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Observation of biodiversity and seasonal variation of weeds growing in Rewa district (M.P.) India

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Abstract

The present paper deal Seasonal and Floristic Biodiversity of weeds growing in Rewa district (M.P.) India. In addition to rice, weeds proliferate in the vegetable garden, rendering them unwanted plants that thrive alongside larger vegetation. This study examines the diversity of weed species in dry soil conditions. It was determined that weeds comprise 20 families, 40 genera, and 44 species. The wet season had significant diversity, whereas the summer displayed less biodiversity. Poaceae is regarded as one of the top six families, alongside comparable families such as Cappariaceae and Papaveraceae.

Keywords: Weeds, seasonal and floristic biodiversity, Rewa district

Introduction

Weeds typically exhibit traits such as prolific seed generation, diverse dormancy mechanisms, resilience in adverse settings, competitive prowess, and effective vegetative propagation. This communication enumerates 46 weeds along with their phonological patterns and ethnobotanical applications, documented from tribal-inhabited areas of Rewa district (Madhya Pradesh). The area's vegetation is examined, including seasonal vegetation, hydrophytic vegetation, vegetation of specialized habitats, and weeds associated with Kharif and Rabi crops. The economic features of flora, including cultivated crops, vegetable plants, fruit-bearing plants, tannin and gum-producing plants, and medicinal plants, have been addressed succinctly. The conservation elements of flora have been succinctly addressed for the benefit of policymakers, forest managers, and other plant administrators.

Weeds are plants that proliferate in undesired locations. Describing such a plant is challenging, as its attributes may be valued differently across several regions. Moreover, they differ in their rates of harm. Weeds can be characterized in several manners, but clarity is essential for comprehension during pregnancy. Weeds indicate that they are undesirable; these harmful plants often thrive and persist, posing risks and hazards. These crops are detrimental to agricultural plants, interfere with Agril's operations, elevate labor requirements, escalate farming costs, compromise the quality of farm products, and eventually diminish crop harvests. These plants are referred to as weeds. In summary, a plant's resilience on a farm surpasses its inherent strength.

Literature Review

Ethnomedicinal uses of these weed plants and used different reference books literature (Jain, 1991; Paradkar, 1995; Prajapati *et al.*, 2003; Ahuja *et al.* 2005; Dyamock *et al.*, 2005; Retnam *et al.*, 2006; Dhiman, 2006; Kumar and Suman 2009; Dhole *et. al.* 2009; Singh and Shrivastava, 2013; Yogesh *et al.* 2013; Jadhav, 2017 and Devi *et al.* 2023) [14, 21, 20, 2, 27, 23, 7, 17, 8, 28, 29, 13, 6].

Materials and Methods

The study was conducted at the Rewa district, Madhya Pradesh, India. Rewa is located at 24°32' N 81°18' E. It has an average elevation of 275 meters (902 feet). The climate of region is typical subtropical with long dry season from late September to late June and wet season from July to September with hot desiccating winds in summer (May-June) with intensive evapotranspiration losses.

Herbarium preparation and identification. Weed was collected in different crop fields of Rewa district. The collected plants are identified by using "The Flora of Marathwada (Naik, 1998) [19], Flora of Bombay presidency (Cooke, 1958) [5]; Flora of Madhya Pradesh (Hewetson, 1951) [10].

Tabulation and family wise categorization: The herbarium was prepared, labeled and stored in the herbarium of the department.

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Results and Discussion

In a study of the weed flora of dryland crops in the Rewa district, a total of 40 genera and 44 species from 20 families were identified across ten sampling sites in the two examined fields, with mean values recorded as data. The family with the highest number of species was Poaceae (6 sps), followed by Asteraceae (5), Amaranthaceae (4),

Convolvulaceae (3), Papilionaceae (3), Euphorbiaceae (2), Lamiaceae (2), Solanaceae (2), Apiaceae (2), Chenopodiaceae (2), and monogeneric families Papaveraceae, Cappariaceae, Asclepiadaceae, Cyperaceae, Verbenaceae, Malvaceae, Rhamnaceae, Zygophyllaceae, Mimoseae etc.

Table 1: Seasonal and Floristic Biodiversity of Weeds Growing in Rewa district of Madhya Pradesh.

S. No.	Family		Botanical Name	Local Name	Habitat	Phenology (Flowering & Fruiting period)
1.	Amaranthaceae	1.	<i>Achyranthus aspera</i>	Chichita	Waste land Bund,	R, W
		2.	<i>Alternanthera sessilis</i>	Garundi	Waste land,	R, W
		3.	<i>Allmania nodiflora</i>	Garundi	Waste land,	R
		4.	<i>Cleosia argentea</i>	Silyari	Waste land, Bund	R, W
2.	Apiaceae	5.	<i>Centella asiatica</i>	Bramhi	Waste land, Bund, crop field	R, W
3.	Asclepiadaceae	6.	<i>Calotropis procera</i>	Madar	Waste land	W,S
		7.	<i>Calotropis gigantia</i>	Madar	Waste land	W, S
4.	Asteraceae	8.	<i>Ageratum conyzoides</i>	Gandhila	Waste land, Bund	R, W
		9.	<i>Parthenium hysterophorus</i>	Gajarghass	Waste land, Bund	R, W, S
		10.	<i>Vernonia cinerea</i>	Sahdevi	Waste land, Bund, crop field	R, W
		11.	<i>Centratherum anthelminticum</i>	Banjira	Waste land, Bund, crop field	R, W
		12.	<i>Blumea lacera</i>	Kukurmutta	Waste land, Bund, crop field	R, W
5.	Capparidaceae	13.	<i>Cleome viscosa</i>	Hur-hur	Waste land	R, W
6.	Chenopodiaceae	14.	<i>Chenopodium album</i>	Bathua	Waste land, Bund, crop field	R, W, S
		15.	<i>Amaranthus spinosus</i>	Chaulai	Waste land, Bund, crop field	R, W, S
7.	Convolvulaceae	16.	<i>Ipomea palmata</i>	Morning glories	Waste land	S
		17.	<i>Cuscuta reflexa</i>	Amar bel	Waste land, Bund, Crop field	R, W, S
		18.	<i>Convolvulus arvensis</i>	Hirankhuri	Waste land, Crop field	R, W
		19.	<i>Ipomoea aquatica</i>	Kalmi	Waste land	R
8.	Cyperaceae	20.	<i>Cyperus rotundus</i>	Motha	Waste land, Bund, Crop field	R, W, S
9.	Euphorbiaceae	21.	<i>Euphorbia hirta</i>	Dudhi	Waste land, Bund	R, W, S
		22.	<i>Phyllanthus niruri</i>	Bhuinawla	Waste land, Crop field, Bund	R,W
		23.	<i>Jatropha curcas</i>	Ratan jot	Waste land	R, W, S
10.	Fabaceae	24.	<i>Indigofera linifolia</i>	Neel	Waste land, Bund	R, W
11.	Lamiaceae	25.	<i>Leucas aspera</i>	Gumma	Waste land, Bund, Crop field	R, W
		26.	<i>Ocimum basilicum</i>	Ban Tulsia	Waste land, Bund	R, W, S
12.	Malvaceae	27.	<i>Sida acuta</i>	Bariyari	Waste land, Bund	R, W
		28.	<i>Sida cordifolia</i>	Khareti	Waste land, Bund, crop field	R, W
13.	Mimoseae	29.	<i>Mimosa pudica</i>	Chhui-mui	Waste land, Bund	R, W
14.	Papaveraceae	30.	<i>Argemone maxicana</i>	Pili Kateri	Waste land	R, W, S
15.	Papilionaceae	31.	<i>Cassia tora</i>	Chakaunda	Waste land, Bund, Crop field	R, W
		32.	<i>Medicago denticulata</i>	Chanouri	Waste land, Crop field	W
		33.	<i>Trifolium alexandrinum</i>	Barsin	Waste land, Crop field	R, W, S
16.	Poaceae	34.	<i>Cynodon dactylon</i>	Dub ghash	Waste land, Crop field, Bund	R, W
		35.	<i>Andropogon odoratus</i>	Ginger ghash	Waste land, Crop field	R, W
		36.	<i>Heteropogon contortus</i>	Steekgras	Waste land, Crop field	R, W
		37.	<i>Aristida adscensionis</i>	Lappa	Waste land	R, W
		38.	<i>Agropyron repens</i>	Grass	Waste land, Bund, crop field	R, W, S
		39.	<i>Cymbopogon martinii</i>	Roshaghass	Waste land, Bund, crop field	R, W, S
17.	Rhamnaceae	40.	<i>Ziziphus numularia</i>	JangaliBer	Waste land,	R, W, S
18.	Solanaceae	41.	<i>Solanum xanthocarpum</i>	Bhatakariya	Waste land, Bund	R, W, S
		42.	<i>Datura alba</i>	Dhatura	Waste land	R, W, S
19.	Verbenaceae	43.	<i>Lantana camara</i>	Phulchuhiya	Waste land, Bund	R, W, S
20.	Zygophyllaceae	44.	<i>Tribulus terrestris</i>	Gokharu	Waste land, Bund, crop field	R, W, S

Note: R = Rainy Season, W = Winter Season, S = Summer Season

Table 2: Floristic Biodiversity of Weeds Genus and Species

S. No.	Name of the Family	No. of Genus	No. of Sps.
1.	Amaranthaceae	4	4
2.	Apiaceae	1	1
3.	Asclepiadaceae	1	2
4.	Asteraceae	5	5
5.	Capparidaceae	1	1
6.	Chenopodiaceae	2	2
7.	Convolvulaceae	3	4
8.	Cyperaceae	1	1
9.	Euphorbiaceae	2	3
10.	Fabaceae	1	1
11.	Lamiaceae	2	2
12.	Malvaceae	1	2
13.	Mimoseae	1	1
14.	Papaveraceae	1	1
15.	Papilionaceae	3	3
16.	Poaceae	6	6
17.	Rhamnaceae	1	1
18.	Solanaceae	2	2
19.	Verbenaceae	1	1
20.	Zygophyllaceae	1	1
	Total	40	44

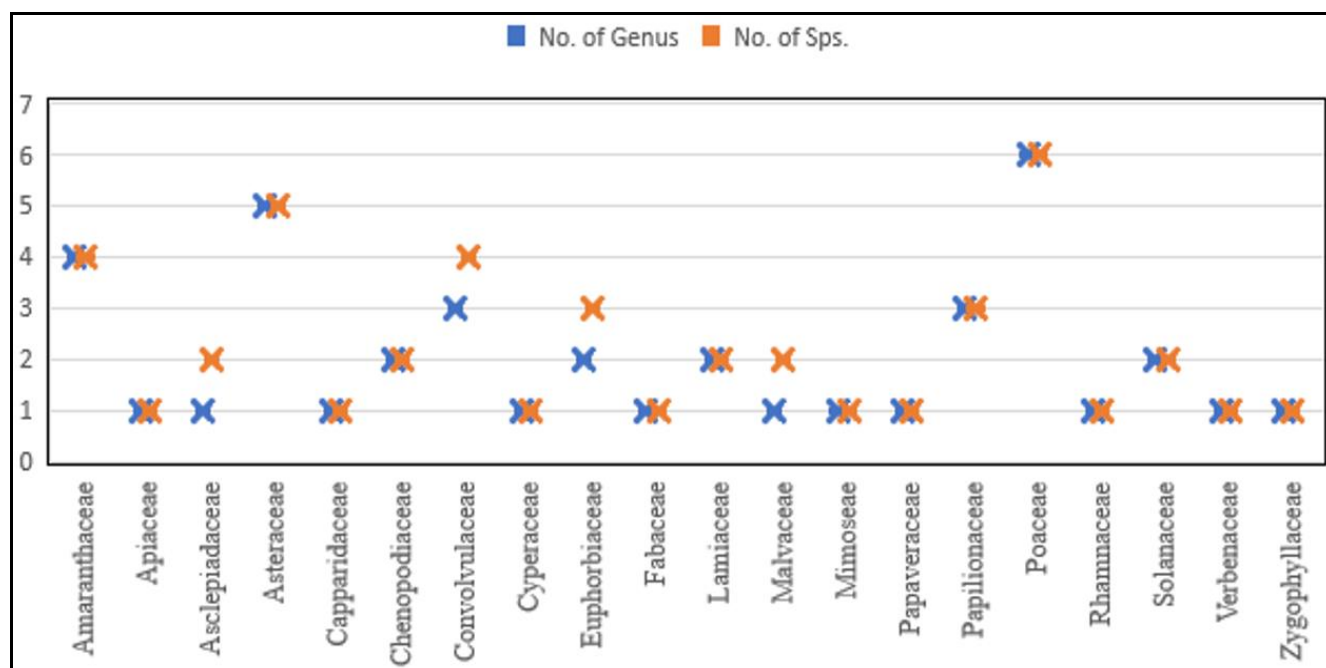
**Fig 1:** Graph analysis of Floristic Biodiversity of Weeds Genus and Species.

Table 3: Common Seasonal Weed Flora in region of Rewa district.

S. No.	Name of Plant	Rainy Season	Winter Season	Summer Season
1.	<i>Achyranthus aspera</i>	+	+	-
2.	<i>Ageratum conyzoides</i>	+	+	-
3.	<i>Agropyron repens</i>	+	+	+
4.	<i>Allmania nodiflora</i>	+	-	-
5.	<i>Alternanthera sessilis</i>	+	+	-
6.	<i>Amaranthus spinosus</i>	+	+	+
7.	<i>Andropogan odoratus</i>	+	+	-
8.	<i>Argemone maxicana</i>	+	+	+
9.	<i>Aristida adscensionis</i>	+	+	-
10.	<i>Blumea lacera</i>	+	+	-
11.	<i>Calotropis gigantia</i>	-	+	+
12.	<i>Calotropis procera</i>	-	+	+
13.	<i>Cassia tora</i>	+	+	-
14.	<i>Centella asiatica</i>	+	+	-
15.	<i>Centratherum anthelminticum</i>	+	+	-
16.	<i>Chenopodium album</i>	+	+	+
17.	<i>Cleome viscosa</i>	+	+	-
18.	<i>Cleosia argentea</i>	+	+	-
19.	<i>Convolvulus arvensis</i>	+	+	-
20.	<i>Cuscuta reflexa</i>	+	+	+
21.	<i>Cymbopogon martinii</i>	+	+	+
22.	<i>Cynodon dactylon</i>	+	+	-
23.	<i>Cyperus rotundus</i>	+	+	+
24.	<i>Datura alba</i>	+	+	+
25.	<i>Euphorbia hirta</i>	+	+	+
26.	<i>Heteropogon contortus</i>	+	+	-
27.	<i>Indigofera linifolia</i>	+	+	-
28.	<i>Ipomea palmata</i>	-	-	+
29.	<i>Ipomoea aquatica</i>	+	-	-
30.	<i>Jatropha curcas</i>	+	+	+
31.	<i>Lantana camara</i>	+	+	+
32.	<i>Leucas aspera</i>	+	+	-
33.	<i>Medicago denticulata</i>	-	+	-
34.	<i>Mimosa pudica</i>	+	+	-
35.	<i>Ocimum basilicum</i>	+	+	+
36.	<i>Parthenium hysterophorus</i>	+	+	+
37.	<i>Phyllanthus niruri</i>	+	+	-
38.	<i>Sida acuta</i>	+	+	-
39.	<i>Sida cordifolia</i>	+	+	-
40.	<i>Solanum xanthocarpum</i>	+	+	+
41.	<i>Tribulus terrestris</i>	+	+	+
42.	<i>Trifolium alexandrinum</i>	+	+	+
43.	<i>Vernonia cinerea</i>	+	+	-
44.	<i>Ziziphus numularia</i>	+	+	+

These areas may be said to the landscape units dominated by Poaceous species.

These two areas had a marked influence on the weed flora, mainly due to the relationship of its phonological cycle with well defined climatic periods and to soil management practices.

In the survey of these fields, the quantity of Dicot species was associated with the families Asteraceae, Amaranthaceae, Convolvulaceae, and Papilionaceae, among others. Conversely, the Monocot species were primarily linked to the family Poaceae. The least number of Dicot species belonged to the families Papaveraceae, Capparidaceae, Asclepiadaceae, Verbenaceae, Malvaceae, Rhamnaceae, Zygophyllaceae, and Mimoseae, while the fewest Monocot species were associated with the family Cyperaceae.

Conclusion

The name "weed" typically carries a negative connotation for humans; nonetheless, several plants classified as weeds possess beneficial qualities. The leaves of weeds are consumable, and their roots or leaves can be utilized for herbal medicinal and culinary purposes. Certain weeds proliferate in areas disrupted by human activity, including construction sites, roadsides, agricultural fields, and lawns. Weeds can enhance soil fertility. Weeds serve as ground cover that mitigates erosion and diminishes moisture loss. Weeds serve as indicators of soil quality; they are resilient to drought and flooding and possess significant therapeutic properties. They are essential for preserving the biogeochemical cycle in grasslands and supporting groups such as consumers and decomposers.

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