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PHYTOSOCIOLOGICAL STUDY OF COMMON WEEDS IN AGRICULTURE FIELD IN CHANASMA TALUKA

S.D. Patel*, H. M. Ant

Department Of Botany, Shree U.P. Arts, Smt M.G. Panchal Science and Shree V.L. Shah Commerce College, Pilvai, North Gujarat, India.382850.

ABSTRACT: Present study deal with Investigation of Phytosociological characters of Weeds plant Community in Agriculture field in Chanasma taluka. An unwanted plant which is harmful to Farmers and crop is called Weed, for this study, Study area was divided in two site-1 North zone and Site-2 South zone. Randomly Quadrate method was applied for investigate the characters of Community. Base line characters of Community like Density, Abundance and Frequency is calculated to using with its formula. Total 34 plants belong with 31 genera and 34 plant families were collected during this Research work. Amaranthaceae is the leading plant family.

KEYWORDS: Chanasma, Weeds, Phytosociology, Density, Frequency. Abundance.

Corresponding Author: S. D. Patel and H. M. Ant

Department Of Botany, Shree U.P. Arts, Smt M.G. Panchal Science and Shree V.L. Shah Commerce College, Pilvai, North Gujarat, India.

Email Address: satishpatel027@gmail.com, hamirant@gmail.com

1. INTRODUCTION

Average 25% crop production decrease through Weed. It's a major factor that directly effected on crop yielding [1]. The common definition of Weed is an unwanted plant grown with crop in field. "An herbaceous plant not valued for use or beauty, growing wild and regarded as cumbering the ground or hindering the growth of superior vegetation [2].Weed classified in two classes [3]. Origin of Weeds in India from the evidence of Rice husks used as soil binder in plastering the walls of Ancient houses [4]. Due to heavy grazing pressure, production in many grassland areas are less and dominated by Weeds [5].It's a major way that decreases the production of Agriculture product and also decreases the quality of crop yielding. Weeds compete with crop plants for Light, Water and

Nutrients[6]. Farmers have been facing this problem since many years. Recent estimate show that weeds in India cause an annual monetary loss of Rs 1980 Cores [1]. Some little work carried out on weeds in Gujarat is Ethno medicinal uses and Floristic diversity of invasive Weeds in Agricultural fields of Godhra and Baria forest division [7] and Weeds in Cereal crop field of Gujarat [8]. Some other quality work on Floristic and ecological aspects has been carried out in Agriculture and non Agriculture land of the different regions in Gujarat state,[9].[10].[11],[12].[13],[14],[15]. [16].[17],[18],[19],[20],[21],[22],[23]. Present study area have much Diversity in Weed plant. Plant Phytosociology is a branch of Science that deal with plant community character like Density, Frequency, Abundance, and its provide a detailed information about distribution of plant community. This character is useful for Weed management idea.

2. MATERIALS AND METHODS

Study Area

Chanasma is a taluka place of Patan district. It's located in Gujarat which located in west part of India. Chanasma is located between 23.42 TO 52.99 N to 72.06 to 46.04E. Total 59 villages in taluka. Total population of taluka is 128629. People are engaged with mostly Agriculture and Dairy farming. Wheat, Castor, Mustard, Barley are the main crop of study area, average rain fall is 20 to 25 inches in area. It's have much Weeds plant diversity due to good Irrigation system.

Map Of Study Area
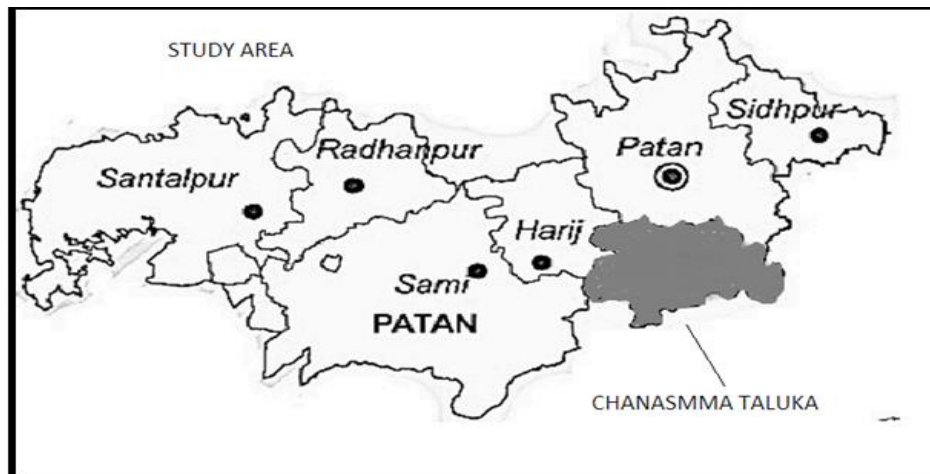
Methodology

This Study was carried out during July 2018 to December 2018 for Phytosociological investigation of Weed plant in Agriculture field in Chanasma taluka. Random quadrate method was applied for This Study total 10 Quadrate Lying In Field With 70 Cm *70 Cm Size. Expensive field trip was arranged during research period. Photograph of observed plant were taken during research field trip. Observed plants were identified with help of Cooke's [24], Gamble's [25], Hooker [26]' Floras and

local Floras G.L. Shah [20] and R.I.Patel [18] and Flora of Saurashtra [27]. The family is arranged as per Bentham and hooker's classification system [28].Vegetation composition was evaluated by analyzing the Frequency, Density and Abundance according to its proper method [29],[30] and as given below:

$$Dencity = \frac{Total\ no\ of\ individual\ of\ species\ in\ all\ quadrates}{Total\ no\ of\ quadrates\ studied}$$

$$Frequency = \frac{No\ of quadrates\ in\ which\ species\ occured}{Total\ no\ of\ quadrate\ studied} * 100$$

$$Abundance = \frac{Total\ no\ of\ individual\ of\ species\ in\ all\ quadrates}{No\ of\ quadrate\ in\ which\ species\ occured}$$

3. RESULTS AND DISCUSSION

During this Research work total 34 plant Species were collected, following table shows the value of Abundance, Frequency and Density.

Table 1: Recorded Weeds plant species with value of Frequency, Density and Abundance in Site 1.

Sr No	Plant Name	Family	TNI	Density	Frequency	Abundance
1	*Celosia argentea* Linn	Amaranthaceae	17	1.7	70	2.42
2	*Phyllanthus niruri* Linn.	Euphorbiaceae	19	1.9	70	2.71
3	*Argemone maxicana* Linn.	Papavaraceae	06	0.6	40	1.5
4	*Cardiospermum halicacabum* Linn.	Sapindaceae	13	1.3	70	1.85
5	*Launaea procumbens* (Roxb.) Rmayya & Rajgopal.	Asteraceae	14	1.4	80	1.75
6	*Calotropis procera* (Ait.) R.Br	Asclepidaceae	06	0.6	40	1.5
7	*Achyranthus aspera* Linn.	Amaranthaceae	06	0.6	50	1.2
8	*Cynodon dactylon* (Linn.) Pers syn	Poaceae	35	3.5	90	3.88
9	*Chenopodium album* (Linn.)	Chenopodiaceae	24	2.4	70	3.42
10	*Digera muricata* (Linn.) Mart	Amaranthaceae	35	3.5	100	3.5
11	*Alternanthera sessilis* (Linn.) DC.	Amaranthaceae	14	1.4	70	2

12	*Portulaca olaracea* Linn.	Portulacaceae	13	1.3	60	2.16
13	*Alysicarpus monilifer* (Linn.)DC	Fabaceae	08	0.8	50	1.5
14	*Datura metal* Linn.	Solanaceae	10	1	60	1.66
15	*Tephrosia purpurea* (Lam.) Pers	Fabaceae	09	0.9	70	1.28
16	*Glinus lotoides* Linn.	Molluginaceae	18	1.8	80	2.25
17	*Citrullus colocynthis* (Linn.) Soland	Cucurbitaceae	57	5.7	60	9.5
18	*Cucumis callosus* (Rottl.) Cogn	Cucurbitaceae	12	1.2	60	2
19	*Capparis deciduas* (Forsk.) Edgew	Capparaceae	15	1.5	50	3
20	*Casia tora* Linn.	Caesalpiniaceae	18	1.8	60	3

**Table 2: Recorded Weeds plant species with value of Frequency, Density and Abundance in Site 2.**

Sr No	Plant Name	Family	TNI	Density	Frequency	Abundance
1	*Abutilon indicum* (Linn.) Sweet	Malvaceae	17	1.7	60	2.83
2	*Tribulus terrestris* Linn.	Zygophyllaceae	11	1.1	50	2.2
3	*Convolvulus microphyallus* (Roth.) Sieb. ex Spr.	Convolvulaceae	13	1.3	70	1.85
4	*Xanthium strumarium* Linn.	Asteraceae	41	4.1	70	5.85
5	*Corchorus olitorius* Linn.	Tiliaceae	12	1.2	60	2
6	*Euphorbia hirta* Linn.	Euphorbiaceae	20	2	80	2.5
7	*Alternanthera sessilis* (Linn.) DC	Amaranthaceae	06	0.6	40	1.5
8	*Solanum xanthocarpum* Schred & Wendl	Solanaceae	09	0.9	70	1.28
9	*Launaea procumbens* (Roxb.) Rmayya & Rajgopal	Asteraceae	14	1.4	80	1.75
0	*Glinus lotoides* Linn.	Molluginaceae	17	1.7	80	2.125
11	*Cocculus hirsutus* (Linn.) Diels	Menispermaceae	14	1.4	70	2
12	*Cynodon dactylon* (Linn.) Pers	Poaceae	35	3.5	90	3.89
13	*Orobanche nicotianae* Wight	Orobanchaceae	35	3.5	100	3.5
14	*Digera muricata* (Linn.)Mart.	Amaranthaceae	33	3.3	90	3.67
15	*Commelina benghalensis* Linn.	Commelinaceae	15	1.5	70	2.14
16	*Chenopodium album* Linn.	Chenopodiaceae	24	2.4	70	3.42

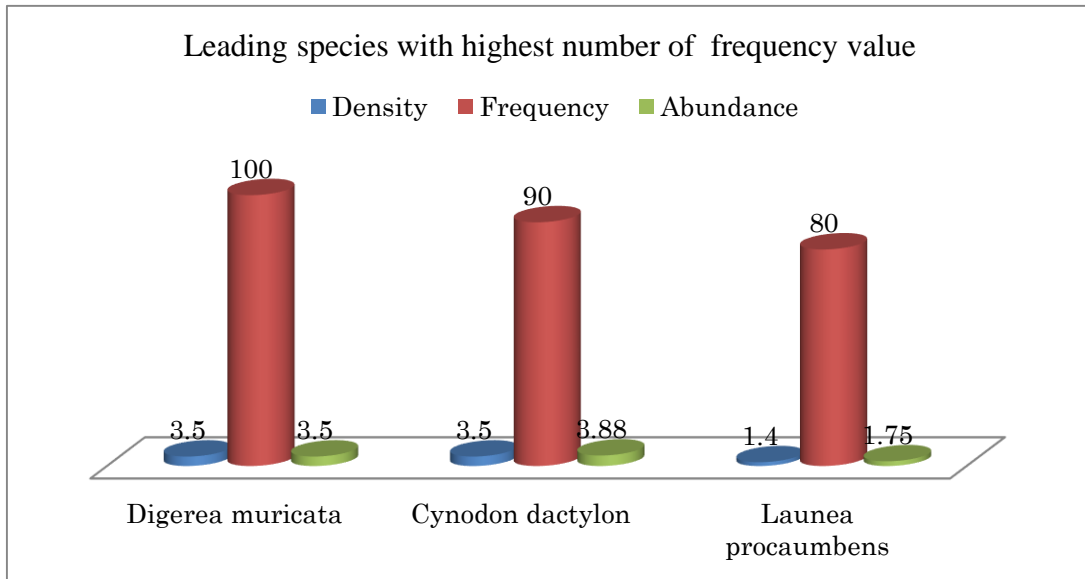| 17	*Calotropis procera* (Ait.) R.Br	Asclepidaceae	06	0.6	40	1.5
18	*Phyllanthus niruri* Linn..	Euphorbiaceae	19	1.9	70	2.71
19	*Parthenium hysterophorous* Linn.	Portulacaceae	16	1.6	90	1.78
20	*Aesphodelus tenufolius* Cav.	Liliaceae	119	11.9	70	17
21	*Cenchrus biflorus* Roxb	Poaceae	24	2.4	60	4
22	*Boerhavia diffusa* Linn.	Nyctaginaceae	36	3.6	60	6

Graph -1. Recorded Families with number of plant in Site 1.
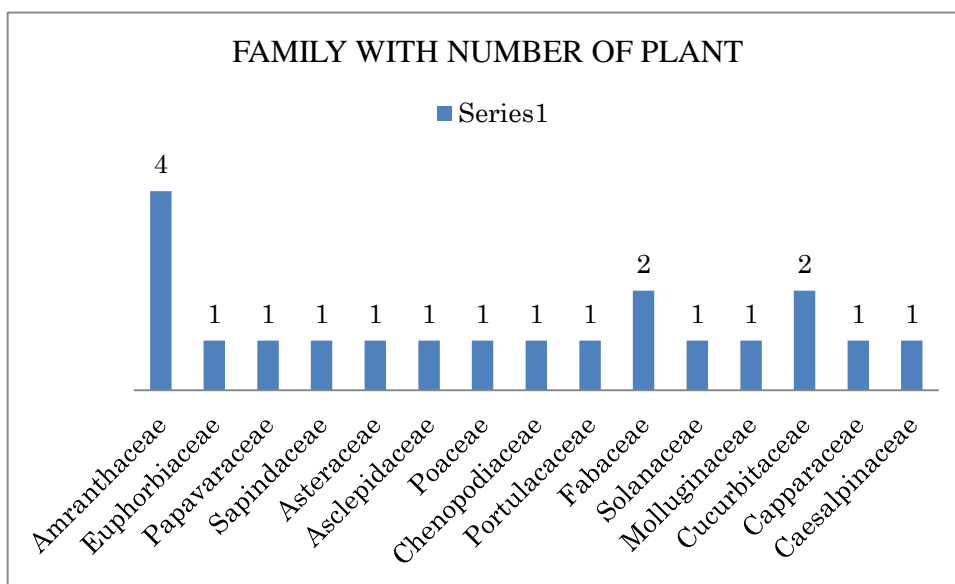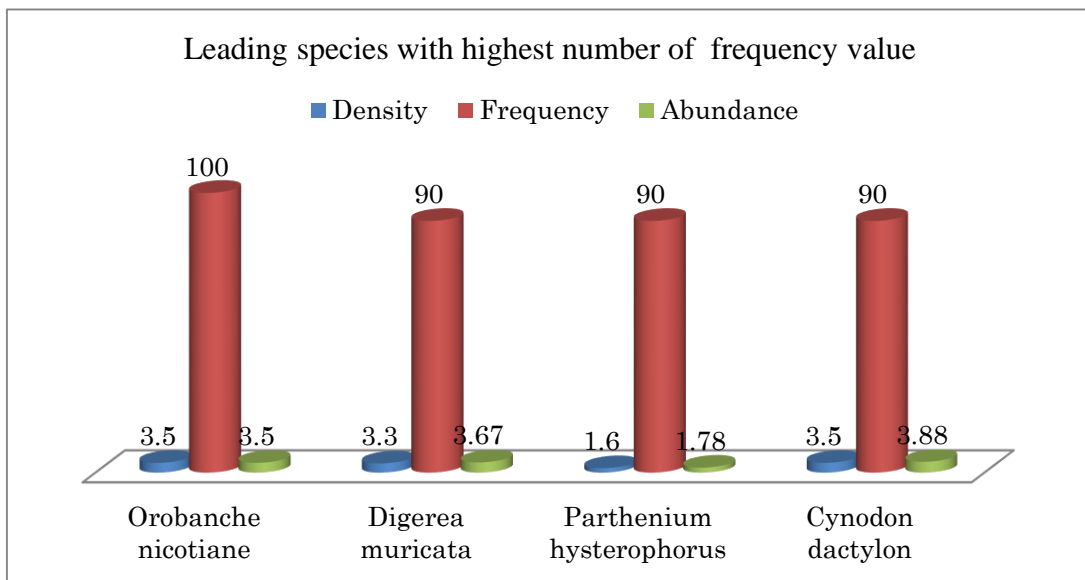

Graph 2: Recorded Families with number of plant in Site 2.
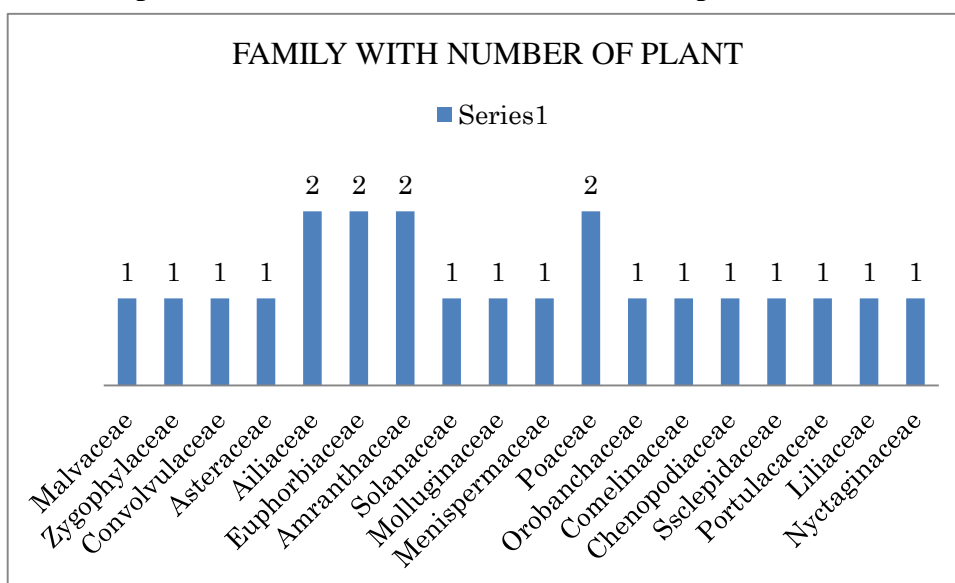
Graph 3: Top 3 Leading Species with value of Density, Frequency and Abundance in Site. 1.

Leading species with highest number of frequency value

■ Density   ■ Frequency   ■ Abundance

	Digerea muricata	Cynodon dactylon	Launea procaumbens
Density	3.5	3.5	1.4
Frequency	100	90	80
Abundance	3.5	3.88	1.75

Graph 4: Top 3 Leading Species with value of Density, Frequency and Abundance in Site. 2.

Leading species with highest number of frequency value

■ Density   ■ Frequency   ■ Abundance

	Orobanche nicotiane	Digerea muricata	Parthenium hysterophorus	Cynodon dactylon
Density	3.5	3.3	1.6	3.5
Frequency	100	90	90	90
Abundance	3.5	3.67	1.78	3.88

Total 34 plant species belong to 24 families and 34 genera have been collected during this study. Amaranthaceae is the most leading plant Family with 4 number of plant. *Digerea muricata* is the most frequent species in site 1 while *Orobanche nicotianae* is most Frequent Species in site 2. 31 plants belong to Dicotyledone and 3 have Monocotyledone. *Digerea muricata, Parthenium hysterophorus* and *Cynodon dactylon* have an equal Frequency value in site.2. Further detail is mentioned in table 1 and table 2.

Plates.

Celosia argentea.

Phyllanthus niruri.

Argemone mexicana

Cardiospermum halicacabum.

Launaea procumbens.

Calotropis procera

Achyranthus aspera.

Cynodon dactylon.

Chenopodium album.

Digera muricata.

Alternanthera sessilis.

Portulaca olaracea.

Alysicarpus monilifer.

Datura metal.

Tephrosia purpurea

Glinus lotoides.

Citrullus colocynthis.

Cucumis callosus.

Capparis deciduas.

Casia tora.

Abutilon indicum.

Tribulus terrestris.

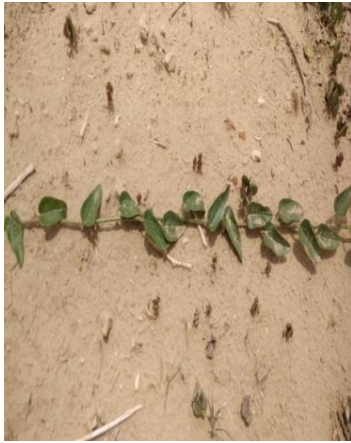*Convolvus microphyallus.*

Xanthium strumarium.

Corchorus olitorius.

Euphorbia hirta.

Solanum xanthocarpum.

Cocculus hirsutus.   *Orobanche nicotianae.*   *Commelina benghalensis.*

Chenopodium album.   *Aesphodeuls tenufolius.*   *Cenchrus biflorus.*

Boerhavia diffusa.

4. CONCLUSION

This is the first attempt of Phytosociology study in Chanasma taluka. This Study provides us most needed information about Distributation of Weed community. Its give us a base line information about Weed. This result is useful for Weed management and further research in economic value, Medicinal value and other branches related weed, this data is useful for Farmers, Researcher and

other interested person. Here one thing is noted that plant which have many number of seed and annual weed plant is Dominant in study area.

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CONFLICT OF INTEREST.

Authors have no conflict of interest.

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