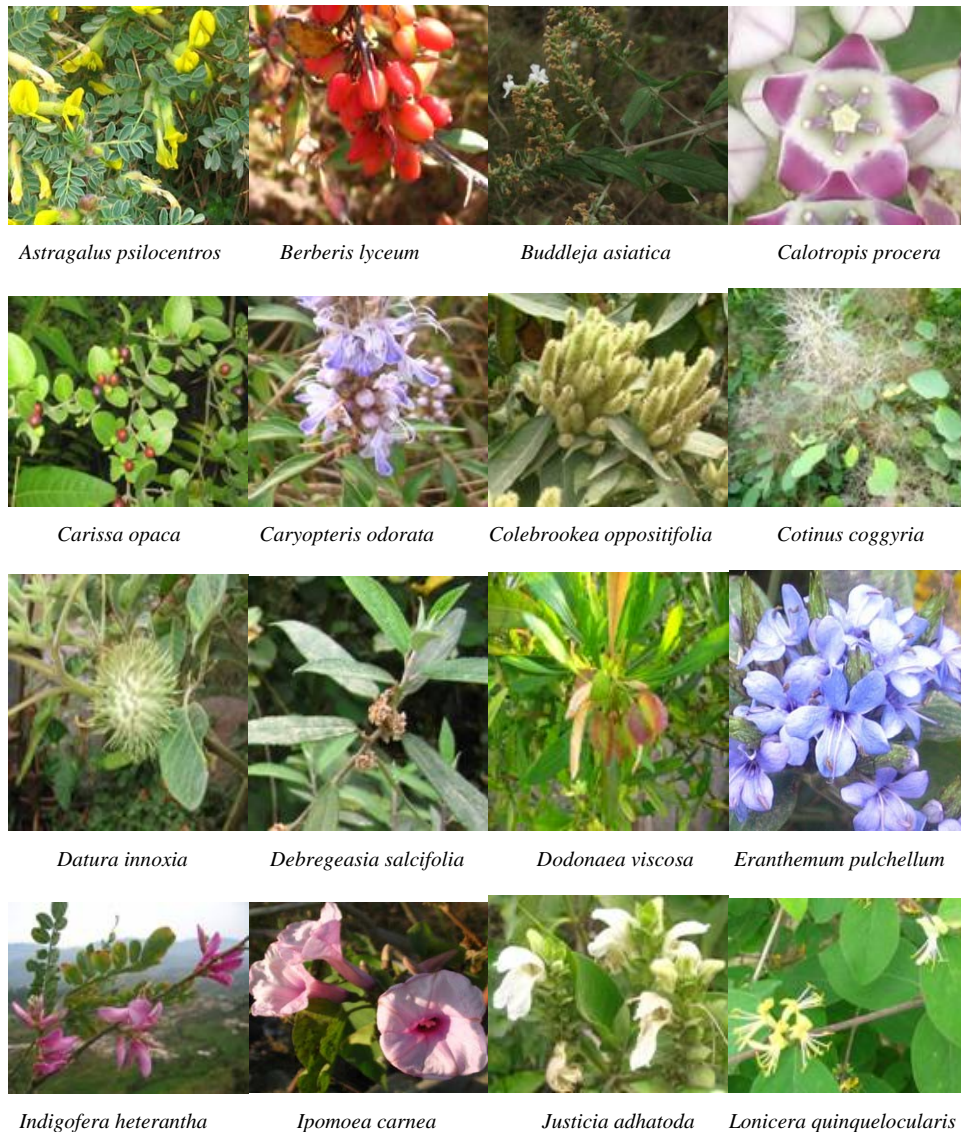


Fig. 1.

Over exploitation not only degraded the local vegetation and the disappearing of natural beauty but also made certain species endangered, for example, *Rhynchosia pseudo-cajan* Camb., *Ziziphus oxyphylla* Edgew and *Carissa opaca* Stapf ex Haines were disappearing day by day. Today certain direct causes such as cutting of shrubs for commercial and subsistence purposes and degradation and indirect causes such as insecure land tenure, poverty and population growth were also influencing the local vegetation. Therefore there is a dire need for the protection of this wealth of nature until it disappears on this planet.

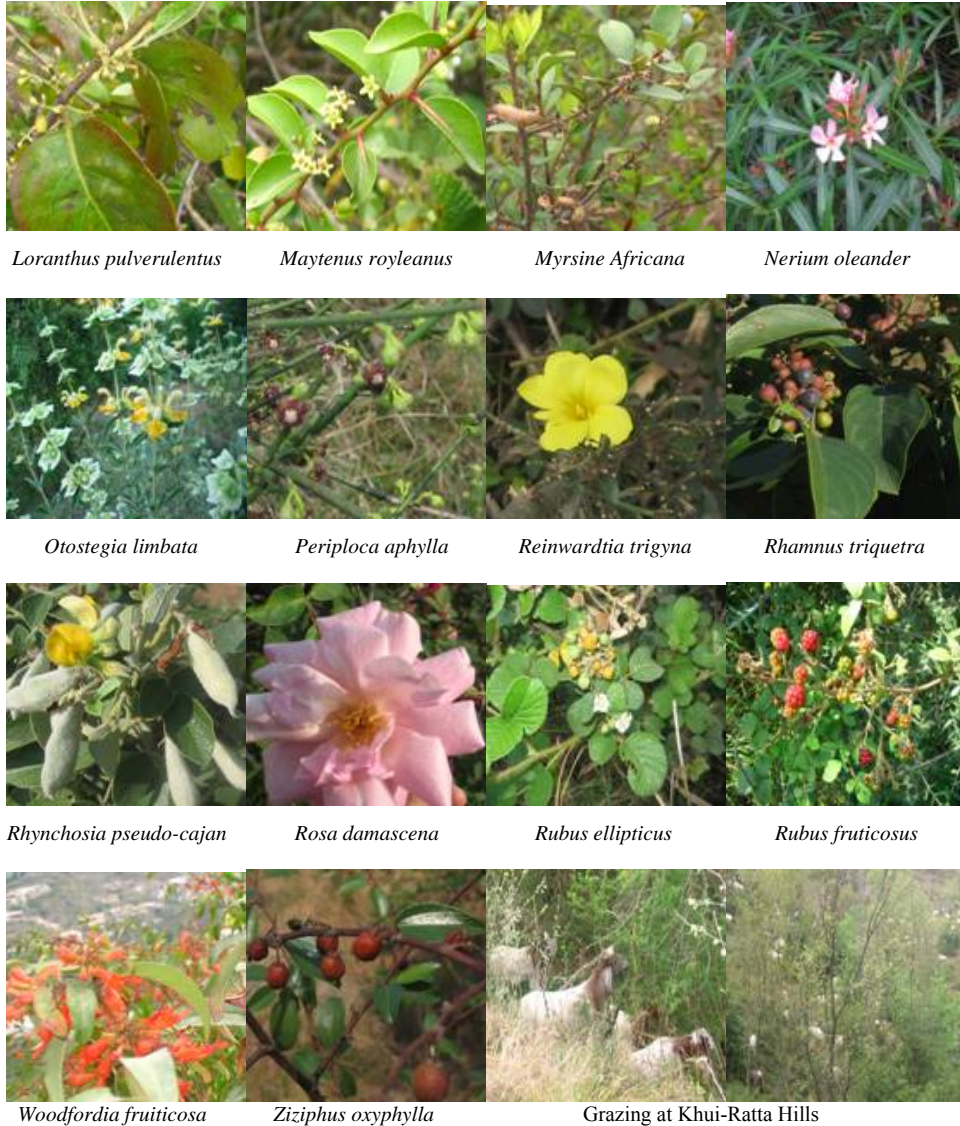


Fig. 2.

During recording the phenological behavior of plants from February to June and July to January, 2007, a relationship between climate and growing period of plants was noticed. This type of study is essential for regeneration, conservation and afforestation. The vegetation varied in different altitudes in a zone. The present study disclosed that the growing season started from February, there few shrubs initiated vegetative growth. The majority of shrub species (68.42%) flowered from February to June, 21.05% flowered during July to January and 10.5% flowered throughout the year and the flowering reached to the peak during April. The phenological studies by Qureshi *et al.* (2007a) in Sudhan Gully and Ganga Chotti Hills, District Bagh, Azad Kashmir reported similar findings.

Table 1. Ethnobotanical uses of Shrubs of District Kotli, Azad Jammu &amp; Kashmir.

Species	Family	Local name	Traditional local uses and flowering period
1. <i>Astragalus psilocentros</i> Fisch.	Papilionaceae	Tindhi	Leaves are palatable and used as fodder for goat and sheep. Fresh leaves are grind and used for stomach problems such as ulcer. Dried plant is used as fuel. <i>Fl. Per.</i> March-May ( <i>Pl. 1</i> ).
2. <i>Berberis lyceum</i> Royle	Berberidaceae	Komal	Decoction of roots and stem barks is useful in dyspepsia, jaundice and other liver diseases. Fruits are edible and also used for sore throat. Roots and stem barks are tonic. <i>Fl. Per.</i> April-June ( <i>Pl. 1</i> ).
3. <i>Buddleja asiatica</i> Lour.	Buddlejaceae	Banna, Batti	Leaves, seeds and roots are purgative. The seeds are used as external application for skin diseases. The dried plant is also used as fuel. <i>Fl. Per.</i> February-April ( <i>Pl. 1</i> ).
4. <i>Calotropis procera</i> (Ait.) Ait. f.	Asclepiadaceae	Ak	Whole plant extract is applied on dog bite. Latex is commonly used for ring worm and skin diseases. The milky juice (latex) is toxic. <i>Fl. Per.</i> Throughout the year ( <i>Pl. 1</i> ).
5. <i>Carissa opaca</i> Stapf ex Haines	Apocynaceae	Garanda	Leaves are palatable for goat and sheep. Fruit is edible and blood purifier. Stems and roots are used as fuel. <i>Fl. Per.</i> April-June ( <i>Pl. 1</i> ).
6. <i>Caryopteris odorata</i> (D. Don) B. L. Robinson	Verbenaceae	Path geri	Powdered leaves and flowers are used in diabetic foot ulcer, tumors and wounds. <i>Fl. Per.</i> February-April ( <i>Pl. 1</i> ).
7. <i>Cassia occidentalis</i> L.	Caesalpiniaceae	Kaswandi, Talwar Phali	Leaves, seeds and roots are purgative. The seeds are used as external application for skin diseases. <i>Fl. Per.</i> October-March.
8. <i>Colebrookea oppositifolia</i> Smith.	Labiatae	Bansa Siah	Leaves applied on wounds and bruises and roots are used in epilepsy. <i>Fl. Per.</i> January-April ( <i>Pl. 1</i> ).



Table 1. (Cont'd).

Species	Family	Local name	Traditional local uses and flowering period
9. <i>Cotinus coggyria</i> Scop.	Anacardiaceae	Bhan	Leaves are used for the treatment of anemia, hepatitis, bacterial and fungal attack. Dried plant is used as fuel. <i>Fl. Per.</i> April-May ( <i>Pl. 1</i> ).
10. <i>Datura innoxia</i> Mill.	Solanaceae	Datura	Leaves are used as repellent and vermicide. Fruit is used to heat up the buffalos. Seeds are grind and cooked in mustard oil to cure scabies. <i>Fl. Per.</i> May-October ( <i>Pl. 1</i> ).
11. <i>Debregeasia salcifolia</i> (D. Don) Rendle	Urticaceae	Sindhari	Leaves and fruits are palatable for goat and sheep. Wood is useful for fuel purposes. Fiber obtained from the stem barks are used to make ropes. <i>Fl. Per.</i> March-June ( <i>Pl. 1</i> ).
12. <i>Dodonaea viscosa</i> (L.) Jacq.	Sapindaceae	Sanatha	Stem barks are anthelmintic and astringent. Leaves are used to heal wounds and cracked skin. Wood oil is used for toothache. Dried plant is used as fuel. <i>Fl. Per.</i> January-March ( <i>Pl. 1</i> ).
13. <i>Eranthemum pulchellum</i> Andrews	Acanthaceae	Neeli Buti	Leaves boil in mustard oil and applied on skin cracks and blisters. <i>Fl. Per.</i> February-March ( <i>Pl. 1</i> ).
14. <i>Euphorbia royleana</i> Boiss.	Euphorbiaceae	Danda Thor	It is used for fencing the fields. <i>Fl. Per.</i> Summer season.
15. <i>Hypericum oblongifolium</i> Choisy	Guttiferae	Pinli	Powdered leaves and fruits are useful in prolepses of anus and uterus. It is also used in diarrhea. <i>Fl. Per.</i> March-April.
16. <i>Indigofera heterantha</i> Wall. ex Brandis	Papilionaceae	Hiran Chari, Kohrr	Powdered leaves and flowers are useful for scabies and diabetes. <i>Fl. Per.</i> April-May ( <i>Pl. 1</i> ).
17. <i>Ipomoea carnea</i> Jacq.	Convolvulaceae	Jangli Bhaikar	Leaves paste is applied to cure skin irritation in toes. It is also used as a hedge plant and fuel species. <i>Fl. Per.</i> July-November ( <i>Pl. 1</i> ).
18. <i>Isodon rugosus</i> (Wall. ex Benth.) Codd.	Labiatae	Chitta Manja	Powdered leaves are useful in digestive problems. Whole plant is used as fuel species. <i>Fl. Per.</i> March-October.

Table 1. (Cont'd.).

Species	Family	Local name	Traditional local uses and flowering period
19. <i>Jasminum humile</i> L.	Oleaceae	Peeli Chambeli	Roots decoction is used for ring worms. Flowers are used as astringent and tonic. <i>Fl. Per.</i> April-June.
20. <i>Justicia adhatoda</i> L.	Acanthaceae	Bhaikar	Leaves, barks and roots are used for wound infections. Leaves decoction is antispasmodic, expectorant and powerful abortifacient. <i>Fl. Per.</i> July-October ( <i>Pl. 1</i> ).
21. <i>Lonicera quinquelocularis</i> Hardwicke	Caprifoliaceae	Phut	The powdered leaves are used for healing the wounds. The plant is also used as a fuel species. <i>Fl. Per.</i> April-July ( <i>Pl. 1</i> ).
22. <i>Loranthus pulverulentus</i> Wall.	Loranthaceae	Parvikh, Grunu	Leaves juice is used for diabetes. Leaves powder have wound healing properties. <i>Fl. Per.</i> December-February ( <i>Pl. 2</i> ).
23. <i>Maytenus royleanus</i> (Wall. ex Lawson) Cuf.	Celastraceae	Ptakh	Root extract is abortifacient. Leaves are palatable for goat and sheep. Dry plant is used as fuel species. <i>Fl. Per.</i> Winter season ( <i>Pl. 2</i> ).
24. <i>Myrsine africana</i> L.	Myrsinaceae	Gugul	Leaves are used as blood purifier. Fruit is anthelmintic, laxative and used in dropsy. <i>Fl. Per.</i> March-May ( <i>Pl. 2</i> ).
25. <i>Nerium oleander</i> L.	Apocynaceae	Gandeera	Leaves paste is applied externally on skin diseases. The plant is ornamental but toxic. Leaves extract is also used as repellent of pests in crops. <i>Fl. Per.</i> April-October ( <i>Pl. 2</i> ).
26. <i>Orostegia limbata</i> (Benth.) Boiss.	Labiatae	Chitti Pataki	Leaves are used for eye diseases. It is also used as a hedge plant and fuel species. <i>Fl. Per.</i> April-May ( <i>Pl. 2</i> ).
27. <i>Periploca aphylla</i> Dene.	Asclepiadaceae	Burya, Batta	Decoction of bark is purgative and stomachic. Milky juice is useful for fever, pus blisters and tumors. <i>Fl. Per.</i> March-May ( <i>Pl. 2</i> ).
28. <i>Reinwardtia trigyna</i> (Roxb.) Planch.	Linaceae	Basant	Fresh leaves grind to make paste and applied on wounds for healing in cattle. <i>Fl. Per.</i> February-May ( <i>Pl. 2</i> ).

Table 1. (Cont'd.).

Species	Family	Local name	Traditional local uses and flowering period
29. <i>Rhamnus triquetra</i> (Wall.) Brandis	Rhamnaceae	Clader	Leaves and fruit extract is useful for hemorrhagic septicemia. <i>Fl. Per.</i> July-August ( <i>Pl. 2</i> ).
30. <i>Rhynchosia pseudo-cajan</i> Camb.	Papilionaceae	Lahrr	Leaves are used as tonic and stomach disorders. <i>Fl. Per.</i> Throughout the year ( <i>Pl. 2</i> ).
31. <i>Ricinus communis</i> L.	Euphorbiaceae	Hermoli	Leaves are emetic, poisonous and purgative. Poultice is applied to swellings. <i>Fl. Per.</i> Throughout the year.
32. <i>Rosa damascena</i> Miller	Rosaceae	Ghulab	Gulucand is made from petals of rose mixed with sugar and is useful for constipation, liver disorders and tonic for human and cattle. <i>Fl. Per.</i> Throughout the year ( <i>Pl. 2</i> ).
33. <i>Rubus ellipticus</i> Smith	Rosaceae	Peela Akhra	Fruit is edible, carminative and tonic. It is used as a hedge plant for bordering the fields. <i>Fl. Per.</i> April-August ( <i>Pl. 2</i> ).
34. <i>Rubus fruticosus</i> Hook.	Rosaceae	Akhra	Fruit is edible, carminative and tonic. It is used as a hedge plant for bordering the fields. <i>Fl. Per.</i> March-May ( <i>Pl. 2</i> ).
35. <i>Sageretia thea</i> var. <i>brandrethiana</i> (Aitch.) Qaiser & Nazim	Rhamnaceae	Meva	Fruit is edible and tonic. Leaves are palatable for goat and sheep. Woody branches are used as fuel. <i>Fl. Per.</i> July-August.
36. <i>Woodfordia fruticosa</i> (L.) S. Kurz	Lythraceae	Tahvi	Leaves are palatable for goats and sheep and also used for making tea. Dried plant is used as fuel. <i>Fl. Per.</i> April-May ( <i>Pl. 2</i> ).
37. <i>Ziziphus nummularia</i> (Burm. f.) Wight & Arn.	Rhamnaceae	Jhand	Leaves are used to cure scabies. Leaves are also used as fodder for goat and sheep. Dried plant is used as fuel. <i>Fl. Per.</i> March-June.
38. <i>Ziziphus oxyphylla</i> Edgew.	Rhamnaceae	Mamyanu	Leaves are palatable for goat. Powdered leaves and roots are used in diabetes and jaundice. Fruit is edible. Dried plant is used as fuel. <i>Fl. Per.</i> June-September ( <i>Pl. 2</i> ).



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