A Survey on Floristic Diversity of Euphorbiaceae family from Sambhal district of Uttar Pradesh

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ABSTRACT

There is no detailed information about Angiosperms especially members of family Euphorbiaceae of sambhal district (U.P) .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 2016-2017 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 , *Emblica 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 tithymaloides* 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. Geographically , Sambhal (U.P) district coordinates are (28.58 ^{o}N and 78.55 ^{o}E) it falls under Ramganga and Gangetic plain of North West India. The district of Sambhal 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.

Key words: Euphorbiaceae , District Sambhal , 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) with 334 genera (Webster, 1994) and over 8000 species in the world (Radcliff-Smith, 2001). 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). 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 Malayn 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 inflorescences cyathium. Some systemic surveys work in India is available on this family Bhatt and Bedi (1969), Sabris and Bhatt (1975), Shah (1978), Yogi (1970), Matreya (2015) but detailed literature around Rohilkhand 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 :-

Sambhal lies to the North west (Upper left corner) of Uttar Pradesh and South West of Moradabad. It is 158Km from Delhi and 349 Km from Lucknow. Sambhal's Soil is extremely suitable for the mint plant and Thus they specialize in growing these plant with spearmint being extensively growth to extract its oil. Sambhal headquarter is Bahjoi town. Samblal is 158.6 Km from New Delhi and 355 Km from state capital Lucknow towards east. The Sambhal District is located between 77^0 and 78^0 longitude East and $28^0.54'$ and $29^0.15'$ latitude North. The district is bounded on the north by Amroha District, on the South by Ghaziabad, Bulandsahar and Gautambudhnagar districts and on the East by Bijnor and Jyotibaphule Nagar districts and on the west by Baghpat District. The whole district is a vast level plain. Ganga and Ramganga Rivers draws the Eastern and Western boundaries of the district (Fig. 1 Showing Sambhal district). Sambhal feathers an atypical version of eco humid sub-tropical climate.The climate of the district is classified as tropical, semi and hot which is dry with very hot summer and cold weather except during South west monsoon season.

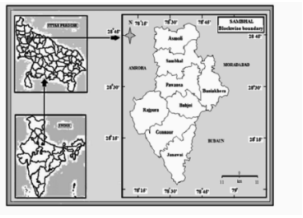

Fig. Showing Sambhal District in India

MATERIAL AND METHODS :-

The study on angiosperms of family Euphorbiaceae form the Sambhal District of U.P. 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 filed work was done by compiling different flora available and authenticated by experts from university department and research institutes.

The photographs of all the plants species were taken during field trip. This prince of work is survey based. Surveys were made for two years (2016-2017) to collect and identify the flowering plants. The collected plants were categoriesed, 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.

Species	**Annual / Perennial**	**Herbs / Shrubs / Tree / Runner**	**Leaves**	**Fruits type**	**Flowering And Fruiting**
Manihot esculenta L	Perennial	Shrub	Across palmately 3-7 lobed oblong-obovate or oblanceolate ,acuminate glaucons minutely puberulous onvers beneth stipules ovate - triangular	Capsule across elliposoid , 6-winged dehiscing into 2 valves.	July Sep

Euphorbia milli 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	
Euphorbia royleana **Boiss (Thuor)**	Perennial	Shrub	Alternate , sessile, obovate-oblaceolate , cuneate at base , margin entire , apex mucronate , 4-9 x2.4	Subglobose , trigonous , 3 lobed compressed greenish grey	Feb May
Euphorbia Caducifolia **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
Euphorbia pulcherrima .**Wild**	Perennial	Shrub	Leaves alternate, elliptic-ovate panduriform, cuneate or subobtuse 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

Euphorbia hirta **L (Badi-Dudhi)**	Annual	Herb	Opposite , obliquely oblong-lanceolate, 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
Euphorbia thymifolia **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 - 8 x 2 - 5 mm, glabrous above, scattered hairy beneath, 3-veined at base; petioles 0.5 - 1 mm long.	scarcely exserted from involucral cup, trigonous-subglobose, obtusely keeled, ca 1.5 x 1 mm, appressed hispid	Jan June
Pedilanthus tithymaloides **L.**	Perennial	Shrub	Alternate , simple glabrous , elliptic-ovate to oblong, pointed at the apex , margin entire ,	Fruit not seen.	Jan July

Jatropha carcus **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
Jatropha gassypifolia **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 oblong-ovoid, 3-lobed	July Sep
Croton bonplandianum **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
Acaylpha indica **L (Khokali)**	Annual	Herb	Ovate lliptic-ovate, rhombate-ovate or broadly ovate cuneate, rounded or attenuate at base, crenate or serrulate along margins, 2 .5- 7 x 1.5 - 5 cm	Capsule hispoid, concealed by persistent bract	Dec March

Acalypha wilkesiana **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
Putranjiva roxburghi **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
Emblica officinalis **Gaertn (Amla)**	Perennial	Deciduous Tree	Leaves are simple subsessile , light green resembling pinnate leaves , narrowly-linear, oblong , mucronate or slightly obtuse 9-18x 3-4 mm.	globose, fleshy, pale yellow with six obscure vertical furrows enclosing six trigonous seeds in 2-seeded 3 crustaceous cocci1 .	March May
Phyllaanthus niruri	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	
Phyllanthus rteticulatus	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
Ricinus communis **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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