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Weeds of the major cereal crops and their economic Gujarat, India

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ABSTRACT

Weed is a relative and anthropocentric concept rather than an absolute category. Plants which interfere with human activity in crop and non crop areas consider weeds. All weeds are non desirable plants but all non desirable plants may not be weeds. In different language weeds are just harmful plants, rather then it contains some advantages and economic value. Weeds commonly used as medicinal, fodder and food in cereal crops. It's also contain some advantages like rapid growth, early maturation, environmental plasticity, resist environment, adaptation avid browsing etc.

Key words: Weed, serial crop, Economic

INTRODUCTION

Weeds are not desired in arable lands since they compete with crop plants for nutrients, soil moisture, sunlight and space (Rao, 1983)**.** They have often been given special identity as a fast growing troublesome exotic and noxious plant, in other words known as unwanted plants growing among the normal seasonal crops. These weeds cause great loss to cultivated crops and are responsible for less production since weeds have competition with main crops for water, light and nutrient. These weeds can be useful to us if we learn to use them, they can use as bio pesticides or controlling many diseases like cold, asthma, dermatitis, etc. The weeds can be utilized as manure, fodder, livestock beds and their therapeutic because of the presence of some chemicals like glycosides and alkaloids.

The increasing demands for food with growing human population in a country like ours compels search for new plants as source of food. The aboriginals' inhabiting the hilly forest areas and the rural people consume many wild species which are unknown and inacceptable to the urban elite. Khattak*et al*, 2005 analyzed weeds usually used as vegetables, for their mineral composition and to find out their consumption in the female subjects of the area. Its rural people and particularly the tribals still depend on the indigenous system of medicine (Pawar and Patil, 2011).

Along with modern system of medicine, homeopathy, Ayurveda and Unani systems are practiced in India. Other than these systems, still there exists a traditional folklore which isbeing perpetuated verbally from person to person and generations to generations. By and large, this lesser known medicinal plant lore in the absence of official patronization could not receive the necessary research support and therefore remained lesser unknown or entirely unknown to the masses. Of late, the traditional medicines are being accepted all over the world since the modern systems of medicine have many side effects. The quest for herbal sources is growing all over because these products have milder action in various body functions in preference to the synthetic drugs. There seems a green wave of lay of interest in medicinal plant lore all over. This wave is discernible in India too. Non availability of satisfactory

drugs for the treatment of different diseases or ailments in the modern systems of medicine prompted many of us to study ethno medicinal claims.

Plants have been, and still are, a rich source of many natural products most of which have been extensively used for human welfare especially in toning up loss of vitality or general debility and also to elevate human pain and sufferings in illness or disease. From ancient time man has used several plants in attempt to cure diseases and relieve pain. Throughout the world, several thousands of plants are used for medicinal purposes. She reported18 weeds medicinal importance weeds used against many diseases.

Tribal and some of the rural people always lead quite a hard life. Although their attention is centered about agriculture, they make great use of spontaneous plants in general. The wild plants make an important contribution, particularly to the diet of the local inhabitants, apart from other useful products.

MATERIALS AND METHODS

The study was conducted for five cereal major crops for their weeds and field areas were selected on the basis on the highest respective crop cultivated district.

The detailed methodology for the study comprised-
1. Selection of crops and major areas in various districts
2. Quadrat study for weed population
3. Economics of de-weeding exercises
4. Herbarium preparation for weed flora
5. Statistical analysis

Selection of major crops:

I. For weed study, major cereal crops cultivated in Gujarat were selected. Based on the selected cereal crops, major districts and respective Locations–villages (Table-1) of Gujarat were identified for the weed study.

II. List of weeds in fields of each selected cereal crop was established. Plant specimens of all weeds were collected for identification and herbarium preparation.

Table-1:Cereal crops and selected districts

Cereal Crops Name			Selected districts
Local	**English**	**Scientific**	
Ghaun	Wheat	*Triticumaestivum* L	Ahmedabad
Bajri	Pearl Millet	*Pennisetumtyphoids*Burm f	Banaskantha
Juwar	Sorghum	*Sorgumvalgure* L	Surat
Dangar	Rice	*Oryza sativa* L	Kheda
Makai	Maize	*Zea mays* L	Dahod

Quadrate study for weed population:

For preliminary studies, minimum size of quadrate was determined as 5×5 m^2.With the help of the string and 3 nails, L – shaped area was marked in the crop field. With another nail, a square of an area 1×1 m^2 was established and various weed species present within the area were noted. Similarly, the area was increased to 2×2 m^2, 3×3 m^2, 4×4 m^2 including 5×5 m^2 was marked and total number of different weeds occurring were recorded. For the above method we take idea from the Field Survey of forest resources of Gandhinagar Forest Division (Jasrai*et al*, 2010) and Study for tree Enumeration of Attarsumba Range (Patel Y B *et al*, 2014 (a)) Based on quadrate study, populations of each weed in the field were recorded to calculate the number of weeds per hectare and also ecological assessment parameter (Trees per hectare) study by Patel Y B *et al*, 2014(b).

The wastelands of Kadi, Gujarat were selected for the present study. During the present investigation, the medicinal weeds collected from the cultivated field and the information regarding them were gathered from the different group of people. Villagers have good knowledge about medicinal plants and their uses in curing different types of diseases. The information regarding the botanical name, family name, local name, plant parts used name of the diseases cured and the process of administration were collected with the help of rural people, village vaidyas and aged elders. The identification of each plant was done with the help of various floras and the authentic literature on taxonomy. During

field visits, ethnobotanical information on weeds was collected through oral interviews with ethnic people, as they are more involved in the management of weeds. Voucher specimens of weeds were collected at flowering and fruiting periods for making herbarium sheets by standard method (Jain and Rao 1977).These have been lodged in the herbarium of Dept of Botany, University School of Sciences, Gujarat University,Ahmedabad, India. All the specimens have been identified were identified with help of published flora (Shah, 1978;Cooke, 1904; Deshpande*et al*, 1993, Jasrai*et al*, 2010). Photograph of weeds were captured with camera (Canon, 12.1 mega pixels; 4X zoom capacity).

RESULTS AND DISCUSSION

In this study 55 weed species under44 genera belonging to22 families have been recorded from various crop fields, which are traditionally valued are discussed (Table:-2). Tribals are thoroughly acquainted with the methods of excluding the harmful substances from these wild plants and preparing acceptable recipes. The plant parts mostly used are the tubers, corms, leaves, flowers, fruit, seeds etc. The rural people using these weeds as food naturally lower down the pressure of seeking food and help to resolve our food problems to some extent. They make judicious use of crop weeds also(Patil, Patil and Pawar, 2007).Weeds are good source of Fodder. Collection of fodder is the first step that turns the wheel of the agricultural economyof the village community (Jasrai*et al*, 2014). Vegetables are rich and comparatively cheaper source of vitamins. Consumption of thee provides taste, palatability, increases appetite and provides fibers for digestion. They also play key role in neutralizing the acids produced during digestion of pretentions and fatty foods, which helps in movement of food in intestine (Jasrai*et al*, 2014). Medicinal treatment by using local plants is always cheaper than allopathic medicines moreover it shows no side effects (Joshi and Oza, 2007; Jasrai e*t al*, 2010)

Table-2: Weeds of the Major Cereal Crops and Their Economic Use

Sr no	Scientific name	Use		
		Medicinal	Fodder	Food
1	*Achyranthusaspera*L	√	√	√
2	*Acrachneracemosa*Heyne		√	
3	*Amaranthuslividus* L		√	√
4	*Amaranthusspinosus*L	√		√
5	*Ammanniabacciferа*L	√		
6	*Anagalisarvensis* L	√	√	
7	*Asphodelustenuifolius*Cav		√	√
8	*Blumeaeriantha*Dc			
9	*Boerhaviadiffusa*L	√	√	
10	*Celosia argentea*L	√	√	√
11	*Chenopodium album* L	√	√	√
12	*Chenopodiummurele*L		√	√
13	*Chlorisbarbata*Sw		√	
14	*Chlorisdolichostachya*Lagas		√	
15	*Chrozophorarottleri*(Geis) Juss		√	
16	*Cleome gynandra*L	√		
17	*Commelinabenghalensis*L	√	√	
18	*Commelinadiffusa*Burn		√	
19	*Conscoradiffusa* (Vahl) R Br		√	
20	*Cynodondactylon*L	√	√	
21	*Cyperuscompressus*L		√	
22	*Cyperusdifformis* L Cent		√	
23	*Cyperusesculentus*L		√	
24	*Cyperusiria*L		√	
25	*Cyperusrotundus*L	√	√	
26	*Dactylocteniumaegyptium*(L) P		√	√
27	*Digeramuricata*(L) Mart	√	√	√
28	*Digitariasanguinalis*Scop		√	
29	*Dinebraretroflexa*Vahl		√	
30	*Echinocholacolonum*(L) Link		√	
31	*Eclipta alba* (L) Hassk	√		
32	*Eragrostisciliaris*(L) R Br		√	
33	*Eragrostispilosa*L		√	
34	*Eragrostistenella*(L) P Beauv		√	
35	*Euphorbia hirta*L	√	√	

36	*Ipomoea pes-tigridis*L		√	
37	*Leucasaspera*(Willd) Spr	√	√	√
38	*Ludwigiaperennis*L		√	
39	*Meliotusindica*All		√	
40	*Partheniumhysterophorus*L	√		
41	*Phalaris minor* Retz		√	
42	*Phyllanudiflora*(L) E	√		
43	*Phyllanthusfraternus*Webst	√	√	
44	*Physalis minima* Nutt		√	
45	*Portulacaoleracea*L	√	√	√
46	*Scirpuslateriflorus*Gmel		√	
47	*Sesbaniabispinosa*(Jacq) W F	√	√	
48	*Setariatomentosa*(Roxb) Kunth		√	
49	*Sonchusasper* (L) Hill		√	
50	*Spergulaarvensis*L		√	
51	*Trianthemaportulacastrum*L		√	
52	*Tribulusterrestris*L	√	√	
53	*Tridexprocumbens*L	√	√	
54	*Vernoniaanthelmintica*(L) Willd		√	
55	*Vernoniacinerea*(L) Less	√	√	

Fodder requirement of the local inhabitants is high. These are derived either from crop weeds or from forests. These are removed manually as a necessity of cultivation practice but are useful for the livestock.

Table-3:No of weed species used as a Medicinal, Fodder, Food

Medicinal	Fodder	Food
23	47	11

India has centuries old heritage of herbal medicine for the treatment of various ailments.Some important medicinal plants are found to be grown naturally in the cultivated land asweeds. Plants are vital for existence of life on earth. The plants around the habitats of the ruralpopulation not only provide food for living organisms, but also produce differentchemicals necessary for human health. It is not possible to provide modern health care toall the people at affordable cost. In this juncture, folklore plays a vital role in the primaryhealthcare of rural people. They depend on natural flora to meet their health care needs.The weeds are undesirable plants which grow naturally along with cultivated crops andalso on wastelands. These weeds are being used as medicines by rural people because oftheir cost-effectiveness with no side effects. This knowledge of immense value and itspractices are of great utility to us (P.K.Patel and M.K.Patel 2010). Information of this kind is orally handed down from generation to generation by rural people and village Vaidyas.

In Mexico, more than 20 "weeds" are used as food (Linares and Aguirre 1992). In Korean local markets 112 wild plants are sold at prices higher than those of cultivated species. Moreover, some weeds are exported to the U.S.A. and used to prepare Korean and Chinese typical dishes (Pemberton and Lee 1996). Similarly, Moroccan weeds are exported with the same purpose to the U.S.A., Spain, Italy and Greece (Tanji and Nassif 1995). The use of edible wild plants and weeds has been considered by several authors (Harris 1969, Kunkel 1984, Facciola 1990, Zurlo and Brandão 1990, Linares and Aguirre, 1992) Michael (1980) and Linares and Aguirre (1992) have reported numerous weed based food recipes.

Amarnath is one of the weeds containing much more vitamin A precursor than cabbage and can help to prevent blindness. Amaranth has 13 times more iron than green cabbage, 9 times the calcium, and 57 times more vitamin A precursor. Wild onion is another weed commonly distributed in fields in winter season. It has many uses; particularly its leaves are cooked with maize cake in traditional *tandoors*. Its bulbs are best cooked, as by slow roasting in n hot ashes, which develops the sweetness. When boiled, this little root is palatable and somewhat resembles the taste of the common potato. The Indian method of preparing it, however, is the best, in which it is roasted on rocks in tandoors. The cooked mass obtained can be pressed into cakes and then dried in the sun, may be preserved for the future use (Khattak, 2006).

Swami and Gupta (1996) gave a note on 20 commonly occurring medicinal weeds of Udhampur district of Jammu and Kashmir. Thomas and Britto (2000) reported 53 common weeds of medicinal importance which are used to cure diseases like diarrhoea, dysentery, gonorrhoea, rheumatism, headache, fever, worm, ulcer, urinary stone, asthma,

cough etc. in Tiruneveli district of Tamilnadu. According to Saika and Hussain (2005) weeds are highly efficacious as medicine against some common diseases and other health problems of man.

CONCLUSION

Weeds are found growing spontaneously and available vicinity and in many cases they are immediately available as therapeutic, edible, fodder etc. The herbal remedies are effective against cuts and wounds, cough, fever, stomachache, dysentery, etc. The person who knows which weed is useful for particular disease can use it for that purpose. The weeds can be useful to the society if their individual usefulness and identity is conformed. Kaushik and Dhiman (1999)have described many of therefore said plants for their potential as raw drugs sold in the market under different trade names.

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