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Shilpa Tiwari

Research Scholar, Department
 of Botany, Govt. Girls P.G.
 College, Rewa, Madhya
 Pradesh, India

Kumud Sandya

Assistant Professor,
 Department of Botany,
 Govt. Girls P.G. College,
 Shahdol, Madhya Pradesh,
 India

Corresponding Author:

Shilpa Tiwari
 Research Scholar, Department
 of Botany, Govt. Girls P.G.
 College, Rewa, Madhya
 Pradesh, India

A survey on floristic diversity of Euphorbiaceae family from Surguja district of Chhattisgarh, India

Shilpa Tiwari and Kumud Sandya

Abstract

There is no detailed information about Angiosperms especially members of family Euphorbiaceae of Surguja district (C.G.). These plants are very important for food value, fodder, biofuel, medicinal and of ornamental value etc. Some of the plants members identified and noted in the study area by monthly trips during 2020-2021 were in all, 18 species under 10 genera which were recorded. These species of Euphorbiaceae were *Acalypha indica* L (Khokali), *Acalypha wilkesiana* Muell, *Croton bonplandianum* Baill, *Embllica officinalis* Gaertn (Amla), *Euphorbia milii* Ch.des, *Euphorbia pulcherrima* Willd., *Euphorbia hirta* L (Badi dudhi), *Euphorbia thymifolia* L (Dudhi), *Jatropha gossypifolia* L (Ratanjot wild), *Jatropha curcas* Jame (ratanjot), *Manihot esculenta* L., *Pedilanthus tithymalooides* L., *Putranjiva roxburghii* Wall, *Phyllanthus niruri*, *Ricinus communis* Linn, *Euphorbia caducifolia* Haines (Thor), *Euphorbia granulata* Forssk, *Phyllanthus reticulatus*. This shows economic importance, great diversity and richness in the family Euphorbiaceae of the selected area under study. The district of Surguja has a very rich flora exhibiting diversity of flowering plants. The data collected includes habit, leaf types, fruit types and flowering and fruiting period in the above members of the family Euphorbiaceae in addition to their formal identifications.

Keywords: Euphorbiaceae, district Surguja, habit, flowering and fruiting

Introduction

Euphorbiaceae, the Spurge family, is one of the most complex, large and diverse family of Angiosperms (Wurdack *et al.* 2004) ^[1] with 334 genera (Webster, 1994) ^[2] and over 8000 species in the world (Radcliff-Smith, 2001) ^[3]. According to others, the family comprises of about 322 genera and 8900 species in the world. In India, 73 genera and 410 species have been reported by Divya *et al.* (2011) ^[4]. Most Spurges are herbs, but some, especially in the tropics, are shrubs or tree. Some are succulents and resemble cactic. This family occurs mainly in the tropics, in the several types of vegetation and habitats, with the majority of the species in the Indo Malayan region and tropical, regions of India.

The Euphorbiaceae family contains a large variety of phytotoxins, a toxic substances produced by plants. A milky latex is a characteristic of the Euphorbiaceac. It includes trees, shrubs, herbaceous timers. Life Span is perennials and annuals. This family easily recognized by their infloresconces cyathium. Some systemic surveys work in India is available on this family Bhatt and Bedi (1969) ^[5], Sabris and Bhatt (1975) ^[6], Shah (1978) ^[7], Yogi (1970) ^[8], Matreya (2015) ^[9] and Naidu (2019) ^[10] but detailed literature around Rohilkhand and Raigarh Region on Euphorbiaceae is almost not available. Hence the present work reported enumeration and systematic survey of floristic diversity of family Euphorbiaceae was carried out from the mention below.

Study area

Surguja district is a district of the Indian state of Chhattisgarh. The district is one of the oldest districts of Chhattisgarh. The headquarters of the district is Ambikapur. It is a tribal dominated district. It lies between 23°37'25" to 24°6'17" north latitude and 81°34'40" to 84°4'40" east longitude. 244.62 kilometers (152.00 mi) long east to west and 67.37 kilometers (41.86 mi) broad north to south, this land has as area of about 5,732 square kilometres (2,213 sq mi). In winters temperature dips to below 5 °C (41°F) and in summers it rises above 46 °C (115°F). About 90% of the working population depends on agriculture, in which 50.36% of working population are of cultivated and about 12.77% of the region are

agriculture labourers. The uplands and high lands are mostly covered with rocky wastelands, infertile soil, woods and

scrubs, sloppy and forested area.

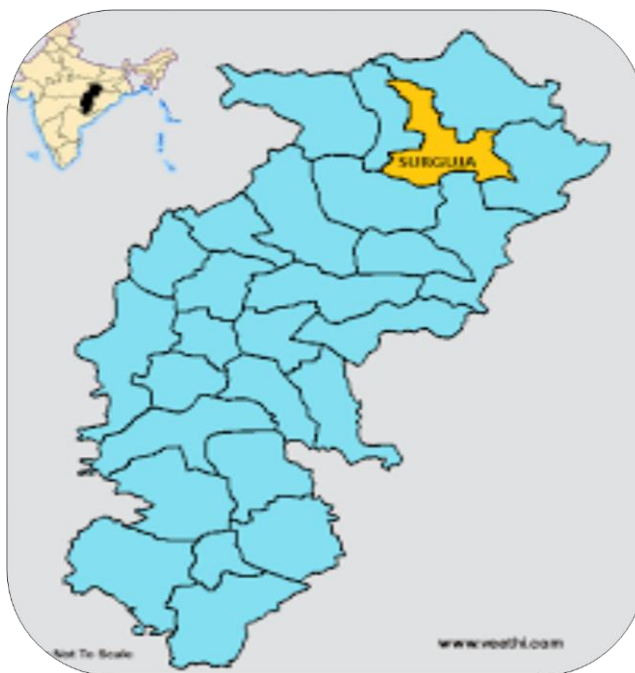


Fig 1: Showing Surguja district in India

Material and Methods

The study on angiosperms of family Euphorbiaceae from the Surguja District of C.G. India is based on the results obtained from both extensive and intensive studies of the vegetation of area under study. Field survey was carried out for collection of plants. Identification of plant species during field work was done by compiling different flora available and authenticated by experts from university department and research institutes.

This piece of work is survey based. Surveys were made for

two years (2020-2021) to collect and identify the flowering plants. The collected plants were categorized, identified Habit, Foliar morphology, fruit type and flowers and fruiting time period were noted for each (Table-1) Showing floral diversity.

Results and Discussion

The list of the collected plants together with the collected information is given in Table-1.

Table 1: Collected plants together with the collected information

Species	Annual/Perennial	Herbs/Shrubs/Tree/Runner	Leaves	Fruits type	Flowering and Fruiting
<i>Manihot esculenta</i> L	Perennial	Shrub	Across palmately 3-7 lobed oblong-obovate or oblanceolate, acuminate glaucous minutely puberulous onvers beneath stipules ovate triangular	Capsule across ellipsoid, 6winged dehiscent into 2 valves.	July Sept.
<i>Euphorbia milli</i> Ch.des	Perennial	Climbing Spiny shrub	Spiral, simple, entire, spatulate or ovate 1.5 x 1-2.5	Capsule-3 lobed, ovoid smooth and glabrous	
<i>Euphorbia royleana</i> Boiss (Thuor)	Perennial	Shrub	Alternate, sessile, obovateoblanceolate, cuneate at base, margin entire, apex mucronate, 4-9 x 2.4	Subglobose, trigonous, 3 lobed compressed greenish grey	Feb May
<i>Euphorbia Caducifolia</i> Haines (Thor)	Perennial	Spinous shrub dendroid	Leaves located singly just above the spines, variable, ovate, ovate-elliptic to orbicular, cuneate at base, undulate along margins, acute at apex, 2 - 8 x 1 - 5 cm, fleshy with prominent midnerve	trilobed, with laterally compressed and sharply keeled cocci, 7 - 9 mm in diam., smooth, glabrous, reddish	Jan - April
<i>Euphorbia pulcherrima</i> Wild	Perennial	Shrub	Leaves alternate, elliptic-ovate panduriform, cuneate or subobtusate at base, entire to undulate along margins, acute, 5 - 12 x 3 - 7 cm.	exserted and deflexed red pedicels, subglobose, trilobate, 1 - 1.5 x 0.5 - 1 cm smooth, glabrous	Dec - March
<i>Euphorbia hirta</i> L (Badi-Dudhi)	Annual	Herb	Opposite, obliquely oblonglanceolate, oblique at base, serrate along margins, acute at apex, 2 - 4.5 x 1 - 1.5 cm	Capsul subglobose to trigonous, 1.2 - 2 mm in diam., pubescent.	Dec-July
<i>Euphorbia thymifolia</i> L (Dudhi)	Annual	Herb	Opposite, ovate-oblong, oblique at base, crenulate-serrulate or entire up to middle along margins, obtuse or subacute at apex, 3 -	scarcely exserted from involucre cup, trigonous subglobose, obtusely keeled, ca 1.5 x 1 mm,	Jan June

			8 x 2 - 5 mm, glabrous above, scattered hairy beneath, 3veined at base; petioles 0.5 - 1 mm long.	appressed hispid	
<i>Pedilanthus tithymaloides</i> L.	Perennial	Shrub	Alternate, simple glabrous, elliptic-ovate to oblong, pointed at the apex, margin entire.	Fruit not seen.	Jan July
<i>Jatropha carcus</i> L (Ratanjot)	Perennial	Tree	Alternate, crowded at apex young leaf cordate, acute, palmately 3-5 lobed 10-15x7-14 cm	Fleshy, drupaceous, drying to capsule, subglobose or ellipsoid, slightly 3-lobed.	Dec June
<i>Jatropha gassypifolia</i> L (Ratanjot Wild)	Perennial	Shrub	Spirally arranged leaves palmately 3-5 lobed, purple colour, hairy at the midrib of the lower surface of leaf	Capsul oblongovoid, 3-lobed	July Sep
<i>Croton bonplandianum</i> Baill (Mirchaini)	Annual	Busy herb	Simple, alternate ovate-lanceolate, rounded at base, serrate- dentate along margins pointed of apex, hair beneath. 4-7 x 2-2.5	Capsule oblong to ellipsoid, shallowly lobed, scattered puberulous to glabrous.	Jan Dec
<i>Acaylpha indica</i> L (Khokali)	Annual	Herb	Ovate llipticovate, rhombateovate or broadly ovate cuneate, rounded or attenuate at base, crenate or serrulate along margins, 2.5-7 x 1.5-5 cm	Capsule hispid, concealed by persistent bract	Dec March
<i>Acalypha wilkesiana</i> Muell	Annual	Herb	Elliptic or broadly ovate, acute or acuminate, dentate, variously mottled with shades of red and purple, petioled.	Capsule trilobed pubescent 3-lobed	Jan July
<i>Putranjiva roxburghi</i> Wall	Perennial	Tree	Leaves are simple, alternately arranged dark green, shiny, elliptic-oblong distantly serrated. 5-8 x 2-4 cm	Ellipsoid or rounded drupes, white velvety; seed normally one, stone pointed, rugose, very hard.	April Jan
<i>Embllica officinalis</i> Gaertn (Amla)	Perennial	Deciduous Tree	Leaves are simple subsessile, light green resembling pinnate leaves, narrowly-linear, oblong, mucronate or slightly obtuse 918x 3-4 mm.	Globose, fleshy, pale yellow with six obscure vertical furrows enclosing six trigonous seeds in 2-seeded 3 crustaceous cocci1.	March May
<i>Phyllanthus niruri</i>	Annual	Herb	Numerous, small, green, sub sessile, closely arranged, elliptic ablong shaped, obtuse, having short petiole and stipules present, they are arranged alternatively on each side of the stem.	capsule, very small, depressed globose and more over capsule is smooth	
<i>Phyllanthus reticulatus</i>	Perennial	Shrubs	Distichous, elliptic to obovate leaves, entire, cuneate to rounded at base, obtuse to emarginate at apex, glabrous and shortly petiolate. 1-3 x 0.5-2 cm	baccate, subglobose to globose, often slightly depressed, unlobed, fleshy, smooth, glabrous;	Aug April
<i>Ricinus communis</i> L	Perennial	Small Tree	Palmalely lobed, lobes 7 or more, serrate 30-60 cm	Capsule 3-lobed globosely oblong mottled	Dec May

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