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RICE (*ORYZA SATIVA* LINN.) FIELD WEEDS AND ITS ETHNOMEDICINAL IMPORTANCE IN EAST VIDARBHA (M.S.)

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ABSTRACT:

Present study is carried out in *kharif* and *rabbi* cropping seasons in east Vidarbha, Maharashtra. The study was based on extensive and intensive fields surveys made during different months during 2018-2019.During the course of field study the authors have selected 4 important rice growing blocks.It divided into two parts. S_1(irrigated) sitecontaining the blocksGoregaon (District-Gondia) and Lakhandur (District-Bhandara). S_2(non-irrigated) site containing blocks Deori and Arjuni/ Mor (District-Gondia).Frequent field trips were made twice a month in each site for collection of weeds. During this period the authors have reported a total of 66 weed species belonging to 21angiospermic and 1 pteridophytic families. Out of 21angiospermic families the predominance was shown by monocot families like Cyperaceae and Poaceae having 14and 12 weed species, respectively. The pteridophytic family Marsileaceae was represented by 01 weed species. The object of this work is to gather such information on the rice-field weeds and to show that most of these haveethnomedicinal importance. It has also been observed that 24weeds having ethnomedicinal properties. The family like Amaranthaceae, Asteraceae and Poaceae had the largest number of plants used for dysentery, wounds and skin diseases. Further phyto-chemical investigation is necessary before some of them can be used as drugs to serve mankind. It is the need of the hour to explore, identify and utilize new ethnomedicinal plants and help to support increase the economy of farmer of the rural area.

Key words: - *Rice, Weeds,Kharif, Rabbi, Yield, Ethnomedicine.*

INTRODUCTION:

The FAO considers rice to be most important human food crop in the world. For half of the world population, particularly in Asia, America, and Africa rice supplies 80% of their food requirements. Rice plays role of paramount importance in the diet of Asian population, particularly in the India. India is one of the largest rice growing country in the world and having greatest consumers. It has 43.20 million hectares land under rice cultivation. Total global consumption of milled rice amounted to approximately 499.2 million metric tons. In Asia yield is680.1 million metric tonsand in India 148.26 million metric tons estimated rice production (FAO, 2017).

In India rice is grown on about 4,49,72,000 hectares, 30% of the total area under food grains and 37% of the total area under cereals. Over 30,000 varieties of rice are cultivated in different part of India. The production of rice in India is 89,475.1 thousand metric tons with an average yield of 2,404 Kg/ha. as per the record of Annual report of Agriculture, New Delhi 2016-2017). The average per hectare yield of rice in India is less as compared to China due to many factors like shortage and high cost labor; lack of irrigation facilities, quality of germplasm, agricultural output and ecological conditions etc., but the problems of weed is the major contributor in the loss of production. Weed is a plant which is judged by man to be not of use and undesirable at a place where it

flourishes (Patil*et al.*, 2010). The weeds that grow along with rice crop results in low agricultural output. They are the major barriers to rice production because of their ability to compete for CO_2, space, moisture, sunlight and nutrients. Weedy crop sometimes leads to complete failure (Singh *et al.*, 2005). Out of total losses due to various biotic factors weeds are known to account for one third (Rao and Nagamani, 2007). It has been observed that grain yield in rice is drastically reduced if it is not deweeded at early stage of growth.Rice provides 23% of global human per capita energy and 16% per capita protein. Rice protein ranks high in nutritional quality among cereals, though protein content is modest(Shah Alam, 2014).India is the second largest producer of rice after China (Savary*et al.*, 2005). Beside its use for human food, rice is a source for number of industrial products like rice starch, rice branoil, flaked rice, puffed rice and rice husk etc. Being staple food it plays an important role in the economy of India hence occupies a central position in agricultural policy making (Dangwal*et al.*, 2012).

Rice crop cultivated in two seasons, *kharif* and *rabbi*. The *kharif* season commence from June to November while rabbi from middle January to May. Occurrence of weeds in rice field is based on favourableecological factors. In view of recent demand it is essential to intensify the utilization of weeds as medicinal plants and support to increase the economy of farmers.

MATERIAL AND METHODS:-

The present study deals with major weeds of rice fields in east Vidarbha, Maharashtra. The study was based on extensive and intensive fields surveys made during different months of cropping seasons 2018-2019. Frequent field trips were made twice a month in each site for collection of weed species (Fig. 1& Plate-1). During this course of interviews were conducted with farmers and agriculturalists of each site about seasonal weed species. Flowering, fruiting seasons and ethno-medicinal uses of weeds were reported. The collected weed plants were properly identified with the help of available literature offlorasand compared with Google lens(Dangwal*et al.*,2012).

RESULTS AND DISCUSSION

In ancient Indian literature, it is mentioned that every plant on the earth is useful for human being, crops and animals. Rice fields are rich in biological diversity. Weeds can act as allelophathic effects. The term Allelopathy means the injurious effects of one upon another. Positive (inhibitory) allelopathic effects of any weed on other weeds can be exploited to developseco-friendly, cheap and effective green herbicides. It contains green allelochemicals which are an integral part of eco or organic farming (Oudhia*et al.*,2002). Hereported the floristic composition of the area and may act as green herbicide. Ecological study of rice, weeds was documented. Total 208 plant species were recorded in rice field, which includes Herbs-118, Shurbs-31, under Shrub-2, Trees-39, Twiner-5, and Climber-13. In these 208 plants, 173 genera, 208 species belong to 63 families.He was also noted that many farmers are sale these useful weeds to local markets after uprooting. This is providing an additional income to the farmers. The study suggested that by educating the farmers and local people about proper grading and processing of different weed parts and establishing village level cooperative societies, one can provide a strong base for them to startsmall cottage industries and also a good market price of their products.

Ethno-medicine and their traditional knowledge is a good illustration of poor communities living in theremote areas, fighting even incurable diseasesthrough the traditional methods and even for theirlivestock through these traditional herbal medicines(Raut*et al.*, 2012). Plant parts are directly used asmedicines by a majority of community in all over world and have no side effect like allopathic medicines. Most of the modern medicines are produced indirectly from medicinal plants. In the state ofOdisha, phytotherapy (treatment with medicines from plant and their derived products) forms an integral part of the local culture, and the information about plants and their uses are passed from generation to generation through oral folklore, primarily amongst the elderly; the natural retainers of traditional knowledge in

their respective communities (Raut*et al.*, 2012).

Rice is the important crop grown in these districts. Regular cultivation are practiced, but the per hector yield of rice in this district is less as compared to other parts of India due to many factors out of which the problem of weeds is of great concern. The persistent weed species give a severe competition to rice crop and reduce the agricultural output. Some weeds are difficult to identify at early stage (Before flowering) because of their resemblance with crop plants.Cyperaceae and Poaceae are dominant and act as associate in rice field**(Table-1)**. FamilyCyperaceae i.e., *Cyperusrotundus*, *C. iria* and *C.difformis*,C.*odorantus, C. pilosus*etc. were dominant. However some of the weeds reported from the study area i.e., *Achyranthesaspera, Eclipta alba, Commelinabenghalensis, Cynodondactylon, Euphorbia hirta, Amaranths virdis, Cyperusrotundus, Ammaniabaccifera ,Ludwigiaparviflora, Mollugopentaphylla, Eleusineindica, Phyllanudiflora*etc. are of medicinal importance, used in traditional medicines by vaidhyas of these area.

The weeds like *Amaranthus viridis, Boerhaavia diffusa, Trianthemaportulaca strum, Portulaca oleracea, Oxalis corniculata* etc. are used in some cooking racepies. *Ophiuru scorymbosus* and *Paspalum distichum*are antioxidant. Other 42 weed species used as fodder for domestic animals. Biomass from weeds is also suggested to use for compost and green manure.

Medicinal plants constitute the base of health care systems in many societies. Globally, about 85% of the traditional medicines used for primary healthcare derived from plants (Farnsworth, 2012). Today, according to the World Health Organization (WHO), as many as 80% of the world's people depends on traditional medicine and in India, 65% ofthe population in the rural areas use Ayurveda (WHO, 2002). In the interior areas of Koraput district, plants become the only source of medicine because lack ofmodern facilities and remoteness (Pattnaik and Mohapatra, 2010). Ironically, information on the useof plants for medicine from that area is completely lacking. At the same time, the traditional knowledgeis rapidly degrading due to modernization of that area and the younger generation is not interested tolearn from older generation. Thus, much important information may have been lost in absence of properdocumentation. Raut*et al.* (2012) reported several ethnobotanical plants inthe Semiliguda of Koraput district of Odisha.

CONCLUSION

The present study was conducted as a first ever attempt from the study area to explore and identify the66 species ofweeds belong to 22 families in the field ofrice crop. This will help the farmers and agriculturists to identify the weeds for the planning of their control. Weeds compete with rice crop for nutrition and hence reduce the yield. They also affect the quality of germplasm and cause enormous loss to the farmers. It is essential to intensify the utilization of weeds as medicinal plants. These weeds provide ample opportunities to study them critically for new drug development through chemical analysis without disturbing biodiversity.Further this study will be useful for the acclimatization of weeds into cultivated plants. Generally weed plants are thehost of microbes, and provides habitat for disease causal organisms.After deweeded microbes decompose them and again infect to rice crop. Eradicated weeds need to be used positively for fodder and composting.

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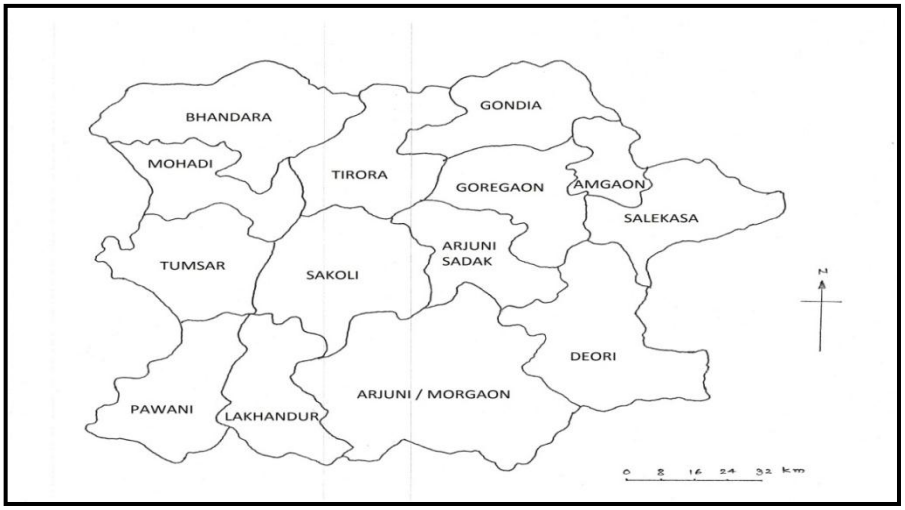

FIG: 1 MAP OF BHANDARA and GONDIA

Table:1 Rice fields weeds and its uses in East Vidarbha

S. N.	Family	Botanical name	Flowering period	Ethnomedicinal uses
1	Amaranthaceae	*Alternantherasessilis* (L.) DC.	Feb- Oct	Dysentery
		A.philoxeroides (Mart.) Ariseb	Aug- Nov	Fodder ,composting
		Amaranthusviridis L.	Jan- Dec	Ear disease, skin eruption, abdominal disorder
		Amaranths spinosus L.	July- Dec	Fodder, composting
		Achyranthesaspera L.	Mar- Dec	Root for rheumatisms
		Celosia argentea L.	Aug- Decr	Fodder, composting
2	Asteraceae	*Ageratum conyzoides* L.	Jan- Dec	Kidney stones,wounds
		Bidensbipinnata L.	Mar- Dec	Fodder, composting
		Eclipta alba L.	Jan- Dec	Hair, eye, dental & leprosy problem,
		Galinsogaparviflora Cav.	yearly	Fodder, composting
		*Partheniumhysterophorus*L.	yearly	Fodder, composting
		*Vernoniacinarea*Lees.	July-Dec	Leucoderma,psoriasis
3	Aizoaceae	*Trianthemaportulacastrum*L.	Aug- Dec	Fodder, composting
4	Brassicaeae	*Nasturtium officinale R.BR.*	Mar- Sept	Fodder, composting
5	Commelinaceae	*Commelinabenghalensis*L.	July- Nov	Hemorrhage, fever, rabies, snake bite, leprosy, skin
		*Cynotisvaga*Lour.	July-Oct	Fodder, composting
		*Murdannianudiflora*L.	Aug- Nov	Fodder, composting
6	Convolvulaceae	*Ipomoea aeriocarpa* R.BR.	July- Oct	Cooking vegetable
7	Cyperaceae	*Cyperusiria* L.	Sept- Dec	Fodder, composting
		*Cyperusodorantus*Kunth.	Aug.- Nov	Fodder, composting
		*Cyperuspilosus*Vahl.	Aug. Nov	Fodder, composting
		Cyperusrotundus L.	July- Dec	Vomiting,dysentery wounds, epilepsy,
		Cyperusdifformis L.	Aug- Nov	Fodder, composting
		Cyperusesculentus L.	July- Dec	Fodder, composting
		Cyperusbrevifolius (Rottboell) Hasskarl.	Aug- Nov	Fodder, composting
		*Cyperuscorymbosus*Rottboell	July- Dec	Fodder, composting

		Cyperuspaniceus (Rottboell) Boech.	Aug- Sept	Fodder, composting
		Fimbristyliscomplanata (Retz.) Link.	Mar- June	Fodder, composting
		Fimbristylisdichtoma L.	June- Nov	Fodder,composting
		Fimbristylisferruginea (L.) Vahl	July- Nov	Fodder, composting
		Fimbristylisquincuangularis (Vahl.)Kunth	July- Nov	Fodder, composting
		Scripussetaceus L.	Jun- Nov	Fodder, composting
8	Euphorbiaceae	*Acalyphaindica L.*	June- Nov	Anthelmantic, ulcers
		Euphorbia hirta L.	Jan- Dec	Cough, asthma,dysentery,UTI
		Euphorbia indica Lam.	Sept- Nov	Fodder, composting
		Phyllanthusurinaria L.	yearly	Fodder, composting
9	Fabaceae	*Aeschynomeneindica* L.	Sept- Dec	Fodder, composting
		Cassia pumila Lam.	Aug- Oct	Fodder, composting
10	Lythraceae	*Ammaniabaccifera* L	Aug- Dec	Snake bite, ulcers, leucorrhoea
		Ludwigiaparvifloral.	Aug- Dec	Fever, ulcer, wound
11	Malvaceae	*Malvastrumcoromandelianum*L.	yearly	Fodder, composting
		*Sidaacuta*Burm.	July-Dec	Fodder, composting
12	Marsileaceae	*Marseliaquadrifolia* L.	Aug-Dec	Fodder, composting
13	Molluginaceae	*Mollugopentaphylla* L.	Aug-Nov	Checking bleeding, skin
14	Nyctaginaceae	*Boerhaviadiffusa* L	Aug- Dec	Cooking vegetable
15	Oxalidaceae	*Oxalis corniculata* L.	yearly	Cough, dysentery, leucorrhoea, dandruff
16	Poaceae	*Cynodondactylon* L.	yearly	puja, menoerrhagia, skin diseases,
		Digitariaciliaris Retz.	Aug- Nov	Fodder, composting
		Echinochloacolona L.	July- Oct	Fodder, composting
		Echinochloa crus-galli L.	Aug- Sep	Fodder, composting
		Eleusineindica L.	July- Nov	Anthelmintic, astringent, depurative, diuretic, febrifuge, laxative
		Imperatacylindrica (L.) P. Beauv.	Sep- Jan	Brush-making, rope-making, fuel
		*Ophiuruscorymbosus*Gertn.	Aug- Nov	Nutritious, antioxidant
		PaspalumdistichumAuct.	Mar- Dec	Nutritious, antioxidant
		Paspalumscrobiculatum L.	July- Dec	Fodder, composting
		Saccharumspontaneum L.	Sept- Nov	Ropes, mats and brooms
		Setariaglauca L.	July- Nov	Fodder, composting
		*Setariavirdis*L.	July- Nov	Fodder, composting
17	Polygonaceae	*Polygonumbarbatum* L.	Jan- Dec	Haemorrage, diuretic
		Polygonumhydropiper L.	Jan- Dec	Haemorrage, diuretic
18	Portulacaceae	*Portulacaoleracea* L.	Sep -Apr	Cooking vegetable, diabetes
19	Rubiaceae	*Oldenlandiacorymbosa* L.	July- Nov	Fodder, composting
	Sapindaceae	*CordiospermumhelicacabumL.*	July- Nov	Fodder, composting
20	Scrophulariaceae	*Mazuspumilus* (Burm F.) Van Steen.	Mar- Nov	Fodder, composting
21	Solanaceae	*Physalis minima* L.	July- Nov	Fodder, composting
22	Verbenaceae	*Phylanudiflora* L.	Feb- Nov	Ulcer, wounds,asthma

PLATE -1

FIG: 1- SITE GOREGAON

FIG: 3-SITE DEORI

FIG: 2- SITE LAKHANDUR

FIG: 4- SITE ARJUNI/MOR