

Summer Weeds of District Baghpat, Uttar Pradesh: A Floristic Assessment

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ABSTRACT

Baghpat district is located in western Uttar Pradesh and there is significant weed invasion during the summer season (April to July), particularly in agricultural landscapes. This study provides a comprehensive account of the summer weed flora in the district, documenting species diversity, families, habitats, and ecological behavior. In the present paper total of 50 common summers weed species belonging to 22 families were identified. Maximum number of weed was observed from family Poaceae, followed by Amaranthaceae and Asteraceae. The findings highlight the need for region-specific weed management strategies, especially during the Kharif cropping season.

Keywords- Summer weeds, Baghpat District, Poaceae, Amaranthaceae, Asteraceae.

I. INTRODUCTION

Weeds act as the most resilient and major biological constraints in agro-ecosystems, especially during the summer months when the high temperature, continuous irrigation, Open area provides perfect ambience for the rapid growth of these slender and hairy plants. Weeds are unwanted plants that vigorously compete with crops for sunlight, water, nutrients, and space. Invasive alien weeds cause serious concern in agriculture, forestry and the aquatic environment

Weeds not only reduce product quality but also pose health and environmental risks, resulting in reductions in crop yields. They cause significant decreases in the yield of the crops and create deterioration in crop quality by interfering with crop growth and productivity (Rao, 2000). They are considered one of the most critical factors affect the worldwide agricultural productivity (Holt & Orcutt, 1991), and are responsible for approximately 37% of the total annual loss of agricultural produce in India (Yaduraju, 2006; Singh et al., 2015).

The growth of weeds or weeds has a great effect on the loss in the yield of crop of main summer

crops such as maize, sugarcane, and paddy in the Baghpat area of western Uttar Pradesh, in which the growth of summer wheat in the crops is especially important (Chauhan & Mahajan, 2014). Crop-specific problematic weeds, such as weedy rice, are becoming a growing concern to cultivation, impacting farmer income, crop productivity, and product quality (Rao and Chauhan 2015)

In the summer season when temperatures is high and the moisture level of the soil is low, a particular class of weeds, such as *Parthenium hysterophorus*, *Amaranthus viridis*, *Cyperus rotundus*, *Trianthema portulacastrum*, *Commelina benghalensis*, *Euphorbia hirta*, grow. These species are frequently found along roadsides, in irrigation channels, fallow areas, and cultivated fields (Yaduraju, 2006; Singh et al., 2010). Many summer weed species demonstrate remarkable ecological adaptability, fast growth cycle, and strong allelopathic, effects, which allow them to outcompete crops and dominate agriculture systems (Kohli et al., 2006). Therefore, accurate identification and systematic documentation of weed flora are essential for developing effective, site-specific weed management practices. Previous research has highlighted the importance of

ecological and floristic surveys in understanding weed distribution patterns across different agroecological zones (Rao, 2000). The present study aims to document the summer weed species prevalent in Baghpat district, analyze their distribution across different plant families, and identify dominant taxa along with their habitat preferences. This information is intended to support the development of targeted weed management practices for the region.

II. STUDY AREA

Baghpat district is part of the Upper Gangetic Plain and lies between 28°57'N latitude and 77°13'E longitude. The region experiences a subtropical climate with hot summers, a monsoon season, and mild winters. The average summer temperature ranges between 30°C and 45°C. The soils are predominantly alluvial, making the area highly fertile and agriculturally productive. These conditions, however, also favor the growth of a wide variety of summer weeds. The main crops grown during the summer include sugarcane, maize, and vegetables, all of which are prone to weed invasion if not properly managed.

III. MATERIALS AND METHODS

Field survey was conducted between May and June 2023 from multiple localities of Baghpat including Baraut, Khekra, Binauli and rural farmlands. Sampling was conducted in crops, fallow lands, roadside bunds, canal bunds and moist margins adjacent to irrigation channels to cover a variety of habitats.

Plant specimens were carefully uprooted, cleaned, pressed, and dried using standard herbarium techniques (Jain and Rao, 1977). Preliminary identification was done in the field using local floras and

visual traits such as leaf shape, inflorescence type, stem structure, and root system. For accurate identification, preserved specimens were studied in the laboratory and compared with taxonomic keys and herbarium specimens at recognized institutions.

The major references used for identification included *Plant Taxonomy* by O. P. Sharma (1996), Mishra and Verma (1992) *The flora of Allahabad District, Flora of Upper Gangetic Plain* Duthie 1903-1929, and *A Handbook of Field, Herbarium Methods* by Jain and Rao (1977). Nomenclature was verified using the Plant List and other standard botanical databases. Identified specimens were labeled with scientific names, family, habitat, life form, and field collection data. Stratified random sampling approach was used.

IV. RESULTS

During the survey recorded a total of **50 summer weed species**. These were belonging to **22 families and 42 genera** in which the species include herbs, grasses, sedges, and climbers, the most common was herbs (Table-1). Poaceae, Asteraceae, Fabaceae and Euphorbiaceae were recorded the dominant families (table-2) and (figure1). The most dominant family was **Poaceae**, represented by eight species, including *Cynodon dactylon*, *Dactyloctenium aegyptium*, and *Eleusine indica*. **Amaranthaceae** was the second most represented family, with species like *Amaranthus viridis*, *Digera arvensis*, and *Achyranthes aspera*. Similarly, **Asteraceae** contributed significantly to the weed flora, including invasive species such as *Parthenium hysterophorus*, *Tridax procumbens*, and *Ageratum conyzoides*, which are known for their allelopathic effects and rapid seed dispersal. Common identified weed are listed in table 3

Table-1 List of Summer Weeds in Baghpat District

S. No.	Botanical Name	Common Name	Family	Habit	Habitat
1	<i>Abutilon indicum</i>	Indian mallow	Malvaceae	Shrub	Roadsides
2	<i>Achyranthes aspera</i>	Prickly chaff flower	Amaranthaceae	Herb	Waste areas
3	<i>Ageratum conyzoides</i>	Billygoat weed	Asteraceae	Herb	Margins of fields
4	<i>Alternanthera sessilis</i>	Sessile joyweed	Amaranthaceae	Herb	Moist fields
5	<i>Amaranthus spinosus</i>	Spiny amaranth	Amaranthaceae	Herb	Roadsides
6	<i>Amaranthus viridis</i>	Green amaranth	Amaranthaceae	Herb	Crop fields
7	<i>Argemone mexicana</i>	Mexican poppy	Papaveraceae	Herb	Barren lands
8	<i>Blumea lacera</i>	Blumea	Asteraceae	Herb	Dry fields
9	<i>Boerhavia diffusa</i>	Punarnava	Nyctaginaceae	Herb	Moist soils
10	<i>Cassia tora</i>	Sickle senna	Fabaceae	Shrub	Wastelands
11	<i>Chenopodium album</i>	Bathua	Amaranthaceae	Herb	Fallow fields
12	<i>Chloris barbata</i>	Swollen finger grass	Poaceae	Grass	Drylands
13	<i>Chrozophora rottleri</i>	Rottler's chrozophora	Euphorbiaceae	Herb	Dry fields
14	<i>Cleome viscosa</i>	Spider flower	Cleomaceae	Herb	Dry areas
15	<i>Commelina benghalensis</i>	Bengal dayflower	Commelinaceae	Herb	Moist shady places
16	<i>Convolvulus arvensis</i>	Field bindweed	Convolvulaceae	Climber	Crop lands
17	<i>Corchorus aestuans</i>	Wild jute	Tiliaceae	Herb	Road margins

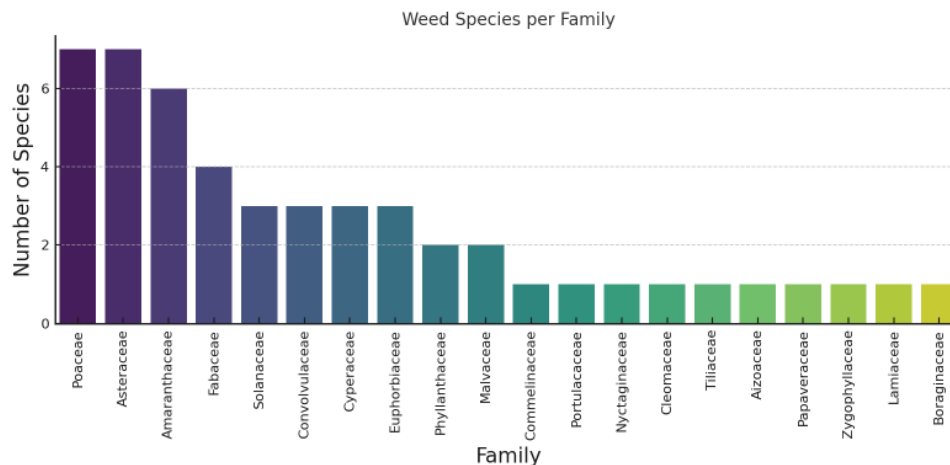
18	<i>Crotalaria medicaginea</i>	Crotalaria	Fabaceae	Herb	Road margins
19	<i>Cynodon dactylon</i>	Bermuda grass	Poaceae	Grass	Roadsides, fields
20	<i>Cyperus iria</i>	Rice flat sedge	Cyperaceae	Sedge	Irrigated lands
21	<i>Cyperus rotundus</i>	Nut sedge	Cyperaceae	Sedge	Cultivated fields
22	<i>Dactyloctenium aegyptium</i>	Crowfoot grass	Poaceae	Grass	Fallow lands
23	<i>Digera arvensis</i>	False amaranth	Amaranthaceae	Herb	Along canals
24	<i>Eclipta prostrate</i>	False daisy	Asteraceae	Herb	Damp soils
25	<i>Eleusine indica</i>	Goosegrass	Poaceae	Grass	Irrigated fields
26	<i>Euphorbia hirta</i>	Asthma plant	Euphorbiaceae	Herb	Roadside edges
27	<i>Euphorbia prostrata</i>	Prostrate spurge	Euphorbiaceae	Herb	Gardens, walls
28	<i>Fimbristylis dichotoma</i>	Forked fimbry	Cyperaceae	Sedge	Marshy fields
29	<i>Heliotropium indicum</i>	Indian heliotrope	Boraginaceae	Herb	Roadside and field edges
30	<i>Indigofera cordifolia</i>	Heart-leaf indigo	Fabaceae	Herb	Sandy plains
31	<i>Ipomoea nil</i>	Blue morning glory	Convolvulaceae	Climber	Field edges
32	<i>Ipomoea purpurea</i>	Morning glory	Convolvulaceae	Climber	Fallow lands
33	<i>Laggera crispate</i>	Laggera	Asteraceae	Herb	Damp fields
34	<i>Ocimum americanum</i>	Wild basil	Lamiaceae	Herb	Field borders
35	<i>Panicum maximum</i>	Guinea grass	Poaceae	Grass	Road margins
36	<i>Parthenium hysterophorus</i>	Congress grass	Asteraceae	Herb	Roadsides
37	<i>Phyllanthus amarus</i>	Gale of the wind	Phyllanthaceae	Herb	Moist habitats
38	<i>Phyllanthus niruri</i>	Stonebreaker	Phyllanthaceae	Herb	Canal banks
39	<i>Physalis minima</i>	Ground cherry	Solanaceae	Herb	Field boundaries
40	<i>Portulaca oleracea</i>	Common purslane	Portulacaceae	Herb	Cultivated lands
41	<i>Setaria pumila</i>	Yellow foxtail	Poaceae	Grass	Crop fields
42	<i>Sida cordifolia</i>	Country mallow	Malvaceae	Shrub	Sandy areas
43	<i>Solanum nigrum</i>	Black nightshade	Solanaceae	Herb	Moist fields
44	<i>Sorghum halepense</i>	Johnson grass	Poaceae	Grass	Fields
45	<i>Tephrosia purpurea</i>	Wild indigo	Fabaceae	Herb	Open lands
46	<i>Trianthema monogyna</i>	Horse purslane	Aizoaceae	Herb	Sandy areas
47	<i>Tribulus terrestris</i>	Puncture vine	Zygophyllaceae	Herb	Dry sandy areas
48	<i>Tridax procumbens</i>	Coat buttons	Asteraceae	Herb	Roadsides, walls
49	<i>Withania somnifera</i>	Ashwagandha	Solanaceae	Shrub	Cultivated lands
50	<i>Xanthium strumarium</i>	Cocklebur	Asteraceae	Herb	Waste lands

Table-2 Dominant Families with their species

Name of family	Species
Poaceae Grass family	9
Asteraceae Sunflower family)	7
Amaranthaceae	5
Fabaceae	4
Euphorbiaceae –	3

Table-3 Common Summer Weeds Identified

S. No.	Scientific Name	Common Name	Family	Habitat Type
1	<i>Dactyloctenium aegyptium</i>	Crowfoot Grass	Poaceae	Agricultural field
2	<i>Cynodon dactylon</i>	Bermuda Grass	Poaceae	Roadsides
3	<i>Amaranthus viridis</i>	Green Amaranth	Amaranthaceae	Cultivated fields
4	<i>Chenopodium album</i>	Bathua	Amaranthaceae	Crop field
5	<i>Parthenium hysterophorus</i>	Congress Grass	Asteraceae	Roadsides
6	<i>Trianthema portulacastrum</i>	Horse Purslane	Aizoaceae	Fallow lands
7	<i>Portulaca oleracea</i>	Purslane	Portulacaceae	Field margin
8	<i>Eclipta prostrate</i>	False Daisy	Asteraceae	Moist field edge
9	<i>Corchorus trilocularis</i>	Wild Jute	Tiliaceae	Crop fields
10	<i>Digera muricata</i>	Digera	Amaranthaceae	Dry field

**Fig.1: Graphic representation of weed species per family**

V. DISCUSSION

The diversity of weed species in Baghpat district reflects the region's rich agricultural landscape. Grasses, particularly from the *Poaceae* family, are highly abundant, likely due to their resilience and ability to thrive in disturbed, irrigated soils. Broadleaf weeds such as *Amaranthus viridis* and *Cleome viscosa* are also common, particularly in cultivated fields and fallow lands, indicating their ability to outcompete crops in nutrient-rich soils.

Habitat preference is strongly influenced by water availability. Species like *Cyperus rotundus* thrive in moist margins and canal banks, while others, such as *Echinochloa colona*, are more adaptable to varying soil conditions, found in both cultivated fields and moist areas.

VI. CONCLUSION

This study highlights the significant weed species in the summer season of Baghpat District. With the dominance of grasses from the *Poaceae* family and a high number of broadleaf species, it is clear that both types of weeds need focused management strategies. Since cultivated fields and fallow lands provide the ideal conditions for weed growth, it is essential to implement targeted control measures such as timely weeding, crop rotation, and the use of herbicides where necessary. Effective management of these weeds will be crucial to maintaining the region's agricultural productivity and minimizing resource loss.

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