

# Survey of Weed Flora in Rice Fields of Bilaspur District, Chattisgarh

## Research Article

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### Abstract

Rice is the staple food of more than half of the population of the world, is an important target to provide food security and livelihoods for millions. Weeds grow and dispersion patterns in rice fields are dynamic in nature. The survey of weed flora was conducted in Bilaspur district region of Chhattisgarh state to identify problem of weed species in the rice field. The survey has been carried out of four selected sites in rice field. During the study and survey of weeds plant in rice field have been done in the month of August to September 2021. Climatic conditions are generally wet and humid type in this region and rainfall is average. The result of this survey has obtained 41 weed species belonging to 29 Genera and 10 families. Dicot/monocot ratio of weeds is 23/18 and Genera / Species ratio are 29/41. Dominating Weed families in the rice fields of study site in Bilaspur district are Poaceae, Cyperaceae, Asteraceae, Euphorbiaceae, Amaranthaceae, Oxalidaceae. The highest number of weed species in rice field of study sites is from poaceae family belonging to 8 genera and 12 species and less weed species is from Oxalidaceae, Rubiaceae and Verbenaceae families belonging to 1 genera and 1 species. The study was based on survey of weed species in rice field of Bilaspur district (C.G.).

**Keywords:** Rice weeds; Bilaspur district; Dominating species

## Introduction

Rice (*Oryza sativa* L.) is a member of poaceae family and is a staple food of world population. Rice is extensively cultivated all over the country. In Chhattisgarh rice is the most important and extensively grown food crop and rice is an important target to provide food security and livelihoods for millions. Paddy is a source of income for number of industrial products like rice starch, rice bran oil, flaked rice, noodles, puffed rice, rice straw product and rice husk etc. Being staple food it plays a great role in the economy of India hence occupies a central position in agricultural policy making [1-3]. India is the second big largest producer of rice after china. Rice is the primary source of income and employment of many farmers. Paddy is the identity of Chhattisgarh due to which it is called rice bowl of Chhattisgarh. The reduction in paddy yield due to weed composition ranges from 9-51%. Uncontrolled growth of weeds in paddy reduced the grain yield by 75.8, 70.6 and 62.6% in dry seeded

rice, wet seeded rice and transplanted rice, respectively. In weed management program, a tough survey is necessary to address the current weed problems in the rice field and survey information is very much important in building target oriented research programs [2].

Weeds are unwanted plants of any plant community. They interfere with the main crop by utilization of land and water resources, and reduce quantity and quality of rice production. Weed is an aggressive pest for rice causing serious yield reduction in rice production worldwide. The weeds that grow along with paddy crop results of output of agricultural are very low. They are the major barriers to rice production because of their ability to compete for CO<sub>2</sub>, space, water, moisture, sunlight, and nutrients. Weeds take all the nutrient of the soil from where they grow and fertility, nutrient of soil gets reduced. Among the cereal crops, it serves as the principal source of nourishment for over- half of the global population [4].

Weeds are suppressed to rice production & their marketing rate also affected by weeds. Weed succession and distribution pattern in rice fields are dynamic in nature. The composition of the weeds flora may differ depending on location and atmosphere [1].

## Materials and Methods

### Study area

Bilaspur district is located in the northern region of Chhattisgarh state. Bilaspur is located 260 meters above sea level (Figure 1). The geographical location of the study site is 25°5' North latitude and 82°12' East longitude and it is a big rice cultivation area [5-9]. Survey was conducted in four different sites of the Bilaspur district. Site's are - Masturi, Ghuru, Ratanpur, and Ganiyari. These sites are located in approximately 25 km. distance from each other. Climatic conditions

are generally wet and humid type. The rainfall of month of august and September are 5.8 and 8.0 mm respectively and the minimum and maximum temperature of the district are 23.4°C and 31.5°C. in month of August and 23.2 and 31.5 in month of September. (Source: Climate department, Barrister Thakur Chhedilal college of Agriculture & Research Station Bilaspur Chhattisgarh. The climate is ideal for agriculture development, particularly for rice [10,11].

### Methodology

General survey was done in rice field in the month of august to September 2021 by quadrat method. The size of quadrat is 50×50 meter. Obtained weed plants were identified with the help of available literature and standard flora (5). Their Botanical name, family, local name, flowering period are identified.

**Table 1:** Weed flora in rice fields of study site of Bilaspur district (C.G.).

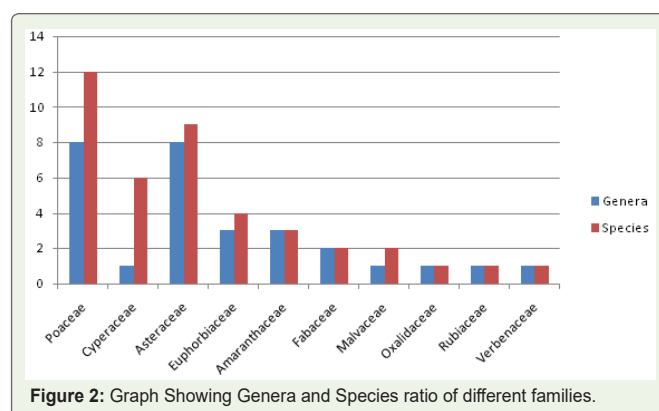
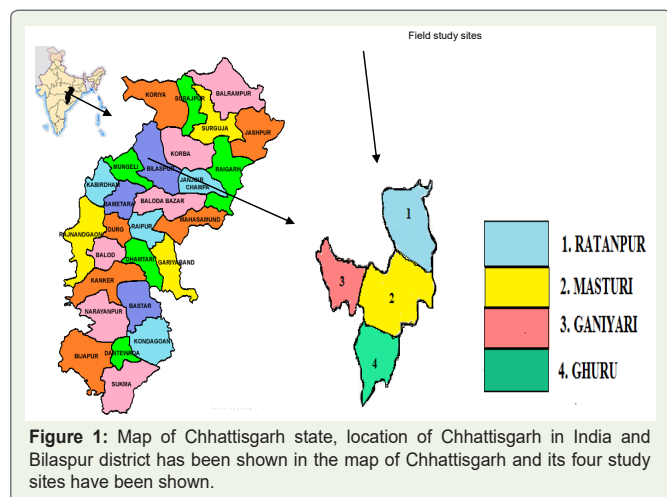
S.No.	Family	Botanical name	Local Name	Flowering Time	Dicot / Monocot
1.	Poaceae	<i>Brachiaria ramosa</i> (L.) Stapf	Singal grass	November- February	Monocot
2.		<i>Cynodon dactylon</i> L.	Dub grass	January- December	Monocot
3.		<i>Digitaria ciliaris</i> Retz.	Tropical finger grass	August- November	Monocot
4.		<i>Digitaria sanguinalis</i> (L.) Scop.	Hairy crab grass	January- April	Monocot
5.		<i>Echinochloa colona</i> L.	Jungle rice	July- October	Monocot
6.		<i>Echinochloa crus-galli</i> L.	Barnyard grass	August- September	Monocot
7.		<i>Eleusine indica</i> L.	Indian goose grass	July- November	Monocot
8.		<i>Lapochloa chinensis</i> (L.) Nees	Sprangletop	August- October	Monocot
9.		<i>Paspalum conjugatum</i> Berg.	Buffalo grass	May- September	Monocot
10.		<i>Paspalum distichum</i> Auct.	Knot grass	March – December	Monocot
11.		<i>Paspalum flavidum</i> Retz.	Yellow water crown grass	July- November	Monocot
12.		<i>Paspalum scrobiculatum</i> L.	Kodo millet	July- December	Monocot
13.	Cyperaceae	<i>Cyperus sanguinolentus</i> Vahl.	Flat sedge	November – April	Monocot
14.		<i>Cyperus difformis</i> L.	Motha	August- November	Monocot
15.		<i>Cyperus distans</i> L. F.	Slender cyperus	July- August	Monocot
16.		<i>Cyperus esculentus</i> L.	Earth almond	July- December	Monocot
17.	Asteraceae	<i>Cyperus pilosus</i> Vahl.	Fuzzy flat sedge	February- June	Monocot
18.		<i>Cyperus rotundus</i> L.	Nut grass	July- December	Monocot
19.		<i>Ageratum conyzoides</i> L.	Goat weed	January- December	Dicot
20.		<i>Bidens bipinnata</i> L.	Spanish needles	March- December	Dicot
21.		<i>Bidens pilosa</i> L.	Tharwad	September-November	Dicot
22.		<i>Cosmos caudatus</i> Kunth	King's salad	June- November	Dicot
23.		<i>Cyanthillium cinereum</i> (Linn.) H. Rob	Little iron weed	November- February	Dicot
24.		<i>Eclipta prostrata</i> (L.)	White heads	August- September	Dicot
25.		<i>Parthenium hysterophorus</i> L.	Carrot grass	Throughout the year	Dicot
26.		<i>Sphaeranthus indicus</i> L.	Gorakmundi	November- March	Dicot
27.	Amaranthaceae	<i>Tridax procumbens</i> L.	Khal muriya	June- September	Dicot
28.		<i>Achyranthes aspera</i> L.	Prickly chaff flower	March-December	Dicot
29.		<i>Alternanthera sessilis</i> (L.) DC.	Matsyakshi	February- October	Dicot
30.		<i>Amaranthus viridis</i> L.	Slender amaranth	December-April	Dicot
31.	Euphorbiaceae	<i>Croton bonplandianum</i> L.	Bon Tulshi	September- November	Dicot
32.		<i>Euphorbia hirta</i> L.	Snake weed	January- December	Dicot
33.		<i>Euphorbia prostrata</i> Aiton	Prostrate spurge	March- November	Dicot
34.		<i>Phyllanthus urinaria</i> L.	Chamber bitter	January- December	Dicot
35.	Oxalidaceae	<i>Oxalis corniculata</i> L.	Creeping wood	Throughout the year	Dicot
36.	Malvaceae	<i>Sida acuta</i> Burm. f. <sup>(1)</sup>	Wire weed/Bala	Throughout the year	Dicot
37.		<i>Sida cordifolia</i> L.	Flannel weed	October-December	Dicot
38.	Fabaceae	<i>Cassia tora</i> L.	Charota	October-February	Dicot
39.		<i>Desmodium triflorum</i> L.	Beggar weed	January- December	Dicot
40.	Rubiaceae	<i>Oldenlandia corymbosa</i> L.	Diamond flower	July- November	Dicot
41.	Verbenaceae	<i>Lippia nodiflora</i> L.	Mokana	Throughout the year	Dicot

**Table 2:** Dominant weeds in rice fields of study site of Bilaspur district (C.G.).

S. No.	Family	Botanical Name	Local Name	Flowering Period
1.	Poaceae	<i>Cynodon dactylon</i> (L.)	Dub grass	January- December
2.		<i>Echinochloa colona</i> L.	Jungle rice	July- October
3.		<i>Eleusine indica</i> L.	Indian goose grass	July- November
4.		<i>Paspalum scrobiculatum</i> L.	Kodo millet	July- December
5.		<i>Echinochloa crus-galli</i> L.	Barnyard grass	August- September
6.		<i>Paspalum distichum</i> Auct.	Knot grass	March – December
7.	Cyperaceae	<i>Cyperus pilosus</i> Vahl.	Fuzzy flat sedge	February- June
8.		<i>Cyperus distans</i> L. F.	Slender cyperus	July- August
9.		<i>Cyperus sanguinolentus</i> Vahl.	Flat sedge	November - April
10.		<i>Cyperus rotundus</i> L.	Nut grass	July- December
11.	Asteraceae	<i>Ageratum conyzoides</i> L.	Jangali pudina	January- December
12.		<i>Eclipta prostrata</i> (L.)	White heads	August- September
13.	Amaranthaceae	<i>Alternanthera sessilis</i> (L.) DC.	Matsyakshi	February- October
14.	Euphorbiaceae	<i>Phyllanthus urinaria</i> L.	Chamber bitter	January- December
15.		<i>Euphorbia hirta</i> L.	Snake weed	January- December
16.	Oxalidaceae	<i>Oxalis corniculata</i> L.	Creeping wood	Throughout the year

**Table 3:** Families wise Genera and Species ratio of weed flora in rice fields.

S.No.	Family	Genera	Species
1.	Poaceae	8	12
2.	Cyperaceae	1	6
3.	Asteraceae	8	9
4.	Euphorbiaceae	3	4
5.	Amaranthaceae	3	3
6.	Fabaceae	2	2
7.	Malvaceae	1	2
8.	Oxalidaceae	1	1
9.	Rubiaceae	1	1
10.	Verbenaceae	1	1

**Figure 2:** Graph Showing Genera and Species ratio of different families.**Figure 1:** Map of Chhattisgarh state, location of Chhattisgarh in India and Bilaspur district has been shown in the map of Chhattisgarh and its four study sites have been shown.

## Result & Discussion

Table 1 indicate during the study and survey of weeds plant of rice field in Bilaspur district more than 41 weed species obtained belonging to 10 families and 29 genera. Dicot/ Monocot ratio of weeds species are 23/18 and genera species ratio are 29/41. According to table 2 dominant weeds families are Poaceae, Cyperaceae, Asteraceae, Amaranthaceae, Euphorbiaceae and Oxalidaceae with genus *Echinochloa*, *Cynodon*,

*Paspalum*, *Eleusine*, *Cyperus*, *Ageratum*, *Eclipta*, *Alternanthera*, *Phyllanthus*, *Euphorbia* and *Oxalis* and its species are *colona*, *crus-galli*, *dactylon*, *scrobiculatum*, *distichum*, *indica*, *rotundus*, *pilosus*, *distans*, *sanguinolentus*, *conyzoides*, *prostrata*, *sessilis*, *urinaria*, *hirta*, *corniculata* (Figures 2 & 3). Table 3 indicate families wise genera and species ratio of weed flora in rice fields of study area which is based on table 1. In this table monocot Poaceae family is most dominating families belonging to 8 genera and 12 species and in dicot Asteraceae is most dominating families belonging to 8 genera and 9 species and less weeds species is from Oxalidaceae, Rubiaceae and Verbenaceae families belonging to 1 genera and 1 species which is shown in the graph. Similar result obtained by many researches such as Sharma R.P. and Dubey V. (2009) in Bilaspur district (Chhattisgarh), Sinha M.K. (2017) in Korla district (Chhattisgarh), Karim S.M.R., (2004) in Malaysia, L.R. Dangwal (2012) in Rajouri district (J&K) [12-15]. The report of all these is a discussion on the weed problem in the paddy field. Weeds are a persistent problem in agriculture production system and increased production cost, resulting in high economic losses.

## Conclusion

Weeds are unwanted plant from any agriculture land. Weeds compete with paddy crop plant for resource - nutrition, water,



**Figure 3:** Photographs of rice field in Bilaspur District (C.G.).

mineral's etc. and reduce their production. The result of the survey provides knowledge of study area to explore and identified the weeds of paddy crop. This will help the farmers and agriculturists of the study area to identify the weeds and thus help in the planning a suitable strategy for their control [13].

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