

## STUDY OF FAMILY MALVACEAE OF RAIPUR

P. PRAGYA DIPIKA<sup>a1</sup>, POONAM DEWANGAN<sup>b</sup> AND V. ACHARYA<sup>c</sup>

<sup>a</sup> Govt. D.B. Girls P.G. College, Raipur, Chhattisgarh, India

<sup>b</sup> Govt. D.B. Girls P.G. College, Raipur, Chhattisgarh, India

<sup>c</sup> Department of Botany, Govt. D.B. Girls P.G. College, Raipur, Chhattisgarh, India

### ABSTRACT

The present work focuses on identification and study of plants of an Angiosperm family commonly known as Mallow Family or Malvaceae. Worldwide there are about 115 genera and 1500 species The Family is characterized by large, showy variously colored flowers ideal for ornamental purpose. Study site is Raipur city & areas in vicinity. Period of study was from August 2015-2016. Method used for the work is extensive and intensive field survey followed by identification and collection of plant specimen. During the survey about 18 Plant species are listed down of which 4 are herbs, 12 are Trees and only 2 plants are trees. About 14 Plants are cultivated and 4 plants are found wild. Most of the plants are terrestrial and some are found in marshy places. (*Malvastrum tricuspdatum* L.) Plants of this family show diverse life forms. Habit and habitat of plants varies from plant to plant. Some of the plants are annual herb like *Sida cordifolia* or perennial shrub like *Hibiscus rosa-sinensis* or tree like *Gossypium arboreum*. Besides being extensively used for ornamental purpose (*Hibiscus mutabilis*, *Hibiscus rosa -sinensis*), plants of this family also yields food (e.g. *Abelmoschus esculentus*, *Hibiscus sabdariffa*), oil, commercial cotton (*Gossypium hirsutum* L.) fibre (*Hibiscus cannabinus* L.), timber for making musical instrument boat, furniture etc (*Thespesia populnea* L), Medicine(*Sida cordifolia* L.). These plants are cultivated worldwide due to their economic importance. Some wild plants of this family are found to be medicinally important(*Sida acuta*, *Sida cordifolia*, *Abutilon indicum*, *Urena lobata*) and are used in traditional system of medicine. Therefore these wild plants should also be taken into consideration for their conservation and utilization.

**KEYWORDS:** Malvaceae, Raipur, Gossypium

The present work focuses on study of Plants of one of angiosperm family Malvaceae, also known as Mallow family. The family comprises about 1500 species and 115 genera worldwide (Sivarajan & Pradeep 1996). Family is characterised by Large, showy variously coloured flowers ideal for ornamental for tropics and subtropics. One of distinguishing character include presence of various types of trichomes. Plants of the Mallow family can be herb (*Abuliton*, *Sida*), shrub (*Hibiscus*, *Gossypium*), or Tree (*Gossypium arboreum*) with mucilagenous sap in all parts. Different taxonomist classified the family into tribe from time to time Bentham and Hooker in 1862 distinguished four tribes in Malvaceae. Later on Paul and Nayar (1988) and Paul (1993) recognise five tribes in Indian Malvaceae. Plants of this fammily are commercialy important, Yields fibres, medicines and vegetables.

Malvaceae falls under Identifying characters of this family include Plants usually with tufted or stellate hairs Mucilage is found in roots, stem, leaves and flowers of some species which gives it a slimy texture. Different types of trichomes are known to be present. Fibres present in stem, leaves simple, alternate, palmately lobed, dissected or digitately compound, Free lateral stipules present, petioles usually pulvinate at both ends, stipules present, flowers hermaphrodite, polypetalous, actinomorphic, Solitary inflorescence, sepals 5, Basally

connate calyx, Staminal tube adnate to petals at base, stamens numerous monoadelphous, monotheous. Carpels as many as sepals, long slender like style carpels 5 or many, axile placentation, Fruit schizocarp or berry

### STUDY AREA

Raipur is located near the center of vast and fertile Chattisgarh plain situated between 22°33'N and 21°14'N latitude and 82°6'E and 81°6'E longitude. It is divided into two major physical divisions viz, the chattisgarh plain and Hilly areas. The Mahanadi river flows to east of city of Raipur and thick forest at south. It is rich and diverse topography of Chattisgarh as situated near kharun river. The forest of the state falls under two major forest types i.e Tropical Moist deciduous and Dry deciduous forest.



Map of Raipur district showing four blocks

## CLIMATE

Raipur experience tropical humid and dry climate. From March to June it is hot. Sometimes, the temperature rises above 48°C. The remaining part of the year the temperature stay moderate. Raipur gets about 1,300 mm of rain on an average, mostly during the monsoon season., from July to early October. In winter temperature falls upto 8°C. Winters are quiet pleasant here.

## SOIL AND VEGETATION

The area of Raipur is about 226km<sup>2</sup>, elevation 298.15m. The soil of Raipur is rich and known for its red colour, soil in riverine plain is quite fertile. The vegetation of Raipur includes large number of Trees, crops like Paddy, maize, different types of pulses and many other crops.

## MATERIALS AND METHODS

Survey is done to locate and identify the members of Malvaceae in Raipur city during the period of August 2015 to March 2016 by dividing Raipur district in four blocks. Field visits and data collection were done once in every month. Observations made was noted down in a field notebook with information about habit, habitat, morphological characters, flower color, vernacular name etc of the Plant. Plants were collected, photographs are taken in field and identified by the flora of Hooker (1872-97), Oommachan (1977) Verma pant & Hanfi (1984), Khanna and Kumar (2001), Shukla (1988), Bor and Raizayda (1954), Alverson and Nyffeler (1998), Bayer (1999). Plants so collected are pressed and herbarium was prepared following techniques of Jain and Rao(1977). Uses of Plants (if known) were also noted down and information was gain referencing literatures.

## OBSERVATION

Following plants are identified and studied during the work:

Table 1: List of Plant

S. no	CommonName	Vernacular Hindi-Name	Botanical Name	Habit	Cultivated/ Wild
1	Okra	Bhindi	<i>Abelmoschus esculentus</i> (L.) Moench.	Shrub	Cultivated
2	Musk mallow	Muskdana	<i>Abelmoschus moschatus</i> (L.) Medic.	Herb	Cultivated
3	Hairy Indian mallow	Kanghi	<i>Abutilon indicum</i> (Link) Sweet.	Shrub	Wild
4	Holly hock	Gulkhaira	<i>Althaea rosea</i> Cav.	Shrub	Cultivated
5	Cotton	Kapas	<i>Gossypium hirsutum</i> L.	Shrub/ tree	Cultivated
6	Kenaf	Patwa bhaji	<i>Hibiscus cannabinus</i> L.	Shrub	Cultivated
7	Changable rose	Sthalkamal	<i>Hibiscus mutabilis</i> L.	Shrub	Cultivated
8	China rose	Lal gudhal	<i>Hibiscus rosa sinensis</i> L.	Shrub	Cultivated
9	Roselle	Amari bhaji	<i>Hibiscus sabdariffa</i> L.	Shrub	Cultivated
10	Coral hibiscus	Latkan	<i>Hibiscus schizopetalus</i> (Dyer) Hook.f	Shrub	Cultivated
11	Sea hibiscus	Bola	<i>Hibiscus tiliaceus</i> L.	tree	Cultivated
12	High mallow	Malwa	<i>Malva sylvestris</i> L.	Shrub	Wild
13	Sleeping hibiscus	Mirchi gudhal	<i>Malvaviscus arboreus</i> Dill. ex Cav.	Shrub	Cultivated
14	False mallow	Kharenti	<i>Malvastrum tricuspidatum</i> L.	Shrub	Wild
15	Common wireweed	Mahabala	<i>Sida acuta</i> Burm. f.	Herb	Wild
16	Heart leaf mallow	Baraira, bala	<i>Sida cordifolia</i> L.	Herb	Wild
17	Arrowleaf sida	Atibala	<i>Sida rhombifolia</i> L.	Herb	Wild
18	Amagong	---	<i>Thespesia lampus</i> Lav.	Shrub	C/W
19	Portia tree	Paras papal	<i>Thespesia populnea</i> (L.) Sol. ex Correa.	Tree	Cultivated/wild
20	Caesar weed	Uletkhambal	<i>Urena lobata</i> L.	herb	Wild

**Action & Uses of Plants of Malvaceae reported in the area:**

- *Abelmoschus esculentus* (L.) Moench.: - diuretic, demulcent, used as vegetable, okra is common mucilage containing vegetable. Also capsule controls diabetes.
- *Abutilon indicum* (Link) Sweet.- febrifuge, anthelmintic, diuretic - stem yields fibre used for making rough cordage.
- *Althaea rosea* Cav.: -demulcent, emollient, antitussive – respiratory and gastrointestinal diseases, Ornamental Plant in gardens.
- *Gossypium hirsutum* : - demulcent, laxative - Yields commercial cotton, Seeds yields oil which is used to make vanaspati ghee and in food processing, oil cake used as manure and fodder for cattle.
- *Hibiscus cannabinus* L.: - seeds analgesic, leaves purgative - yields fibre stronger than jute.
- *Hibiscus mutabilis* L.- leaves & flowers expectorant, anodyne – used as Ornamental plant
- *Hibiscus rosa sinensis* L.- emmenagogue, laxative - used as popular landscape plant. Flowers used in alopecia, burning sensation, diabetes, menstrual disorders, piles. Flowers also used in herbal shampoos and hair oils, attracts wide variety of insects and butterflies. . Used in socio religious ceremony.
- *Hibiscus sabdariffa* – digestive, laxative, antiscorbutic- is grown for its Vitamin C rich cayx. The fleshy red calyx is used in the preparation of jams, jellies, and cold and warm teas and drinks. Used as green leafy vegetable.
- *Hibiscus schizopetalus* (Dyer) Hook.f – ornamental plant.
- *Hibiscus tiliaceus* : used as shade tree, leaves used as fodder.
- *Malva sylvestris* L.- Emollient, antitussive, pectoral- used in dry cough and cold.
- *Malvaviscus arboreus* Dill. ex Cav. - flowers yields dye
- *Malvastrum tricuspdatum* L. – ornamental plant
- *Sida acuta* Burm. f.- Root Astringent, cooling, leaves demulcent – used in elephantiasis
- *Sida cordifolia* : - leaves demulcent, febrifuge. Used in traditional system of medicine.(Roots used in ayurvedic preparation for rheumatism). stem yields fiber used for making rough cordage.

- *Sida rhombifolia* L – stem demulcent, emollient, plant febrifuge - used in some ayurvedic preparation, pulmonary tuberculosis, oedema
- *Thespesia lampus* Lav.- leaves used in diseases like Gonorrhoea, Syphilis, Jaundice, Inflammation, Hyperacidity,
- *Thespesia populnea* : leaf anti-inflammatory, Roots, fruit and leaf used in psoriasis, chronic dysentery, also used in making furniture, musical instruments, fancy works, boat., roadside ornamental plant.
- *Urena lobata*: seed extract used in traditional medicine preparation as anti- diarrheal agent.

**Invasive alien species reported in the area:**

**i. *Sida acuta* Burm. f.**

Nativity Trop. America

Distribution in India: Throughout

Propagation: Seeds

*Fl & Fr: July – December*

**ii. *Urena lobata* L.**

Nativity: Trop. Africa

Distribution in India: Throughout

Propagation: Seeds

*Fl & Fr: July – December*

**RESULTS AND DISCUSSION**

During the survey total 20 plants belonging to Malvaceae are found, in which 2 are trees, 13 shrubs, 5 are herbs. Number of cultivated plants are 15 while the number of wild plants are only 5 as the family is well known for its showy ornamental flowers. Most of the cultivated plants of this family are shrubs which are of soil binders. Among the plants studied 7 are ornamental plants (e.g. *Hibiscus rosa sinensis*), 4 are edible plants(e.g. *Abelmoschus esculentus*), 7 are plants of economic importance which yield fibre, oil, commercial cotton (*Gossypium hirsutum*), 5 are plants of medicinal importance (e.g.- *Sida cordifolia*). Out of 19 plants of Malvaceae reported in the area two species are invasive alien plant species *Sida acuta* Burm. f. and *Urena lobata* L.(Table 1,Chart 1& 2 and Figure 1 to 6)

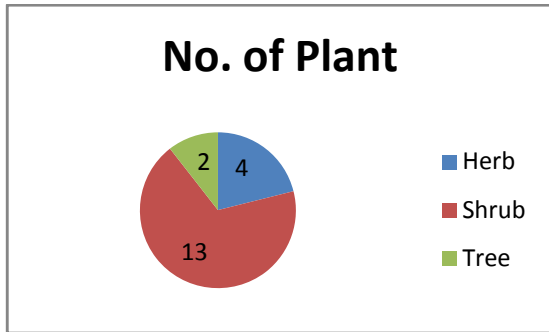


Chart 1: showing number of plants

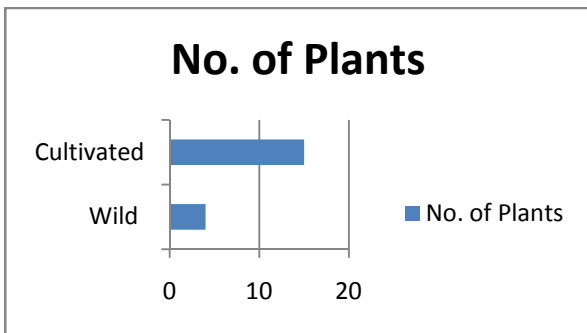


Chart 2: Showing number according to their habit no. of wild & cultivated plant.

Photographs of Some of Plants Collected during the Survey :



Figure 1: *Gossipium hirsutum* L. (cotton)



Figure 2: *Malvaviscus arboreus* Cav.



Figure 3: *Malva sylvestris* L.







Figure 4, 5 & 6: *Sida* Species

## CONCLUSION

The plants of Mallow family show diversity in their life forms ranging from wild to cultivated and herbs to shrubs and trees. *Abutilon indicum* and *Malvestrum tricuspidatum* found on wasteland form major part of vegetation in winter. *Sida* spp and *Malwa* spp are found in marshy places of wasteland. Among which *Malwa* and *Abutilon* are weeds. *Abelmoschus esculantus* is vegetable. In addition to the ornamental qualities, this family also marks its presence in yielding fibre, medicine, oil, raw material for textile industry. The study would update data about the plants of the family. About 35 varieties of *Hibiscus rosa sinensis* are cultivated in the area. The study area reported two invasive alien species i.e. *Sida acuta* Burm. f. and *Urena lobata* L. The effect of these species on other endemic species is also a matter of concern and should be taken into consideration.

There are thousands of interesting and unusual wild plants which have become rare and endangered species in the past 30 years due to habitat destruction. Conservation of these species considering their uses

should appreciate. Revision of information and knowledge of wild plants in addition to the cultivated ones is also necessary for their conservation aspects.

## ACKNOWLEDGEMENT

We would like to express our sincere gratitude to Dr. M.L. Naik (retd. Professor SOS, life Sciences Pt. Ravishankar Shukla University, Raipur & NCERT co-ordinator, RSU) and to Dr. Arvind Girokar, (Principal, Govt. D.B. Girls P.G. College, Raipur [C.G.]) for their guidance and support.

## REFERENCES

- Baum D.A., Alversion W.S. and Nyffeler R., 1998. "A durian by any other name: taxonomy and nomenclature of the core Malvales". *Harvard Papers in Botany*, **3**: 315-330.
- Bayer C., 1999. " Support for an expanded family concept of Malvaceae within a recircumscribed order Malvales: a combined analysis of Linnean Society, **129**(4): 267-303.
- Bor N.L. and Raizayda M.B., 1954. *Some beautiful Indian Climbers and Shrubs*, The Bombay Natural history Society, Bombay India.
- ENVIS Centre on Floral Diversity Hosted by Botanical Survey of India, Kolkata, West Bengal.
- Hooker J.D., 1872-97. *The Flora of British India*, Vol I, pg 317-353 Reeve & Co., London, England.
- Jain S.K. and Rao R.R., 1977. *A Handbook of Field and Herbarium Methods*. Today and tomorrow publisher, New Delhi. ISBN-10-0880651393.
- Jindal S.L., 1987. *Flowering Shrubs in India*, Director Publications Division Ministry of Information and Broadcasting Govt of India, New Delhi.
- Khanna K.K., Jha A. K., Kumar A. and Murti S.K., 2001. *Endemic and Rare Plants of C.G.* *Bulletin of Botanical Survey of India*, **46**(1-4): 77-138.
- Khare C.P., 2007. *Indian Medicinal Plants: An Illustrated Dictionary*. Springer science + Media, LLC ISBN- 978-0-387-70637-5.
- Oommachan M., 1977. *The flora of Bhopal* Published by J.K. Jatin Brothers India, Page no. 59 to 69.
- Reddy C.S., Bagyanarayana G., Reddy V. and Raju S.V., 2008. *Invasive Alien Flora Of India*. National

Biological Information Infrastructure, US  
Geological Survey, USA.

Sivaranjan V.V. and Pradeep A.K., 1996. Malvaceae of  
Southern Peninsular India: A Taxonomic  
Monograph. Daya Publishing House Delhi  
ISBN-81-7035-152-9

Verma D.M., Pant P.C. and Hanfi M.I., 1985. Flora of  
Raipur, Durg and Rajnandgaon. Pg. 40-51  
Botanical survey of India, Howrah.