

Floristic Diversity and Phenological Aspects of Paddy Field Weeds of Janjgir-Champa, Chhattisgarh.

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ABSTRACT:-

Present study deals with survey of floristic diversity and phenological aspects of paddy fields weeds of Janjgir-champa. A survey was done during 2019 to 2023, at the peak point of weed growth. An unwanted plant which is harmful to farmers and crop is called weed. For this study, study area was divided into five sites viz. (Aphrid, Champa, Kurda, Hathnevr and Naila). In present findings 112 weed species belonging to 33 families (Dicot 78, Monocot 33) were reported. One pteridophyte was also reported. Dicot/ Monocot ratio was 2.36 : 1 (family wise) for paddy weed flora. The information and knowledge about floristics of weeds play a significant role in weed management. Phenologically, seasonal behavior showed two aspects - Rainy season aspect & Winter season aspect. Different phenological events of these weeds were also observed and expressed in forms of phenograms. The present study focuses on the floristic diversity and phenological aspects of weeds found in the paddy fields of Janjgir-Champa. Conducted over a period from 2019 to 2023, the survey targeted the peak growth period of these weeds. Weeds, defined as unwanted plants that are detrimental to farmers and their crops, were extensively cataloged in this study. The research area was divided into five distinct sites: Aphrid, Champa, Kurda, Hathnevr, and Naila. Our findings revealed a total of 112 weed species spanning 33 families, with dicots comprising 78 species and monocots 33 species. Additionally, one species of pteridophyte was identified. The ratio of dicots to monocots was 2.36:1 on a family basis for the paddy weed flora. Understanding the floristics of these weeds is crucial for effective weed management strategies.

KEYWORDS:-Paddy weeds, Phenology, Floristics,

INTRODUCTION:-

Weeds are unwanted plants of any plant community. They assume importance posing problems to crop yield. The losses caused by weeds in India are considerably alarming, warranting urgent attention[2]. Weeds, an integral part of croplands, influence the general organization and functioning of the agro-ecosystem. For taking problem of weeds on country wide level, the availability of information, data regarding the distribution and economic importance, different methods of their control, material required for the purpose and the source of their availability are some of the essential pre-requisites[5]. The detrimental effects of weeds necessitate their eradication in croplands and other locations. Therefore, knowledge of weeds is a must to study the ecology and reciprocal relation of weeds and crops. Unfortunately weed ecology has not received sufficient attention till recent years. Some work has been done in most of the agricultural organizations focusing mainly on weed control, but study from an ecological point of view has not been done.[6,7]

MATERIAL AND METHODS:-

Study Area – Janjgir-champa district in Chhattisgarh (Map depicts in figure 1) state is situated between 22°03' N latitude and 82°47' E longitude. Red and yellow soil of Chhattisgarh are of alluvial origin. The climate is wet and humid in general interspersed with rainy months. Temperature ranges between 11°C to 43°C and average rainfall is 1200 to 1500 mm per year. The type of paddy culture used is mainly “direct-seeded” and “transplanted”. Direct seeded paddy suffers a lot by weed infestations than the transplanted paddy. Grasses make 85 to 89% of the total weed population and 90 to 96% of the total dry matter.



Figure 1-Map showings elected study area in janjgir- champa district.

METHODOLOGY:-

A thorough and extensive field work at regular weekly intervals, between 2019-23 was done for understanding the floristic diversity of the paddy weeds, at peak period of vegetational growth. To study floristic composition, genera and species at each sites were enumerated. The weeds were collected, identified using standard flora and the available literature. Voucher specimen were deposited in the herbarium of the Botany Department, C.M.D.P.G. College, Bilaspur.

For phenological studies, several visits at monthly intervals during the growth of plants were made and observations were recorded in the form of phenograms. Phenograms are hexagon figures (2) in which each arms of it depicts each stage of growth called phenophase. The total life span of awed has been divided into 6 phenophase.

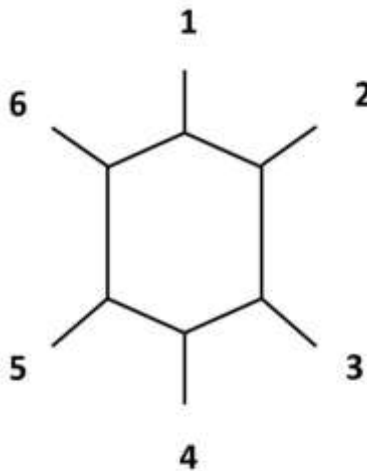


Figure 2. Phenogram

1. Germination
2. Vegetative growth
3. Flowering
4. Fruit formation

5. Seed maturation

6. Death

RESULTAND DISCUSSION :-

The weed flora has been divided into 3 distinct forms of morphological categories i.e. grasses, sedges and broadleaved weeds. **Grasses** such as *Aristida behriana* L., *Chloris barbata* Sw., *Cynodon dactylon* (L.) Pers., *Dactyloctenium aegyptium* (L.), *Dichanthium annulatum* (Forssk.), *Digitaria sanguinalis* (L.) Scop., *Echinochloa colonum* (L.) Link., *Echinochloa crus-galli* (L.) P.Beauv., *Echinochloa glabrescens* Ham. ex Hook.f., *Eleusin indica* L., *Eriocaulon quinquangular* L., *Euphorbia hirta* (Linn.), *Euphorbia microphylla* Lam., *Ischaemum rugosum* Salisb., *Laptochloa chinensis* (L.) Nees, *Oplismenus burmannii* (Retz.) P.Beauv., *Panicum repens* L., *Paspalum distichum* L., *Paspalum Scrobiculatum* Linn., *Saccharum spontenum* L., *Senna tora* (L.) Roxb., *Setaria glauca* (L.) Beauv., *Themeda quadrivalvis* (L.) Kuntze; were found; **Sedges** like *Cyperus difformis* (L.), *Cyperus flavidus* Retz., *Cyperus haspan* L., *Cyperus iria* L., *Cyperus rotundus* L., *Eleocharis geniculata* (L.) Roem & Schult., *Fimbristylis dichotoma* (L.) Vahl, *Fimbristylis miliacea* (L.) Vahl, *Kyllinga triceps* Rottb., *Schoenoplectiella purshiana* (Fernald) Lye were found.

Broadleaved weeds were enumerated as *Abutilon indicum* (Linn.), *Acalypha indica* L., *Achyranthes aspera* L., *Aerva lanata* (L.) Juss. Ex Schult., *Aeschynomene aspera* L., *Ageratum conyzoides* L., *Alternanthera philoxeroides*, *Alternanthera tenella* Colla, *Alysicarpus monilifer* (L.) DC, *Amaranthus viridis* L., *Ammannia auriculata* Willd., *Ammannia baccifera* L., *Anisomeles indica* (L.) O.Kuntz, *Bacopa monnieri* (Linn.) Wettst., *Biophytum sensitivum* (L.), *Blumea lacera* (Burm.f.) DC., *Boerhavia diffusa* L., *Canscora diffusa* (Vahl) R.Br., *Celosia argentea* L., *Centella asiatica* (L.), *Cleome viscosa* L., *Coldenia procumbens* L., *Commelina benghalensis* L., *Corchorus acutangulus* Lam., *Corchorus aestuans* L., *Corchorus olitorius* L., *Corchorus trilocularis* L., *Crotolaria juncea* L., *Croton bonplandianus* Baill.,

Table1: -Floristic diversity of weeds in rice field of five study sites (Aphrid, Champa, Kurda, Hathneva and Naila) –

S. No.	Scientific name of plant	Family	Genera	Species
Dicot				
1.	<i>Hygrophila auriculata</i> (Schumach.)	Acanthaceae	01	01

2.	<i>Achyranthes aspera</i> L. <i>Aerva lanata</i> (L.) Juss. Ex Schult. <i>Alternanthera philoxeroides</i> <i>Alternanthera tenella</i> Colla <i>Amaranthus viridis</i> L. <i>Celosia argentea</i> L.	Amaranthaceae	05	06
3.	<i>Centella asiatica</i> (L.)	Apiaceae	01	01
4.	<i>Ageratum conyzoides</i> L. <i>Blumealacera</i> (Burm.f.) DC. <i>Eclipta alba</i> (L.) Hassk. <i>Emilia sonchifolia</i> (L.) DC. ex Wight <i>Gnaphalium pensylvanicum</i> Willd. <i>Grangea maderaspatana</i> (L.) Poir. <i>Parthenium hysterophorus</i> L. <i>Solanum xanthocarpum</i> <i>Sphaeranthus indicus</i> Linn. <i>Spilanthes acmella</i> (L.) L. <i>Tridax procumbens</i> (L.) L. <i>Xanthium strumarium</i> L.	Asteraceae	12	12
5.	<i>Coldenia procumbens</i> L. <i>Heliotropium indicum</i> L. <i>Heliotropium supinum</i> L.	Boraginaceae	02	03
6.	<i>Cleome viscosa</i> L.	Capparaceae	01	01
7.	<i>Evolvulus nummularius</i> (L.) L. <i>Ipomoea aquatica</i> Forssk. <i>Merremia marginata</i> (Burm.fil.) Hall.fil.	Convolvulaceae	03	03
8.	<i>Mukia maderaspatana</i> (L.) M. Roem.	Cucurbitaceae	01	01
9.	<i>Eriocaulon quinqueangulare</i> L.	Eriocaulaceae	01	01

10.	<i>Acalypha indica</i> L. <i>Croton bonplandianus</i> Baill. <i>Euphorbia hirta</i> (Linn.) <i>Euphorbia microphylla</i> Lam. <i>Phyllanthus maderaspatensis</i> L. <i>Phyllanthus niruri</i> Linn.	Euphorbiaceae	04	06
11.	<i>Aeschynomene aspera</i> L. <i>Alysicarpus monilifer</i> (L.) DC. <i>Crotalaria juncea</i> L. <i>Desmodium triflorum</i> (L.) DC. <i>Indigofera tinctoria</i> (L.f.) Retz. <i>Senna tora</i> (L.) Roxb. <i>Taphrosia purpurea</i> (L.) Pers. <i>Vigna trilobata</i> (L.) Verdc.	Fabaceae	08	08
12.	<i>Canscora diffusa</i> (Vahl) R.Br.	Gentianaceae	01	01
13.	<i>Hydrolea zeylanica</i> (L.) Vahl	Hydroleaceae	01	01
14.	<i>Anisomeles indica</i> (L.) O.Kuntz <i>Hyptis suaveolens</i> (L.) Poit <i>Salvia plebeia</i> R.Br.	Lamiaceae	03	03
15.	<i>Lindernia procumbens</i> (Krock.) Borbas	Linderniaceae	01	01
16.	<i>Ammannia auriculata</i> Willd. <i>Ammannia baccifera</i> L.	Lythraceae	01	02
17.	<i>Abutilon indicum</i> (Linn.) <i>Malachra capitata</i> (L.) L. <i>Sida acuta</i> Burf.f. <i>Sida cordifolia</i> (Linn.) <i>Sida veronicaefolia</i> Lamk. <i>Triumfetta rhomboidea</i> Jacq. <i>Urena lobata</i> (L.)	Malvaceae	05	07
18.	<i>Ludwigia octovalvis</i> (Jacq.) P.H. Raven <i>Ludwigia parviflora</i> Roxb.	Onagraceae	01	02

19.	<i>Biophytumsensitivum</i> (L.) <i>Oxaliscorniculata</i> L.	Oxalidaceae	02	02
20.	<i>Boerhaviadiffusa</i> L.	Nyctaginaceae	01	01
21.	<i>Bacopamonnieri</i> (Linn.) Wettst. <i>Dopatrium junceum</i> (Roxb.) Ham. Ex Benth. <i>Limnophila indica</i> (L.)Druce <i>Scoperiadulcis</i> L.	Plantaginaceae	04	04
22.	<i>Polygonumplebeium</i> R.Br.	Polygonaceae	01	01
23.	<i>Portulacaoleracea</i> L.	Portulacaceae	01	01
24.	<i>Oldenlandiacorymbosa</i> (DC.) Hand. <i>Spermacocepusilla</i> Wall.	Rubiaceae	02	02
25.	<i>Physalis minima</i> Linn.	Solanaceae	01	01
26.	<i>Melochiacorchorifolia</i> L.	Sterculiaceae	01	01
27.	<i>Corchorusacutangulus</i> Lam. <i>Corchorus aestuans</i> L. <i>Corchorus olitorius</i> L. <i>Corchorustrilocularis</i> L.	Tiliaceae	01	04
28.	<i>Phylanodiflora</i> (L.) Greene	Verbenaceae	01	01
Monocot				
1.	<i>Commelinabenghalensis</i> L. <i>Cynotisaxillaris</i> (L.) D.DonexSweet	Commelinaceae	02	02
2.	<i>Cyperus difformis</i> (L.) <i>Cyperusflavidus</i> Retz. <i>Cyperus haspan</i> L. <i>Cyperus iria</i> L. <i>Cyperus rotundus</i> L. <i>Eleocharisgeniculata</i> (L.)Roem&Schult <i>Kyllinga triceps</i> Rottb. <i>Fimbristylisdichotoma</i> (L.)Vahl <i>Fimbristylis miliaceae</i> (L.) Vahl <i>Schoenoplectiellapurshiana</i> (Fernald)Lye	Cyperaceae	05	10

3.	<i>Aristida behriana</i> L. <i>Chloris barbata</i> Sw. <i>Cynodondactylon</i> (L.)Pers. <i>Dactyloctenium aegyptium</i> (L.) <i>Dichanthiumannulatum</i> (Forssk.) <i>Digitaria sanguinalis</i> (L.) Scop. <i>Echinochloa colonum</i> (L.) Link <i>Echinochloa crus-galli</i> (L.) P.Beauv. <i>Echinochloaglabrescens</i> Ham.exHook.f. <i>Eleusin indica</i> L. <i>Ischaemum rugosum</i> Salisb. <i>Laptochloa chinensis</i> (L.) Nees <i>Oplismenusburmannii</i> (Retz.)P.Beauv. <i>Panicum repens</i> L. <i>Paspalum distichum</i> L. <i>PaspalumScrobiculatum</i> Linn. <i>Saccharum spontenum</i> L. <i>Setaria glauca</i> (L.) Beauv. <i>Setariaviridis</i> (L.) Beauv. <i>Themedaquadrivalvis</i> (L.)Kuntze	Poaceae	16	20																																								
4.	<i>Monochoriavaginalis</i> (Burm.f.) C.Presl	Pontederiaceae	01	01																																								
Pteridophyte																																												
1.	<i>Marsileaminuta</i> L.	Marsileaceae	01	01																																								
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In our study of paddy fields in Janjgir-Champa, we observed a diverse array of life forms among weeds (Figure 3). Furthermore, the distribution of genera and species across different families further elucidates the biodiversity patterns (Figure 4).

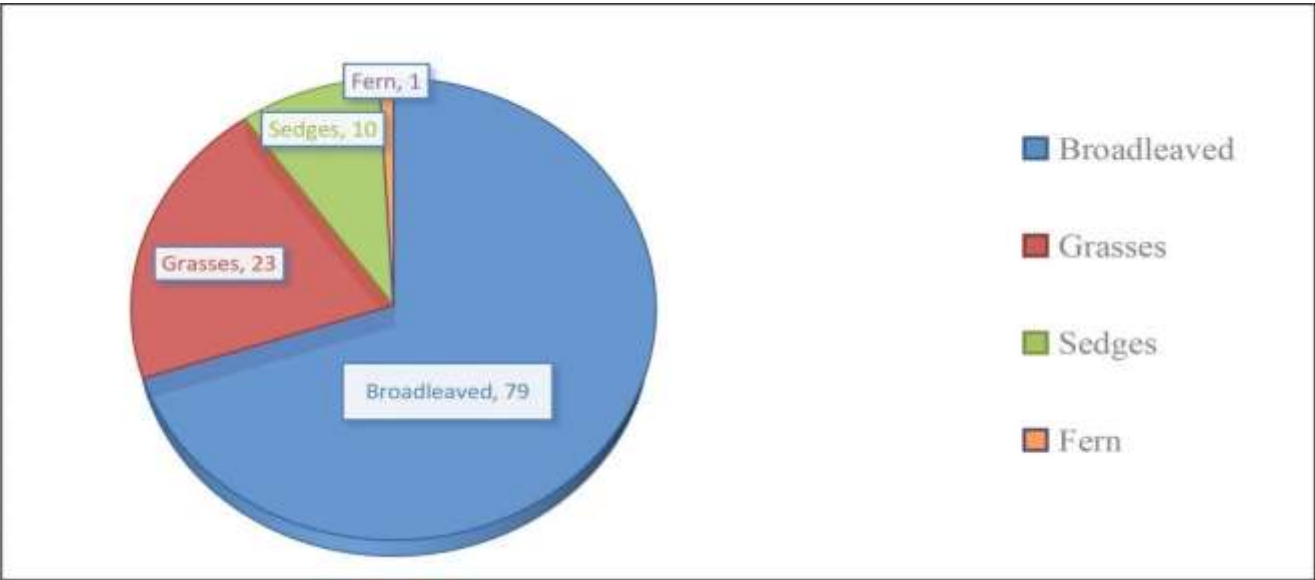


Figure 3:-Different life forms present in paddy field weeds.

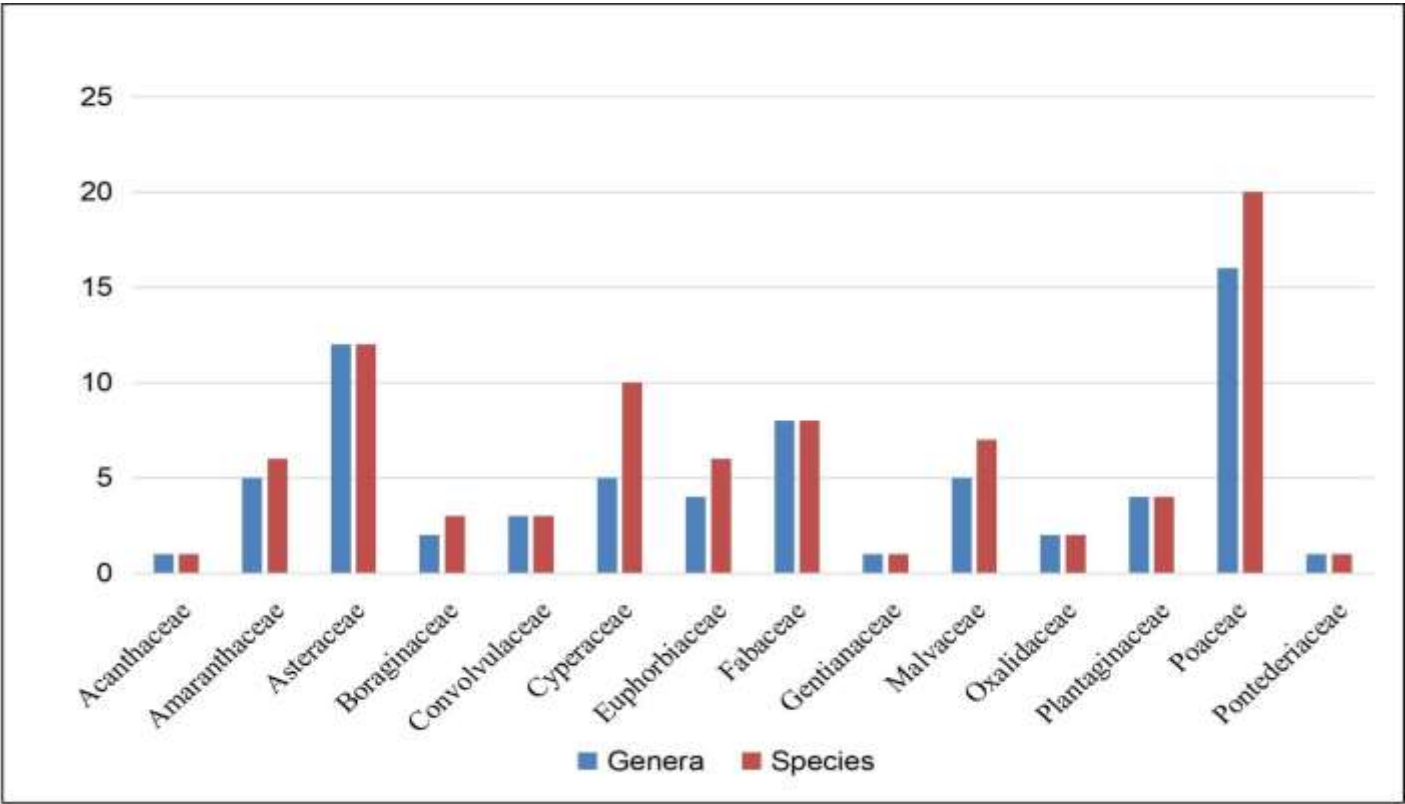
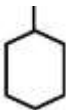
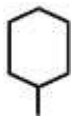
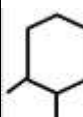
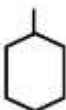
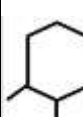
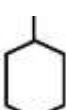
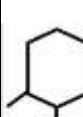
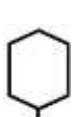
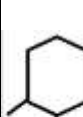
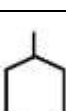
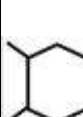
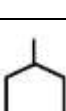
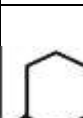
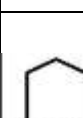
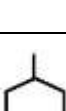
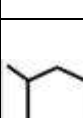
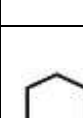
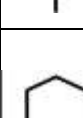
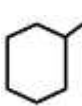
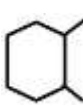
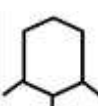
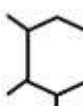
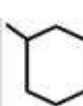
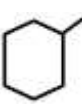
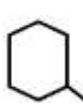
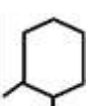
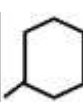
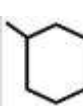
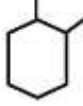
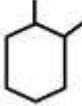
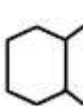
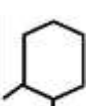
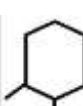
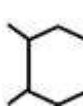
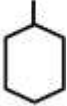
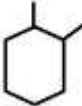
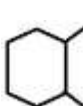
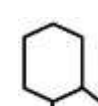
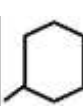
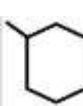
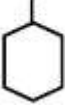
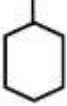
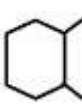
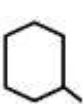
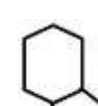
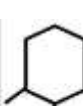
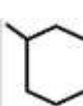
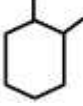
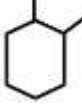
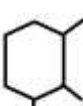
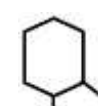
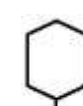
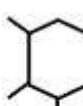
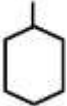
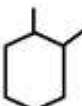
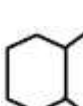
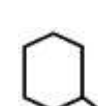
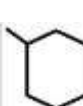
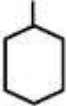
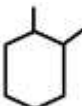
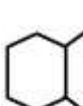
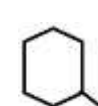
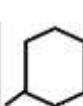
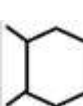
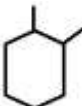
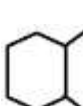
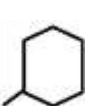
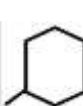
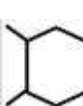
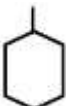
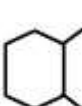
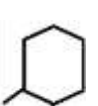
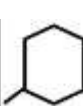
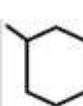


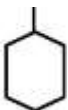
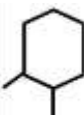
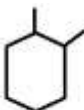
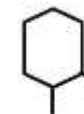
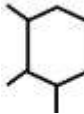
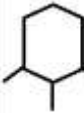
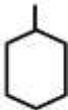
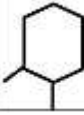
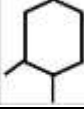
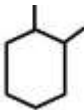
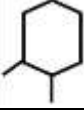
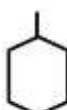
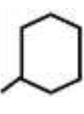
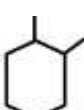
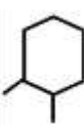
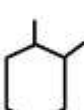
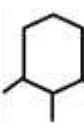
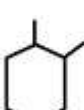
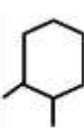
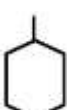
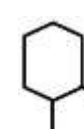
Figure .4:- Distribution of Genera and Species into different families of paddy fields of Janjgir- Champa.

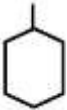
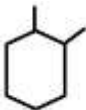
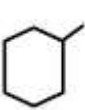
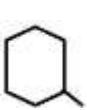
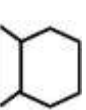
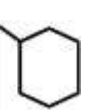
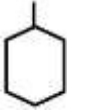
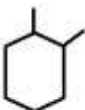
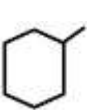
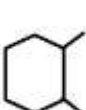
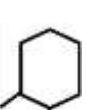
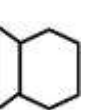
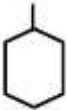
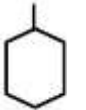
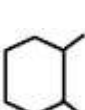
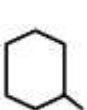
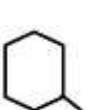
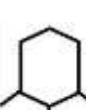
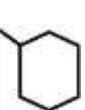
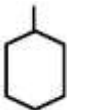
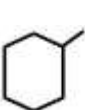
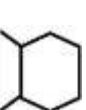
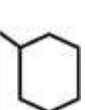
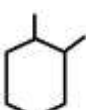
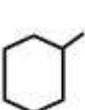
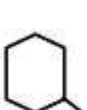
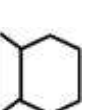
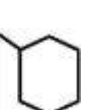
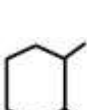
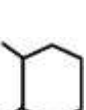
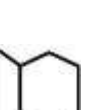
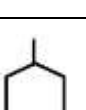
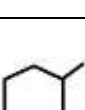
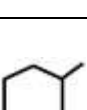
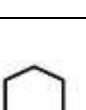
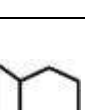
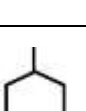
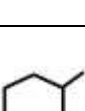
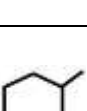
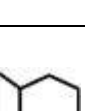
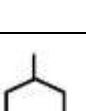
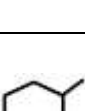
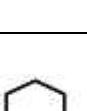
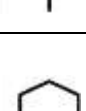
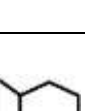
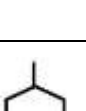
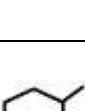
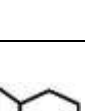
Table 2:- Phenological observation on weeds of rice-fields in the form of phenograms.

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
1.	<i>Abutilon indicum</i> (Linn.)								Perennial	Seeds
2.	<i>Acalypha indica</i> L.								Perennial	Seeds
3.	<i>Achyranthes aspera</i> L.								Perennial	Creeping Stem and Seeds
4.	<i>Aerva lanata</i> (L.) Juss. Ex Schult.								Annual	Seeds
5.	<i>Aeschynomene aspera</i> L.								Perennial	Underground Stem and Seeds
6.	<i>Ageratum conyzoides</i> L.								Perennial	Seeds
7.	<i>Alternanthera philoxeroides</i>								Annual	Seeds
8.	<i>Alternanthera tenella</i> Colla								Perennial	Creeping Stem and Seeds
9.	<i>Alysicarpus monilifer</i> (L.) DC.								Annual	Seeds
10.	<i>Amaranthus viridis</i> L.								Annual	Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
11.	<i>Ammannia auriculata</i> Willd.								Annual	Seeds
12.	<i>Ammannia baccifera</i> L.								Annual	Seeds
13.	<i>Anisomeles indica</i> (L.) O.Kuntz								Perennial	Seeds
14.	<i>Aristida behriana</i> L.								Annual	Seeds
15.	<i>Bacopa monnieri</i> (Linn.) Wettst.								Perennial	Creeping Stem and Seeds
16.	<i>Biophytum sensitivum</i> (L.)								Annual	Seeds
17.	<i>Blumea lacera</i> (Burm.f.) DC.								Annual	Seeds
18.	<i>Boerhavia diffusa</i> L.								Perennial	Seeds
19.	<i>Cassipourea diffusa</i> (Vahl) R.Br.								Annual	Seeds
20.	<i>Celosia argentea</i> L.								Annual	Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Propagation
21.	<i>Centella asiatica</i> (L.)								Perennial	Runner and Seeds
22.	<i>Chloris barbata</i> Sw.								Annual	Seeds
23.	<i>Cleome viscosa</i> L.								Annual	Seeds
24.	<i>Coldenia procumbens</i> L.								Annual	Seeds
25.	<i>Commelina benghalensis</i> L.								Annual	Creeping Stem and Seeds
26.	<i>Corchorus acutangulus</i> Lam.								Annual	Seeds
27.	<i>Corchorus aestuans</i> L.								Annual	Seeds
28.	<i>Corchorus olitorius</i> L.								Annual	Seeds
29.	<i>Corchorus trilobularis</i> L.								Annual	Seeds
30.	<i>Crotalaria juncea</i> L.								Perennial	Seeds

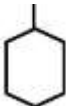
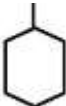
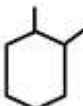
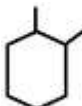
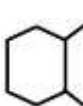
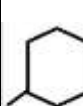
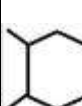
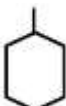
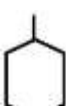
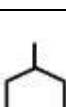
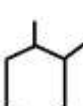
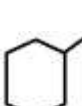
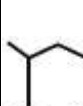
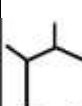
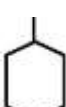
S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
31.	<i>Croton bonplandianus</i> Baill.								Perennial	Seeds
32.	<i>Cynotisaxillaris</i> (L.) D. Don ex Sweet								Annual	Seeds
33.	<i>Cynodondactylon</i> (L.) Pers.								Perennial	Creeping Stem, Rhizome and Seeds
34.	<i>Cyperusdifformis</i> (L.)								Annual	Rhizome and Seeds
35.	<i>Cyperusflavidus</i> Retz.								Annual	Rhizome and Seeds
36.	<i>Cyperushaspan</i> L.								Annual	Rhizome and Seeds
37.	<i>Cyperusiria</i> L.								Annual	Rhizome and Seeds
38.	<i>Cyperusrotundus</i> L.								Perennial	Tuber, Rhizome and Seeds
39.	<i>Dactyloctenium aegyptium</i> (L.)								Annual	Creeping, Rhizome and Seeds
40.	<i>Desmodium triflorum</i> (L.) DC.								Annual	Seeds

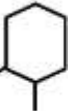
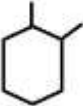
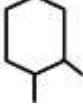
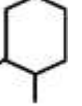
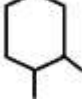
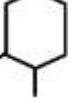
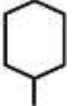
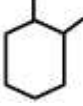
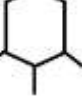
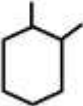
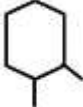
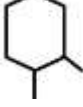
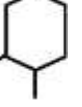
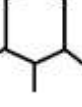
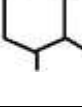
S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
41.	<i>Dichanthium annulatum</i> (Forssk.)								Annual	Seeds
42.	<i>Digitaria sanguinalis</i> (L.) Scop.								Annual	Seeds
43.	<i>Dopatrium junceum</i> (Roxb.) Ham. Ex Benth.								Annual	Seeds
44.	<i>Echinochloa colonum</i> (L.) Link								Annual	Seeds
45.	<i>Echinochloa crus-galli</i> (L.) P. Beauv.								Annual	Seeds
46.	<i>Echinochloa glabrescens</i> Ham. ex Hook. f.								Annual	Seeds
47.	<i>Eclipta alba</i> (L.) Hassk.								Annual	Rhizome and Seeds
48.	<i>Eleocharis geniculata</i> (L.) Roem & Schult								Annual	Seeds
49.	<i>Eleusine indica</i> L.								Annual	Creeping, Rhizome and Seeds
50.	<i>Emilia sonchifolia</i> (L.) DC.								Annual	Seeds

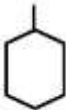
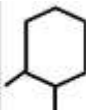
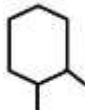
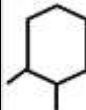
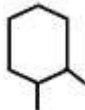
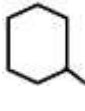
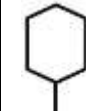
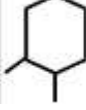
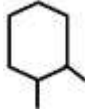
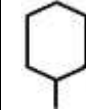
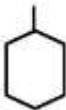
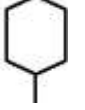
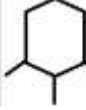
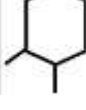
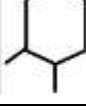
S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
51.	<i>Eriocaulon quinquangulare</i> L.								Annual	Seeds
52.	<i>Euphorbia hirta</i> (Linn.)								Annual	Seeds
53.	<i>Euphorbia microphylla</i> Lam.								Annual	Seeds
54.	<i>Evolvulus nummularius</i> (L.) L.								Annual	Seeds
55.	<i>Fimbristylis dichotoma</i> (L.) Vahl								Annual	Rhizome and Seeds
56.	<i>Fimbristylis miliacea</i> (L.) Vahl								Annual	Rhizome and Seeds
57.	<i>Gnaphalium pennsylvanicum</i> Willd.								Annual	Seeds
58.	<i>Grangea maderaspatana</i> (L.) Poir.								Annual	Seeds
59.	<i>Heliotropium indicum</i> L.								Annual	Seeds
60.	<i>Heliotropium supinum</i> L.								Annual	Seeds

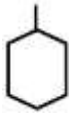
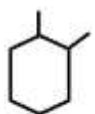
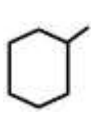
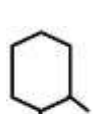
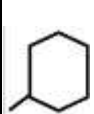
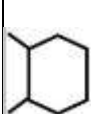
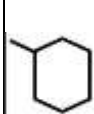
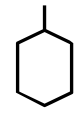
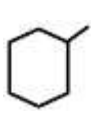
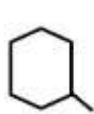
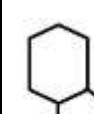
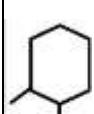
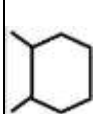
S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
61.	<i>Hydrolea zeylanica</i> (L.) Vahl								Annual	Seeds
62.	<i>Hygrophila auriculata</i> (Schumach.)								Perennial	Seeds
63.	<i>Hyptissuaveolens</i> (L.) Poit								Perennial	Seeds
64.	<i>Indigofera linifolia</i> (L.f.) Retz.								Annual	Creeping Stem and Seeds
65.	<i>Ipomoea aquatica</i> Forssk.								Perennial	Creeping Stem and Seeds
66.	<i>Ischaemum rugosum</i> Salisb.								Annual	Seeds
67.	<i>Kyllingatriceps</i> Rottb.								Annual	Seeds
68.	<i>Laptochloa chinensis</i> (L.) Nees								Annual	Seeds
69.	<i>Lindernia procumbens</i> (Krock.) Borbas								Annual	Seeds
70.	<i>Limnophila indica</i> (L.) Druce								Annual	Creeping Stem and Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
71.	Ludwigia octovalvis (Jacq.) P.H.Raven								Annual	Seeds
72.	Ludwigia parviflora Roxb.								Annual	Seeds
73.	Malachra capitata (L.)L.								Annual	Seeds
74.	Marsilea minuta L.								Annual	Sporocarp
75.	Melochia corchorifolia L.								Annual	Seeds
76.	Merremia emarginata (Burm.fil.)Hall. fil.								Perennial	Creeping Stemand Seeds
77.	Monochoria vaginalis (Burm.f.) C.Presl								Annual	Rhizome and Seeds
78.	Mukia maderaspatana (L.) M. Roem.								Annual	Seeds
79.	Oldenlandia corymbosa (DC.) Hand.								Annual	Seeds
80.	Oplismenus burmannii (Retz.) P.Beauv.								Annual	Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Propagation
81.	<i>Oxalis corniculata</i> L.								Annual	Creeping Stem and Seeds
82.	<i>Panicum repens</i> L.								Annual	Seeds
83.	<i>Parthenium hysterophorus</i> L.								Perennial	Seeds
84.	<i>Paspalum distichum</i> L.								Annual	Creeping, Rhizome and Seeds
85.	<i>Paspalum Scrobiculatum</i> Linn.								Annual	Creeping, Rhizome and Seeds
86.	<i>Phyllanthus (L.) Greene</i>								Annual	Seeds
87.	<i>Phyllanthus maderaspatensis</i> L.								Annual	Seeds
88.	<i>Phyllanthus niruri</i> Linn.								Annual	Seeds
89.	<i>Physalis minima</i> Linn.								Annual	Seeds
90.	<i>Polygonum plebeium</i> R.Br.								Annual	Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
91.	<i>Portulaca oleracea</i> L.								Annual	Seeds
92.	<i>Saccharum spontaneum</i> L.								Perennial	Rhizome and Seeds
93.	<i>Salvia plebeia</i> R. Br.								Annual	Seeds
94.	<i>Schoenoplectiella purshiana</i> (Fernald) Lye								Annual	Seeds
95.	<i>Scoperia dulcis</i> L.								Perennial	Seeds
96.	<i>Sennatoria</i> (L.) Roxb.								Perennial	Seeds
97.	<i>Setaria glauca</i> (L.) Beauv.								Annual	Seeds
98.	<i>Setaria viridis</i> (L.) Beauv.								Annual	Seeds
99.	<i>Sida acuta</i> Burf. f.								Perennial	Rootstock and Seeds
100.	<i>Sida cordifolia</i> (Linn.)								Perennial	Rootstock and Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Methods of Proportion
101.	<i>Sida veronicaefolia</i> Lamk.								Perennial	Rootstock and Seeds
102.	<i>Solanum xanthocarpum</i>								Perennial	Seeds
103.	<i>Spermocoe pusilla</i> Wall.								Annual	Seeds
104.	<i>Sphaeranthus indicus</i> Linn.								Annual	Seeds
105.	<i>Spilanthes acmella</i> (L.) L.								Annual	Seeds
106.	<i>Taphrosia purpurea</i> (L.) Pers.								Perennial	Seeds
107.	<i>Themeda quadrivalvis</i> (L.) Kuntze								Annual	Seeds
108.	<i>Tridax procumbens</i> (L.) L.								Annual	Seeds
109.	<i>Triumfetta rhomboidea</i> Jacq.								Annual	Seeds
110.	<i>Urenalobata</i> (L.)								Perennial	Seeds

S. No.	Name of Plant	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Life Span	Method of Proportion
111.	<i>Vignatrilobata</i> (L.) Verdc.								Annual	Seeds
112.	<i>Xanthium strumarium</i> L.								Annual	Seeds

Cynotis axillaris (L.) D. Don ex Sweet, *Desmodium triflorum* (L.) DC., *Dopatrium junceum* (Roxb.) Ham. Ex Benth., *Eclipta alba* (L.) Hassk., *Emilia sonchifolia* (L.) DC. ex Wight, *Evolvulus nummularius* (L.) L., *Gnaphalium pensylvanicum* Willd., *Grangea maderaspatana* (L.) Poir., *Heliotropium indicum* L., *Heliotropium supinum* L., *Hydrolea zeylanica* (L.) Vahl, *Hygrophila auriculata* (Schumacher), *Hyptis suaveolens* (L.) Poit., *Indigofera linifolia* (L.f.) Retz., *Ipomoea aquatica* Forssk., *Lindernia procumbens* (Krock.) Borbas, *Limnophila indica* (L.) Druce, *Ludwigia octovalvis* (Jacq.) P.H. Raven, *Ludwigia parviflora* Roxb., *Malachra capitata* (L.) L., *Marsilea minuta* L., *Melochia corchorifolia* L., *Merremia emarginata* (Burm. fil.) Hall. fil., *Monochoria vaginalis* (Burm. f.) C. Presl, *Mukia maderaspatana* (L.) M. Roem., *Oldenlandia corymbosa* (DC.) Hand., *Oxalis corniculata* L., *Parthenium hysterophorus* L., *Phyllanthus nodiflorus* (L.) Greene, *Phyllanthus maderaspatensis* L., *Phyllanthus niruri* Linn., *Physalis minima* Linn., *Polygonum plebeium* R.Br., *Portulaca oleracea* L., *Salvia plebeia* R. Br., *Scoperia dulcis* L., *Setaria viridis* (L.) Beauv., *Sida acuta* Burf.f., *Sida cordifolia* (Linn.), *Sida veronicaefolia* Lamk., *Solanum xanthocarpum*, *Spermacocepusilla* Wall., *Sphaeranthus indicus* Linn., *Spilanthes acmella* (L.) L., *Taphrosia purpurea* (L.) Pers., *Tridax procumbens* (L.) L., *Triumfetta rhomboidea* Jacq., *Urena lobata* (L.), *Vignatrilobata* (L.) Verdc., *Xanthium strumarium* L.

Conclusion

A total of 112 weed species belonging to 92 genera and 33 families in which 78 Dicot and 33 Monocot & one pteridophyte was also reported. The dicot weeds were distributed in 67 genera and 78 species, whereas monocot weeds were distributed in 24 genera and 33 species. However the Dicot : Monocot ratio was 2.36:1 (family wise) where 2.79 :1 (genera wise). They were distributed in different life forms i.e., broadleaved (79), grasses (23), sedges (10) and fern (01). Poaceae (22), Asteraceae (12), Fabaceae (08) and Cyperaceae (08) contain highest number of weed species among the recorded families from the study site (Table 1).

Different workers have reported the composition of weed flora in different places. [3] has reported 58 weed species associated with the rice fields of Bilaspur (C.G.). Several other reports [8], [10], [4],[9],[1],[11]

Phenological behavior of weeds has been depicted in Table 2 in the form of phenograms. It is evident that most of the weed emerge with the emergence of paddy crop. They are rainy season annuals completing their life cycle in the month of November or October. Phenological cycle was found to be closely resembling to the climatic cycle. The most of rice weeds show their vegetative growth from July to September, flowering and fruiting till October and in November end seed were matured. After end of the November and December they died at that time rice crop was also harvested.

REFERENCES:-

1. Costa BP, Silva MR, de Moraes Rego CA, de Herrera JL, Cruz MS, Ristau AC, Sampaio MC, Alves TN, Oliveira SS, Braz H, Machado NA. Phytosociology and floristic composition of the infesting community in rice crop waterlogged. *American Journal of Plant Sciences*. 2018 Jan 31;9(3):353-67.
2. Sah D, Panwar GS, Kalhapure AH, Singh N. Phytosociological Association of Weeds in Rice Crop of Bundelkhand Region of Uttar Pradesh. *Int. J. Curr. Microbiol. App. Sci*. 2020;9(11):1285-94.
3. Moghe, Snehal, and Veenapani Dubey. "Eriocaulaceae of rice fields of Bilaspur in Chhattisgarh." *Current Botany* 8 (2017): 141-143.
4. Duary, B.; M.M. Mishra, R. Dash and K.C. Teja. 2015. Weed management on lowland Rice. *Indian Journal of Weed Science*, 47(3): 224-232. [https://www.isws.org.in/IJWSn/Full_PDF/47\(3\)_2015.pdf#page=12](https://www.isws.org.in/IJWSn/Full_PDF/47(3)_2015.pdf#page=12)
5. Duary, B., K. Charan Teja, and U. Soren. "Management of composite weed flora of transplanted rice by herbicides." (2015): 349-352.
6. Rout SD, Panda SK, Panda T. Phytosociological and floristic evaluation of Kuldiha wildlife sanctuary, Odisha, India. *Tropical Plant Research*. 2018;5(3):419-30.
7. Satyavathi K, Sandhya Deepika D, Padal SB. Floristic diversity and Phyto-sociological studies of Sanjavanam Sacred Grove in G. Madugula Mandal, Visakhapatnam District, Andhra Pradesh, India. *Int. Res. J. Environmental Sci*. 2017;6(4):37-47.
8. Anwar M, Akhtar N, Khalid S. 63. Phytosociological study of weeds of wheat crop under edaphic variation: A case study from district Swabi, Khyber Pakhtunkhwa, Pakistan. *Pure and Applied Biology (PAB)*. 2020 Feb 11;9(1):640-9.
9. Sinha MK. Studies on weed diversity and its associated phytosociology under direct dry seeded rice systems in Korla District (CG) India. *Advances in Plants and Agriculture Research*. 2017;7(2):246-52.
10. Shrivastava, A. K., A. Tikariha, and S. Patra. "Seasonal and floristic biodiversity of weeds growing in Chhikatta and Bhilai area of Chhattisgarh, India." (2014): 318-326.
11. Tiwari P, Rautela B, Rawat DS, Singh N. Weed floristic composition and diversity in paddy fields of Mandakini valley, Uttarakhand, India. *Int. J. Bot. Stud*. 2020;5(3):334-41.