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Ethnobotanical studies of weed plants in rice field ecosystem

A. Arunesh*, P. Karuppaiah, Ajish Muraleedharan

Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalainagar, Tamil Nadu, India

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***Corresponding Author:**

A. Arunesh

Email: arunesharasu@gmail.com

ABSTRACT

Tamilnadu is one of the leading states in rice production in India. Weeds are widely found and are tremendously grown everywhere on paddy fields. Ethnobotany have gained importance during recent years. Based on this, an ethnobotanical exploration has been carried to find out the medicinal values of weed plants growing in the paddy fields of Annamalai Nagar, Cuddalore district. The study reveals the importance of the weed plants associated with paddy fields, a total of 40 species of weeds belonging to 22 families has been recorded in meeting the multiple requirements of human beings.

KEYWORDS: Rice, weeds, ethnobotany, medicinal values

INTRODUCTION

India is one among the major biodiversity rich countries of the world. Paddy (*Oryza sativa* L.) is a major food crop of the world and is cultivated widely in India. Ethnobotany is usually defined as anthropological approach to botany [1]. Thus, 'Ethno' refers to people, culture, language, knowledge and practice and 'Botany' is the study of plants. Weeds are very common in all parts of Tamil Nadu, India, and mainly in agricultural fields like rice fields [2]. Thus, the present study deals with ethnobotanical aspects of the major weeds of paddy fields in Tamilnadu.

MATERIALS AND METHODS

Study area

Annamalai Nagar is a special grade panchayat town in cuddalore district of Tamilnadu. It is located at about 6 Km west of Bay of Bengal at 11° 24' North latitude and 79° 41' East longitude and at an altitude of +5.79 M above the Mean sea level (MSL). The climate is moderately warm with hot summer months. The mean maximum temperature ranges from 29.7°C to 38.3°C with a mean of 32.42°C while, the mean minimum temperature ranges from 21.1°C to 27.0°C with a mean of 24.1°C. The mean relative humidity is 73%.

Methodology

The ethnobotanical survey was conducted in the selected paddy fields of Annamalai Nagar region in cuddalore district of

Tamilnadu during the year 2018. Observation on morphology of the weed and their habitat were recorded. The ethnobotanical research regarding the medicinal utility of the common weeds were collected with the help of field labours and local community. They had indigenous knowledge about the weed plants growing in the paddy fields. However, relevant literature was also consulted on the basis of interviews in local language. Standard procedure was adopted for preparing herbarium sheets. All collected specimens were critically examined in the Herbarium for proper identification.

RESULTS AND DISCUSSION

The ethnobotanical information in the study area about the use of weed plants in paddy fields of Annamalai Nagar region was well documented. All the major weeds are reported to have medicinal properties. The different parts of the plant that are used for medicinal purposes such as leaves, shoots, roots, seeds, fruits, flowers etc. These parts contain some medicinal value used to cure specific diseases. Their botanical features and medicinal potential are given in the table as follows. Based on the survey, there are 40 species of weeds belonging to 22 families were recorded (Table 1, Figure 1). The dominant family Amaranthaceae having 6 species, followed by Euphorbiaceae, Solanaceae and Poaceae having 4 species each, Cyperaceae having 3 spp, Asteraceae, Lamiaceae, having 2 spp each and the other families sharing 1 spp each. The collection of information obtained from the ethnobotanical survey was similar to the investigation done by Dhanam and Elayaraj [3] in paddy fields of Villupuram district.

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Table 1: Ethnobotanical aspects of weed plants in rice field

S.No	Botanical name	Common name	Family	Vernacular name	Medicinal uses
1	<i>Acalypha indica</i>	Indian copperleaf	Euphorbiaceae	Kuppaimeni	Asthma, pneumonia, bronchitis
2	<i>Achyranthes aspera</i>	Devil's horsewhip	Amaranthaceae	Naayuruvi	Kidney stone, leprosy, haemorrhoids
3	<i>Aerva lanata</i>	Javanese wool plant	Amaranthaceae	Sirukkan poolai	Constipation, head ache, gonorrhoea
4	<i>Alternanthera sessilis</i>	Sessile pigweed	Amaranthaceae	Ponnanganni	Stomach disorders, night blindness,
5	<i>Amaranthus spinosus</i>	Spiny pigweed	Amaranthaceae	Mullu keerai	Diarrhea, tooth ache, eczema, urinary troubles
6	<i>Amaranthus viridis</i>	Slender amaranth	Amaranthaceae	Kuppaikeerai	Dysentery, inflammations, constipation
7	<i>Bergia capensis</i>	Cape ash	Elatinaceae	Neeru paavila	Against Intestinal worms, food poisoning
8	<i>Cardiospermum helicacabum</i>	Balloon vine	Sapindaceae	Modakkanthan	Rheumatism, nervous diseases, ear ache
9	<i>Centella asiatica</i>	Asiatic pennywort	Apiaceae	Vallaarai	Increases memory, healing wounds, atherosclerosis, asthma
10	<i>Chloris barbata</i>	Purple chloris	Poaceae	Corai pillu	Diabetes, skin diseases, fever
11	<i>Cleome viscosa</i>	Tick weed	Cleomaceae	Vaelai keerai	Rheumatism, ulcer, ear ache, scurvy
12	<i>Commelina benghalensis</i>	Tropical spiderwort	Commelinaceae	Kaanaakuzhai	Dysentery, infertility, burns, rashes, leprosy
13	<i>Convolvulus arvensis</i>	Field bindweed	Convolvulaceae	Bhoomi Chakra Poondu	Heal spider bites, Purgative
14	<i>Croton sparciflorus</i>	Ban tulasi	Euphorbiaceae	Rail poondu	Malaria, cough, ulcer, hypertension
15	<i>Cynodon dactylon</i>	Bermuda grass	Poaceae	Arugampul	Leucoderma, bronchitis, piles, asthma, tumors, skin diseases
16	<i>Cyperus difformis</i>	Umbrella sedge	Cyperaceae	Vattakorai	Vermifuge, Diuretic and Antibacterial properties.
17	<i>Cyperus rotundus</i>	Purple nut sedge	Cyperaceae	Koraipil	Pyresis, Stomach ache, diarrhea
18	<i>Cyperus iria</i>	Flat sedge/Yellow sedge	Cyperaceae	Oosikorai	Amenorrhoea, rheumatism, diuretic
19	<i>Echinochloa crus-galli</i>	Barnyard grass	Poaceae	Kudiravali	Carbuncles, Haemorrhages, Sores, Spleen trouble, Cancer
20	<i>Echinochloa colona</i>	Jungle rice	Poaceae	Sauri	Spleen and Haemorrhage problems, Antimicrobial activity
21	<i>Eclipta alba</i>	False daisy	Asteraceae	Karisalaan kanni	Diabetes, cirrhosis of liver, hepatitis, skin diseases
22	<i>Euphorbia hirta</i>	Asthma herb	Euphorbiaceae	Amman pacharisi	Cancer, bronchial infections, abscesses, asthma
23	<i>Gomphrena celosoides</i>	Bachelor's button	Amaranthaceae	Neer vadamalli	Dermatitis, Asthma
24	<i>Heliotropium indicum</i>	Indian heliotrope	Boraginaceae	Siruthael kodukku	Warts, inflammations, tumors, skin problems, ulcer
25	<i>Hygrophila auriculata</i>	Marsh barbel	Acanthaceae	Neermuli	Dysuria, spermatorrhoea, diabetes, rheumatism
26	<i>Leucas aspera</i>	Common leucas	Lamiaceae	Thumbai	Wounds, sores, chronic skin diseases, scabies, fever
27	<i>Marsilea quadrifolia</i>	European water clover	Marsileaceae	Arakeerai	Snakebites, anti inflammatory, diuretic, skin injuries
28	<i>Mimosa pudica</i>	Touch me not plant	Fabaceae	Thotta chinungi	Haemorrhoids, jaundice, wounds
29	<i>Ocimum canum</i>	Hoary basil	Lamiaceae	Naaithulasi	Fever, cough, diabetes, dysentery, tooth ache
30	<i>Phyla nodiflora</i>	Frog fruit	Verbinaceae	Poduthalai	Ulcers, wounds, burns and boils, gastric troubles
31	<i>Phyllanthus niruri</i>	Gale of wind	Euphorbiaceae	Keela nelli	Jaundice, stomach pain, ulcer, fever
32	<i>Physalis minima</i>	Sunberry/Wild gooseberry	Solanaceae	Tholthakkaali	Urinary purgative, diuretic, itching, hypertension
33	<i>Portulaca oleracea</i>	Common purslane	Portulacaceae	Pasalai	Cough, dysentery, burns, skin diseases, dyspepsia
34	<i>Sida acuta</i>	Common wire weed	Malvaceae	Arivaalmunai poondu	Swelling, indigestion, blood clot, head ache
35	<i>Solanum nigrum</i>	Black nightshade	Solanaceae	Manathakkaali	Cancerous sores, boils, leucoderma, stomach pain, ulcers, rabies, ring worm
36	<i>Solanum trilobatum</i>	Purple eggplant	Solanaceae	Thoodhuvai	Cold, cough, asthma, rheumatism, leprosy
37	<i>Solanum xanthocarpum</i>	Yellow berried nightshade	Solanaceae	Kandan kathiri	Bronchitis, cough, constipation, asthma
38	<i>Sphenoclea Zeylanica</i>	Goose weed	Sphenocleaceae	Kopuram thaangi	Ulcers
39	<i>Tribulus terrestris</i>	Puncture vine	Zygophyllaceae	Nerinji	Diabetes, crystalluria, cholesterol, diuretic
40	<i>Tridax procumbens</i>	Coat buttons	Asteraceae	Vetukaya poondu	Diarrhoea Arrests bleeding, antiseptic, ulcer

Ethnobotanical studies are helpful in revealing medicinal potential of underutilized plants especially in complicated and minor diseases [4]. Many plants and their products recently

used in industries were developed through the indigenous ethnobotanical knowledge. So, it is need of the time to enhance our ethnobotanical knowledge on weeds plants.



Figure 1: Major weeds present in rice fields

But modernization resulted in decrease of ethnobotanical information and hence attempts are being made to make a permanent record on plants and their uses by Botanical Authorities of India [5]. Thus in this pollution rich environment human beings are prone to diseased conditions easily and these ethnobotanical aspects are dealing it a readymade solution to solve those problems especially in rural regions. There is a need of the hour to investigate these studies further and explore more things.

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