

Ethnomedicinal aspects of some weeds from paddy fields of Villupuram district in Tamil Nadu, India

S. Dhanam^{1,*}, B. Elayaraj²

¹PG and Research Department of Botany, Arignar Anna Government Arts College,
Villupuram - 605 602, Tamil Nadu, India

²Environmental Science, Department of Botany, Annamalai University, Annamalai Nagar - 608 002,
Tamil Nadu, India

*E-mail address: sdhanam2@gmail.com

ABSTRACT

The present investigation has been carried out to enumerate the ethnomedicinal plant growing in the paddy field of Villupuram district, Tamil Nadu. Ten selected sites in the Villupuram district was taken for investigation. Random quadrat method was adapted for studying the phytosociological attributes of the weeds. A total of 145 plant species belonging to 22 families were identified, out of which 39 plant species are medicinally important to cure different diseases in human beings directly. Amaranthaceae and Euphorbiaceae was the dominant family seen during observation. Frequency, Relative frequency, Density, Relative density, Abundance, Relative abundance and Important Value Index (IVI) of the species were calculated.

Keywords: Ethnomedicine; Paddy field; Frequency; Density; Important Value Index (IVI)

1. INTRODUCTION

Plants are generally rich sources of many natural herbal products which have mostly used for human welfare especially in tonic to loss of viability and also reduce the human pain and suffering from many diseases. From the ancient period man has been used several different plants to cure all body pain and different diseases. Now-a-days throughout the world several thousands of plants mostly weed plants are medicinal but very few drug plant are cultivated (Upma Dobhal *et al.*, 2006). Many of the drug used in modern medicine were initially used in crude form in traditional uses and other useful biological activity (Iwu *et al.*, 1999). Ethnobotany is the study of the relationship between plants and people. Quite a number of plants considered as weeds in modern sciences have significant value in ethnobotany. Weeds are very common, dominant and widespread in the crop fields. Paddy is the most important cereal crop in Tamil Nadu, which contributes nearly 20 % to the gross domestic agricultural product and provides more than 50 % of total calorie requirement to the Tamil Nadu people. Weeds are genetically liable and phenotypically plastic; such characters enable them to pass through successfully in adverse habitats. They easily invade crop fields which are favourite grounds for their quick growth. The presence of weeds in the fields and their impact on the crop production and environment has been well documented (Randall 1996; Frohlich *et al.*, 2000; Hassan and Marwat 2001). Role of weeds in ayurvedic medicine

was described by Govindiah (1981). Nath *et al.* (2007) described ethnomedicinal aspects of 38 species of weeds of Darrang district of Assam. Leena Sharma (2010) described the weeds of Rajasthan and their ethnobotanical importance.

2. MATERIALS AND METHODS

2. 1. Study area

The Villupuram district extends over an area of 8204.63 sq. Km is situated in the south eastern portion of Tamil Nadu. It is bounded on the north by Thiruvannamalai and Kanchipuram districts on the east by the Bay of Bengal, on the south by the district of Cuddalore and on the west by Salem and a part of Dharmapuri districts. The average maximum and minimum temperature ranges from 32.78 °C to 24.08 °C respectively. The district lies between 11° 57' N latitude and 79° 32' E longitude.

2. 2. Methodology

Present study was conducted in ten selected sites of Villupuram district in the paddy crop fields. Random quadrat method was adopted for studying phytosociological attributes of weeds. Quadrat of 1 x 1 m were laid down and hence a sum of 60 quadrats was laid. All the weeds from each quadrat were collected separately in polythene bags. The information regarding the 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. A questionnaire was prepared in the local language for collection of ethic information and interviews were conducted. The collection of information was accompanied by the collection of voucher specimens. The plants were pressed, following the standard technique (Cunningham, 2001). Identification of collected specimens was done with the help of literature. Ethnomedicinal data obtained in the field were compiled and compared with the published references of Srivastava *et al.* (2000), Prajapathi and Khana (2004) and Jadeja *et al.* (2004). Frequency, Relative frequency, Density, Relative density, Abundance, Relative abundance and Importance Value Index of the species were calculated.

$$\text{Frequency (\%)} = \frac{\text{Total number of quadrats in which the species occur}}{\text{Total number of quadrats studied}} \times 100$$

$$\text{Relative Frequency (\%)} = \frac{\text{Frequency of individuals of a species}}{\text{Total frequency of all species}} \times 100$$

$$\text{Density} = \frac{\text{Total number of individuals of a species in all quadrats}}{\text{Total number of quadrats studied}}$$

$$\text{Relative Density (\%)} = \frac{\text{Density of individuals of a species}}{\text{Total density of all species}} \times 100$$

$$\text{Abundance} = \frac{\text{Total number of individuals of a species in all quadrats}}{\text{Total number of quadrats in which the species occurred}}$$

$$\text{Relative abundance (\%)} = \frac{\text{Abundance of individuals of a species}}{\text{Total abundance of all species}} \times 100$$

Importance Value Index = Relative density + Relative frequency + Relative abundance

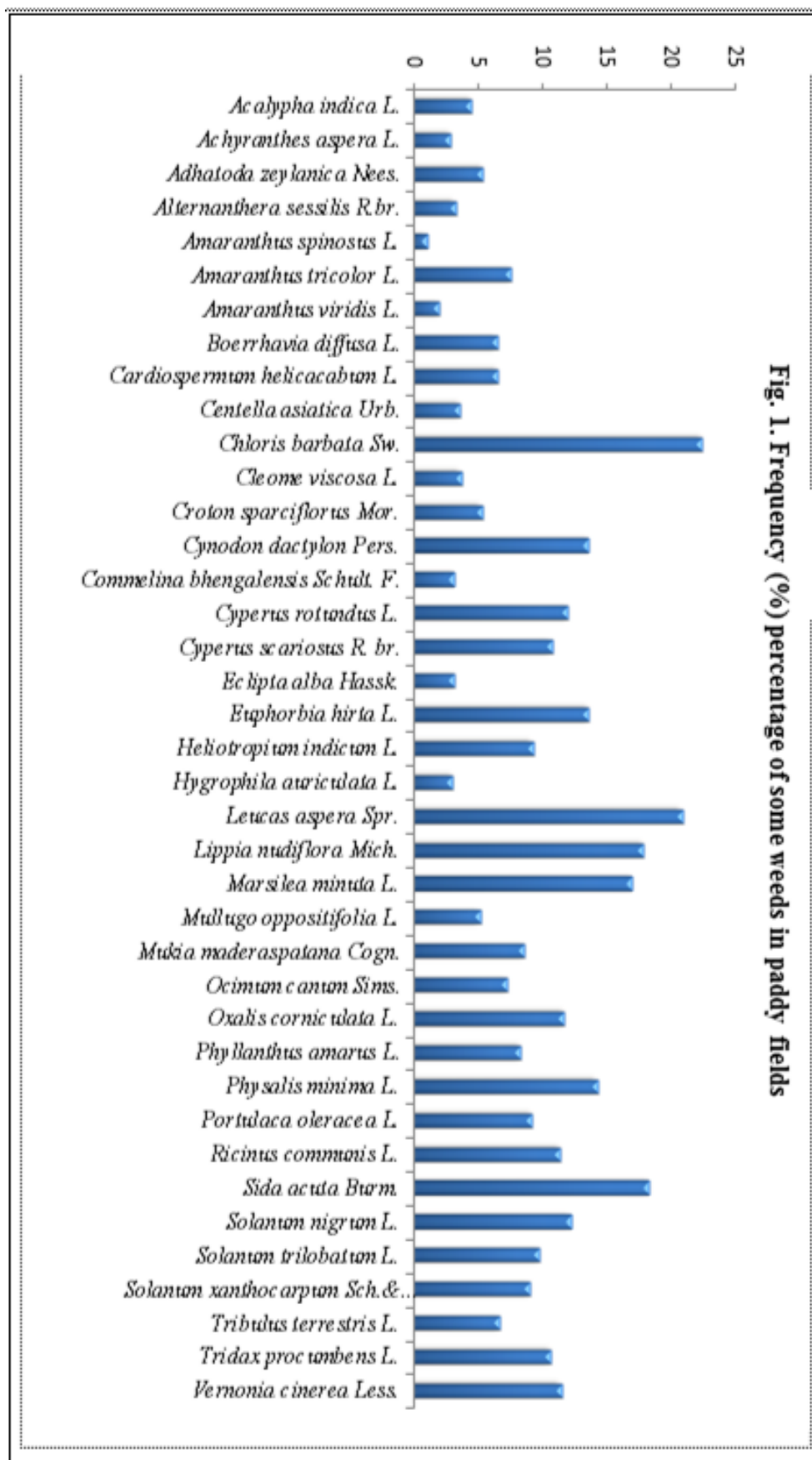
3. RESULTS AND DISCUSSION

Present study is undertaken with a view to explore the source, purpose and method of use of different plant resources of Villupuram district. The present survey was done to record the overall relationship of the local people with plant resources. The information obtained from the various source of the area of study has been given in the table 1. Observation indicated that weed species collected from crop fields are being used to cure different human diseases.

Table. 1 Survey of ethnomedicinal plants in the paddy field.

S. No.	Botanical name	Family	Vernacular name	Parts used	Uses
1.	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppaimaeni	Whole plant	Anthelmantic, Ulcers
2.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Naayuruvi	Leaves, seeds	Urinary and skin diseases
3.	<i>Adhatoda zeylanica</i> Nees.	Acanthaceae	Adhatoda	Leaves, roots	Tuberculosis, Ulcer, Piles
4.	<i>Alternanthera sessilis</i> R.br.ex D C	Amaranthaceae	Ponnaankanni	Whole plant	Eye diseases, body cool, Ulcer
5.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Mullukeerai	Whole plant	Mouthwash, Toothache
6.	<i>Amaranthus tricolor</i> L.	Amaranthaceae	Thandukeerai	Leaves, roots	Blood pressure
7.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kuppaikeerai	Leaves, roots	Skin diseases, Blood pressure
8.	<i>Boerrhavia diffusa</i> L.	Nyctaginaceae	Moorkaratai	Whole plant	Eye infection, Anaemia
9.	<i>Cardiospermum helicacabum</i> L.	Sapindaceae	Modakkanthaan	Whole plant	Fever, Eye complaints
10.	<i>Centella asiatica</i> Urb.	Apiaceae	Vallaarai	Whole plant	Cooling, carminative, Asthma
11.	<i>Chloris barbata</i> Sw.	Poaceae	Coraipillu	Roots	Cold, Rheumatism
12.	<i>Cleome viscosa</i> L.	Cleomaceae	Vaelaikeerai	Whole plant	Wounds, Ulcer, Earache
13.	<i>Croton sparciflorus</i> Mor.	Euphorbiaceae	Railpoondur	Roots	Cough, Fever, Vomitting
14.	<i>Cynodon dactylon</i> Pers.	Poaceae	Arugampul	Tubers	Skin diseases
15.	<i>Commelina benghalensis</i> Schult. F.	Commelinaceae	Kaanaakuzhai	Whole plant	Cancer, Ulcer, Skin diseases
16.	<i>Cyperus rotundus</i> L.	Cyperaceae	Koraipil	Whole plant	Vomitting, Wounds

17.	<i>Cyperus scariosus</i> R. br.	Cyperaceae	Poonkorai	Tubers	Stomach pain, Washing hair
18.	<i>Eclipta alba</i> Hassk.	Asteraceae	Karisalaankanni	Whole plant	Chronic diseases, Cough
19.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Ammanpacharisi	Whole plant	Cough, brest pain, asthma
20.	<i>Heliotropium indicum</i> L.	Boraginaceae	Siruthaelkodu	Whole plant	Cough, Fever, Wounds
21.	<i>Hygrophila auriculata</i> L.	Acanthaceae	Neermuli	Roots, Seeds	Rheumatism, eye diseases
22.	<i>Leucas aspera</i> Spr.	Lamiaceae	Thumbai	Leaves, flowers	Dyspepsia, Vermiosis
23.	<i>Lippia nudiflora</i> Mich.	Verbinaceae	Poduthalai	Whole plant	Ulcers, Wounds, Asthma
24.	<i>Marsilea minuta</i> L.	Marsileaceae	Aarakkeerai	Tubers, leaves	Anti- inflammatory, diuretic
25.	<i>Mullugo oppositifolia</i> L.	Aizoaceae	Paarpadagam	Whole plant	Dysentery
26.	<i>Mukia maderaspatana</i> Cogn.	Cucurbitaceae	Musumusukkai	Leaves, Seeds	Chronic diseases, cough
27.	<i>Ocimum canum</i> Sims.	Lamiaceae	Naaithulasi	Whole plant	Cough, Dysentery
28.	<i>Portulaca oleracea</i> L.	Portulacaceae	Pasalai	Leaves	Dysentery, Haemorrhoids
29.	<i>Phyllanthus amarus</i> L.	Euphorbiaceae	Keelanelli	Whole plant	Stomach pain, Ulcer, fever
30.	<i>Physalis minima</i> L.	Solanaceae	Tholthakkaali	Whole plant	Urinary purgative
31.	<i>Ricinus communis</i> L.	Euphorbiaceae	Aamanakku	Leaves, roots	Pilles, cough, headache
32.	<i>Sida acuta</i> Burm.	Malvaceae	Arivaalmunai poondu	Leaves, flowers	Swelling, Blood clot
33.	<i>Solanum nigrum</i> L.	Solanaceae	Manatthakkaali	Leaves, roots	Ulcers, burning sensation
34.	<i>Solanum trilobatum</i> L.	Solanaceae	Thoodhuvalai	Leaves	Cold, Pain, Cough
35.	<i>Solanum xanthocarpum</i> Sch.& Wendl.	Solanaceae	Kandankathiri	Whole plant	Cough, Stomach pain, Asthma
36.	<i>Toddalia asiatica</i> Lam.	Rutaceae	Milaharani	Roots, leaves	Skin diseases, Piles, Cough
37.	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Nerinji	Fruits	Crystalluria, Urolithiasis
38.	<i>Tridax procumbens</i> L.	Asteraceae	Vettukaya poondu	Whole plant	Ulcer, Antiseptic
39.	<i>Vernonia cinerea</i> Less.	Asteraceae	Neisurutti	Roots, leaves	Wounds, Rheumatism



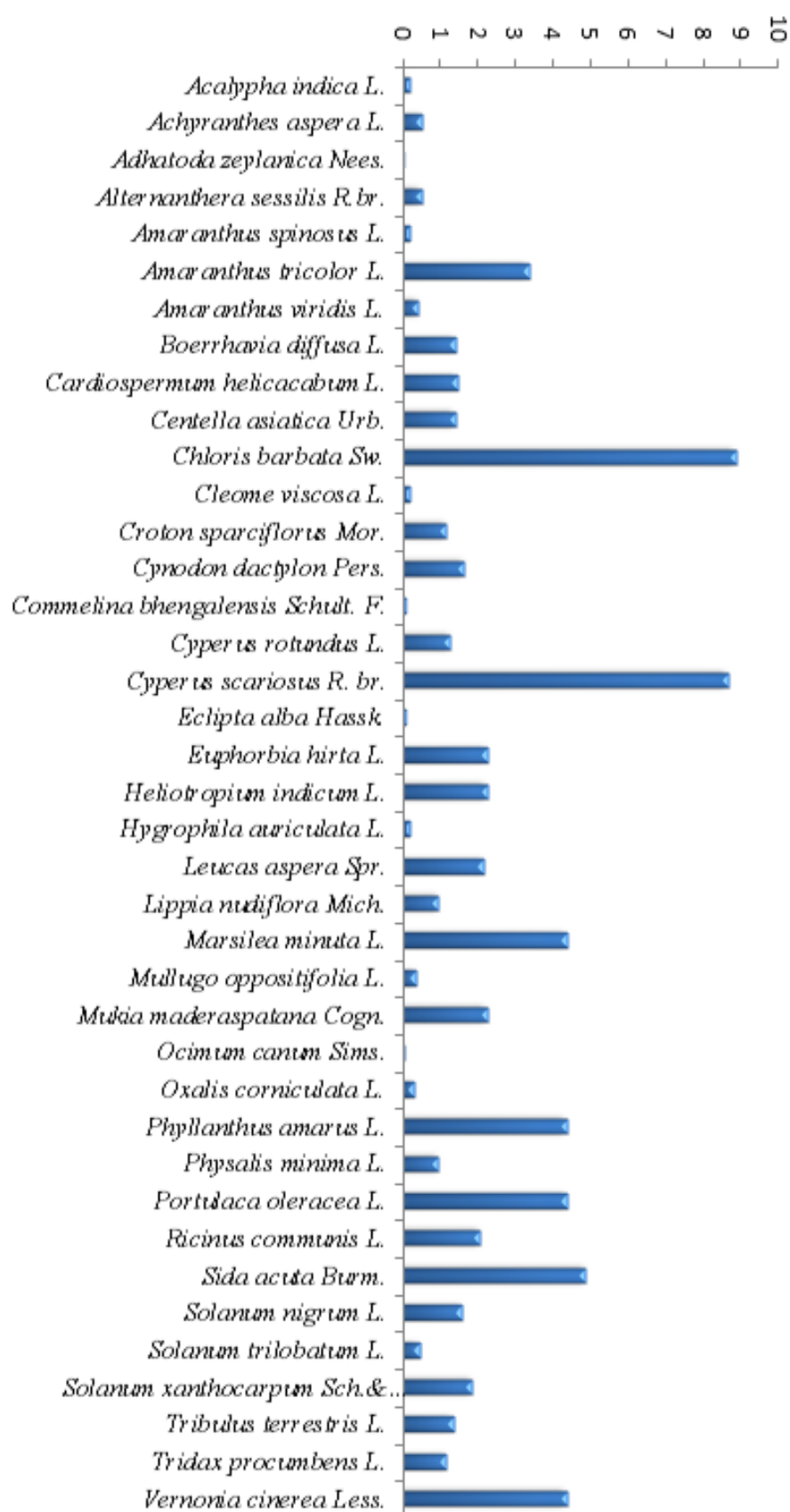


Fig. 2. Density percentage of some weeds in paddy fields

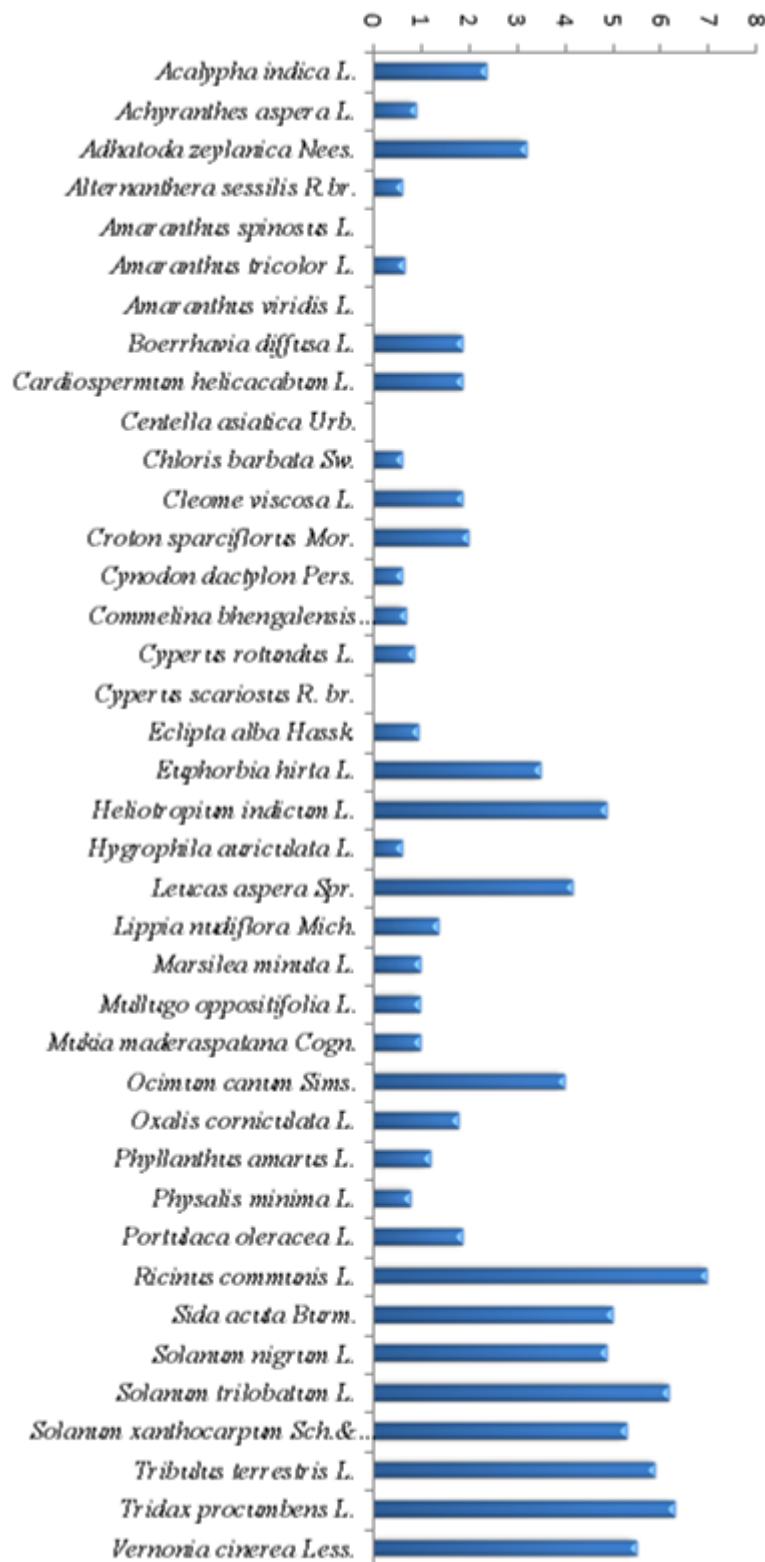


Fig. 3. Abundance percentage of some weeds in paddy fields

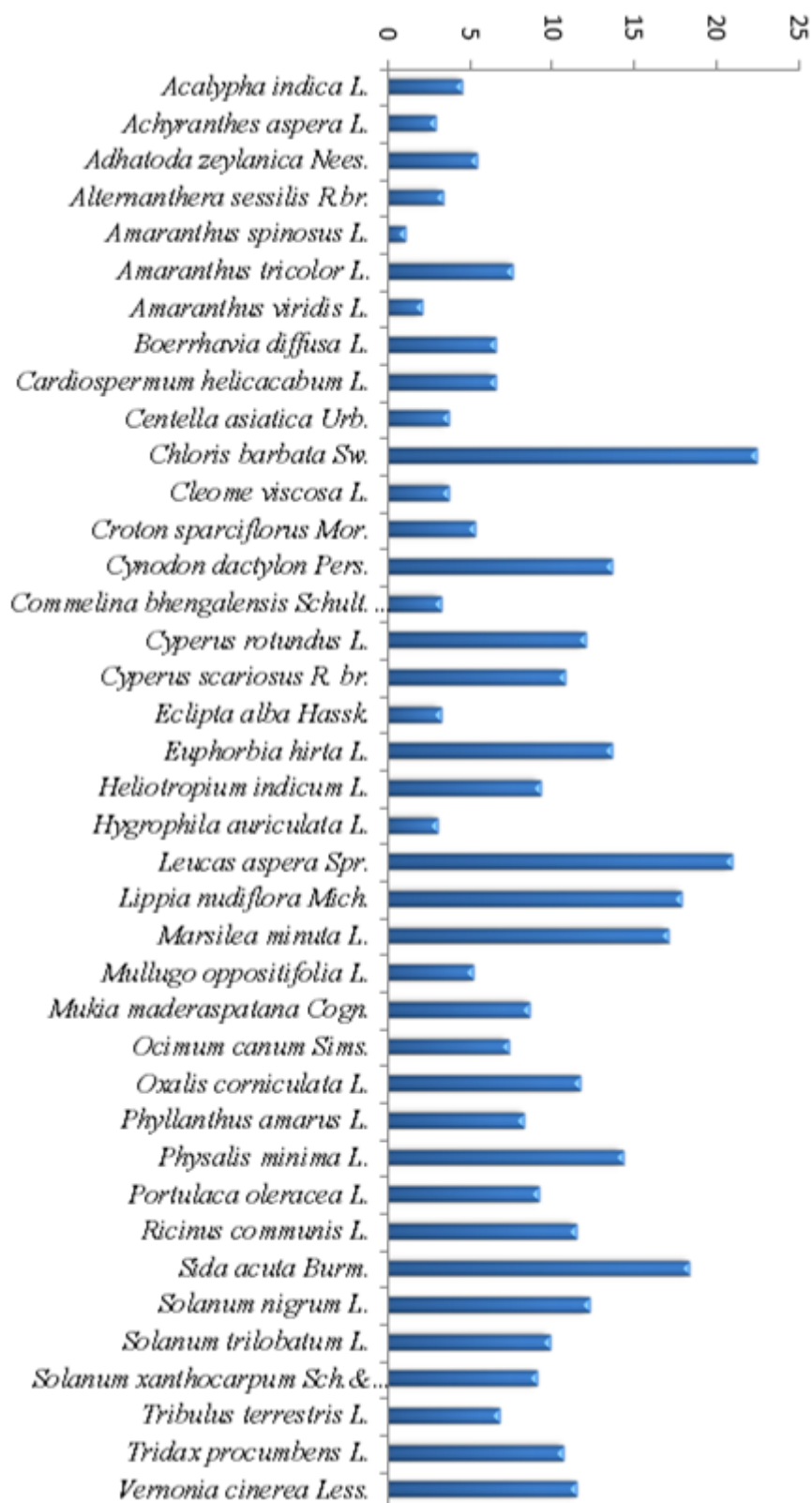


Fig. 4. Importance Value Index percentage of some weeds in paddy fields

Out of 145 weeds studied, 39 weeds are of medicinally important and useful to cure various diseases.

Amaranthaceae and Euphorbiaceae was the dominant families present with five genera, Solanaceae (4), Asteraceae (3), Lamiaceae (2), Acanthaceae (2), Poaceae (2), Cyperaceae (2) followed by Verbinaceae, Cucurbitaceae, Malvaceae, Cleomaceae, Nyctaginaceae, Sapindaceae, Apiaceae, Commelinaceae, Boraginaceae, Marsileaceae, Aizoaceae, Portulacaceae, Rutaceae and Zygophyllaceae. Important value index was high in *Chloris barbata* Sw., *Cynodon dactylon* Pers., *Cyperus rotundus* L., *Cyperus scariosus* R. br. *Leucas aspera* Spr. *Marsilea minuta* L. and *Physalis minima* L. Phytosociological attributes of paddy field is given in Fig. 1, 2, 3 and 4.

On the traditional uses of weeds a little work has been carried out in India. Weeds play an important role in ayurvedic medicine. Saikia and Hussain (2005) collected information on medicinal aspects of some weeds used by the Ahan and Khamti communities of Sivasagar. The present report coincides with the earlier reports of Adishesu (1997), Tomar (2009) and Prayagamurthy (2009). Workers like Dangwal *et al.* (2010) and Perira (1998) have worked on weed flora and their management in other areas of India.

4. CONCLUSION

Indian council of agriculture has recommended that proper utilization of weeds itself can contribute significantly to enhance the income of poor farmers. Weeds are tremendously grown in open areas and people are not aware for medicinal value of weeds. On the other hand India is a leading exporter of the medicinal plants in the world trade. So, one should understand the importance of weeds. It may be useful for taxonomists, agriculturists and scientists involved in the management of weeds. Awareness should be carried out to the local peoples to use these weeds as medicine and to practice them in their day today life. The various uses of these weeds may aid dealers in crude drugs manufactures of plant products or persons interested in the beneficial aspects of plants. Hence it is concluded that weeds present in the paddy fields can be used as medicine directly or in ayurvedic medicine in large scale.

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(Received 23 June 2014; accepted 01 July 2014)