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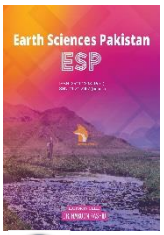

RESEARCH ARTICLE

STUDY OF WEED INFESTATION IN WHEAT FIELDS AT SOUTH PUNJAB REGION PAKISTAN

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ABSTRACT

Weeds are one of the major threats to the natural environment. They are destroying native habitats, threatening native plants and animals, and choking our natural systems including rivers and forests. Aiming to explore the existing situation of weed infestation and assessing its impact, present research work was conducted in south Punjab region, focusing on District Layyah and Muzaffargarh. Weed flora of wheat crop at 3 sites i.e. Nawan Kot, Fethpur, and Karor Lal-e-son in district Layyah; and three sites (Kot Addu, Chowk Sarwar Shaheed, and Sultan Nagar) in district Muzaffargarh was observed using quadrat method. Ten quadrats measuring 1.0 m2 were randomly selected to record the data. From each quadrat soil samples (from top 3 cm) were also taken. Different ecological parameters (i. e. Frequency (%) density (%), (%), relative density (%), relative frequency (%) and important value (%) were worked out using proper formulae. Weed species related to 9 families were classified into different frequency classes. Two most important families of these sites were found Poaceae and Papilionaceae each one represented by four species. Chenopodium album, Cynodon dactylon and Anagallis arvensis were observed the most frequent species at these sites.

KEYWORDS

Weed infestation, wheat crop, frequency, density, ecological attributes, Chenopodium, Families.

1. INTRODUCTION

Weeds are known as unwanted plants which by competing with our cultivated crop plants hamper their growth and ultimately their yield. They may belong to any specific plant family. However, few families like Asteraceae, Brassicaceae, Poaceae, and Fabaceae comprise the most weed flora all over the world (Nazar et al., 2008). It has been estimated that approximately 30,000 species of related to both monocot as well as dicot families are currently existing worldwide. Among these 250 weed species commonly infest the agricultural crops throughout the world. They can reduce the crop yield considerably by hampering the vegetative growth of plants as they exert extensive exploitive competitive effect.

They also interfere with crop plants for water, nutrients, space and pollinators. Therefore, with changing environmental scenarios, they variably reduce the vegetative growth as well as development of crop plants (Marwat et al., 2013). Weeds usually complete their life cycle before cultivated crops. Their germination also starts a little early. Additionally, weed seedlings show faster growth than cultivated crop plants. They also mature and complete their life cycle a little earlier than their fellow crop plants because they have adopted an ephemeral nature. As such weed plants possess a high degree of adaptation to survive under diverse edaphic features and other environmental conditions (Petal, 2014).

Seeds of some weeds have resemblance with the seeds of crops and get easily mixed up with crop seeds when harvested. Seeds of wheat and Avena fatua are very difficult to be separated due to high resemblance. Similarly, size and shape of seeds of Asphodelus tenuifolius resembles wheat grains to get mixed with them for propagation in next seasons. In some developing countries like Pakistan, majority of population living in rural areas largely depends on agriculture products (Oudhia and Tripathy, 1999). The low production of agriculture crops and forest resources has become major issue to fulfill the requirement of the growing population. Main cause of low production of crops and forest is weed infestation (Kingman and Ashton, 1982).

The basic reasons for the low yield of wheat are the production of different species of weeds. Some researchers reported 31 and 45 weed species in wheat growing region of Punjab and Sindh, separately (Siddique and Bajwa, 2001; Qureshi and Bhati, 2001). They found that Phalaris minor, Medicago polymorpha, Avena fatua, Conocarpus Didymus and Chenopodium album are most frequently occurring and densely populated weeds. Weeds can reduce 20 to 60% yield of wheat under different environmental conditions.

The Thal desert in Pakistan is confined by the Indus river in the west and two parallel running rivers i. e. Jhelum and Chenab in the east running through five districts i. e. Bhakkar Khushab, Mianwali, Jhang, Layyah and Muzaffargarh of the Punjab (Shah et al., 2014). Every year these surrounding rivers get flooded and disperse diverse weeds brought through soil erosion and disperse then in their deltas. Besides the

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frequency of wind storms in the Thal desert being under the influence of westerlies winds rising from the Persian Gulf is very high (Sher et al., 2011). They also influence weed seed dispersal. The objective of this research project was to conduct survey of weeds in wheat field at different sites of south Punjab region mainly in districts of Layyah and Muzaffargarrh and to investigate the weed distribution pattern and its frequency.

2. Materials and Methods

2.1 Study Area and Research Plan

This study was conducted in two main districts of South Punjab in Pakistan, Layyah and Muzaffargarrh. It was aimed to record the weed flora infesting the wheat fields comprising of following steps.

- Field Survey of Wheat Fields and demarcation of study sites
- Data Collection of weeds and Soil sampling
- Taxonomic classification of weeds in study area
- Physical and chemical analysis of soil samples
- Soil-Weed species relationship studies

The following six sites were selected in District Muzaffargarh and Layyah to study the weed flora in wheat crop fields. All the sites were more than 30 km apart from each other.

- Nawan Kot
- Fatehpur
- Karor Lal Eson
- Chowk Sarwar Shaheed
- Kot Addu
- Sultan Nagar

2.2 Ecological Analysis of weeds

During survey the number of individuals of each species falling in quadrat was counted. All these data were put to ecological analysis for the determination of density (%), frequency (%), relative density (%), relative frequency (%) and importance value (%) of weed flora. Following formulae were used to determine the various components.

$$\text{Weed Density (\%)} = \frac{\text{Number of individual of a species in Quadrat}}{\text{Number of individual of all species in a quadrat}} \times 100$$

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

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

$$\text{Frequency (\%)} = \frac{\text{Total quadrate in which species occurred}}{\text{Total number of quadrates taken}} \times 100$$

2.3 Frequency classification

Weeds species of study area were classified into five frequency classes. Distribution level of all the weeds existing in the area was thus determined. Distribution classes were assigned according to following frequency scale:

- Rare 1-20%
- Occasional 21-40%
- Frequent 41-60%
- Abundant 61-80%
- Very abundant 81-100%

2.4 Collection of soil samples

The soil samples were collected from the surveyed wheat fields. These samples were taken from surface to about nine inches deep soil to cover the area occupied by wheat and weeds of roots (Siddiqui et al., 2010). Apparent appearance of the soil was also noted. The samples put into the polyethylene bags were brought to Laboratory for analysis.

2.5 Taxonomic classification of weeds

All the weeds were classified as follow:-

- All weed species were assigned to their respective families
- Weeds species were also categorized into monocot and dicot group of plants
- All weeds existing in study area were subjected to nomenclature

3. Soil Analysis

The soil analysis was performed in the Lab of the Institute of Soil Science, University of Agriculture, and Faisalabad. The soil samples collected from various study sites were analyzed for following features:

3.1 Soil weed Relationship

Various soil parameters of wheat fields were considered to find out some relationship with weeds infesting wheat fields of this area. In this regards pH, EC and ion contents of soil were particularly taken into consideration.

4. Results and Discussion

4.1 Weed flora of wheat field at Nawan Kot District Layyah site

The data relating to density, frequency, relative density and relative frequency of weed infesting of wheat at this site have been given in Table 1 & 2. Quadrate measuring 1m2 was selected to collect data and count the number of weeds species. Total nine species were counted (Siddiqui et al., 2010). The frequency of weed infesting of Nawan Kot one species is Anagallis arvensis occupied all quadrates having 100% frequency. Cynodon dactylon occurred 80% in all quadrates. Rumex dentatus 70% frequency. Chenopodium album 60% Medicago denticulata 50%. Desmostachya bipinnata, Melilotus alba and Avena fatua having 20% frequency and Pharlis minor, 10% frequency. Weed density are shown in Table 2.

Table 1: Frequency (%) of weeds infesting wheat field at Nawan Kot district Layyah

Name of species	Local name	Family	Frequency %
Anagallis Chenopodium arvensis L.	Billi booti	Primulaceae	100
Chenopodium album L.	Bathoo	Chenopodacae	60
Cynodon dactylon (L.) Pers	Khabal	Poaceae	80
Medicago denticulata L.	Maina	Papilionaceae	50
Melilotus alba Ders	Sinji	Papilionaceae	20
Phalaris minor L.	Dumbi sitti	Poaceae	10
Avena fatua	Jangli jai	Poaceae	20
Rumex dentatus L.	Palak	Polygonaceae	70
Desmostachya bipinnata (L) Stapf	Dub	Poaceae	20

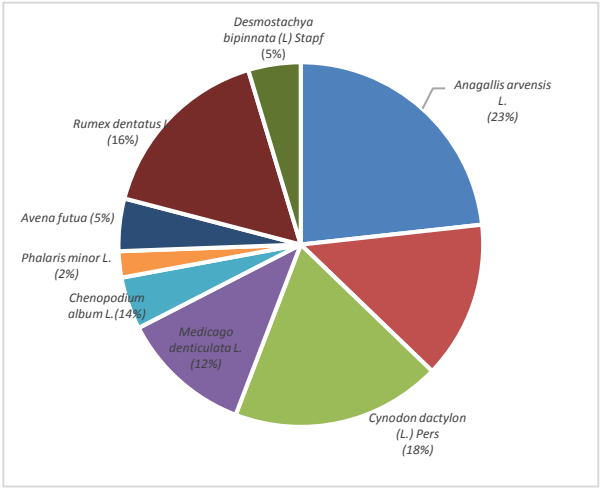

Figure 1: Frequency (%) of weed infesting in wheat field of Nawan Kot District Layyah.

Table 2: Density (%) of weed infesting wheat field at Nawan Kot district Layyah

Species Name	Local name	Family	Density (%)
Anagallis arvensis L.	Bili boti	Primulaceae	5
Chenopodium album L.	Bathoo	Chenopodaceae	5
Cynodon dactylon (L.) Pers	Khabal	Poaceae	15
Medicago denticulata L.	Maina	Papilionaceae	3
Melilotus alba Ders	Sinji	Papilionaceae	5
Phalaris minor L.	Dumbi sitti	Poaceae	4
Avena fatua L	Jangli jai	Poaceae	3
Rumex dentatus L.	Palak	Polygonaceae	5
Desmostachya bipinnata (L) Stapf	Dub	Poaceae	2

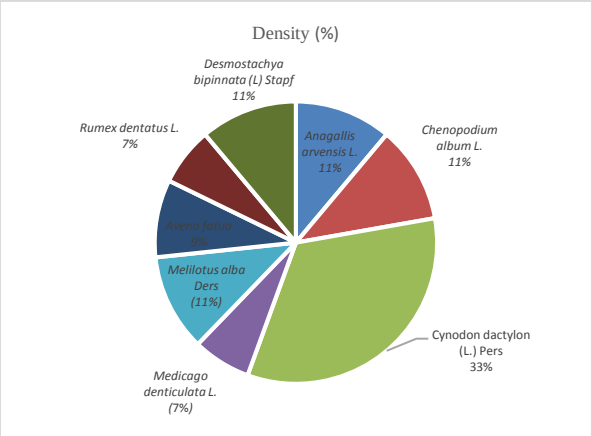

Figure 2: Density of weed infesting wheat fields in Nawan Kot site.

4.2 Weed flora of wheat field at Fethpur district Layyah site

The data relating to density, frequency, relative density and relative frequency of weed infesting of wheat at this site have been given in Table 3 & 4. Quadrate measuring 1meter sequare was selected to collect data and count the number of weeds species. Total nine species were counted. The weed flora at Fethpur consisted of five dicot species and four monocot species. The dicot species was assigned to five genera in three families. Among dicots Primulaceae captured one genus each. As regard frequency of weed at this site Coronopus oxyacantha and Chenopodium album having 70% occurred in all quadrates. Medicago denticulata 60% Cynodon dactylon 50% Tribulus terrestris 30% occupied same number of quadrat while other three species are rarely occurred having frequency 10-20%. As regard the density of weed species at this site. Chenopodium album 50% and Coronopus oxyacantha 26%. Tribulus terrestris and Cynodon dactylon were 20%. Remaining species had less than 20%.

Table 3: Frequency (%) of weeds infesting wheat field at Fethpur district Layyah

Species Name	Local name	Family	Frequency (%)
Asphodelus tenuifolius	Piazzi	Asphodeliaceae	10
Coronopus oxyacantha (L) Smith	Halun	Brassicaceae	70
Carthamus oxyacantha	Polhi	Asteraceae	10
Cynodon dactylon	Khabal	Poaceae	50
Tribulus terrestris	Bukhara	Zygophyllaceae	30
Medicago denticulata	Maina	Primulaceae	60
Phalaris minor	Dumbi sitti	Poaceae	10
Chenopodium murale	Krund	Chenopodaceae	20
Chenopodium album	Bathoo	Chenopodaceae	70

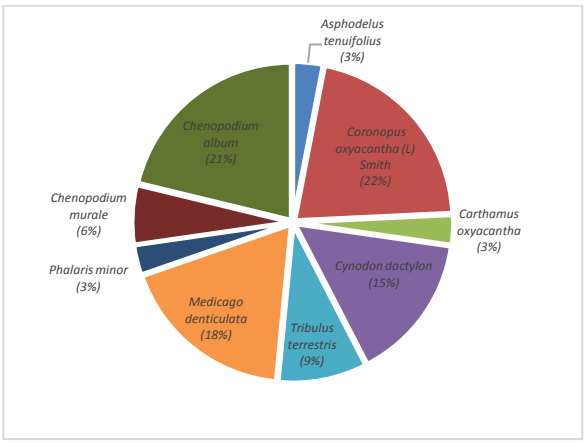

Figure 3: Frequency of weed infesting in wheat field of Fethpur District Layyah.

Table 4: Density of weed infesting wheat field at fethpur district Layyah

Name of species	Local name	Family	Density (%)
Asphodelus tenuifolius	Piazzi	Asphodeliaceae	10
Coronopus oxyacantha (L) Smith	Halun	Brassicaceae	26
Carthamus oxyacantha	poli	Asteraceae	3
Cynodon dactylon	Khabal	Poaceae	20
Tribulus terrestris	Bukhara	Zygophyllaceae	20
Medicago denticulata	Maina	Primulacae	19
Phalaris minor	Dumbi sitti	Poaceae	8
Chenopodium murale	Krund	Chenopodaceae	7
Chenopodium album	Bathoo	Chenopodaceae	50

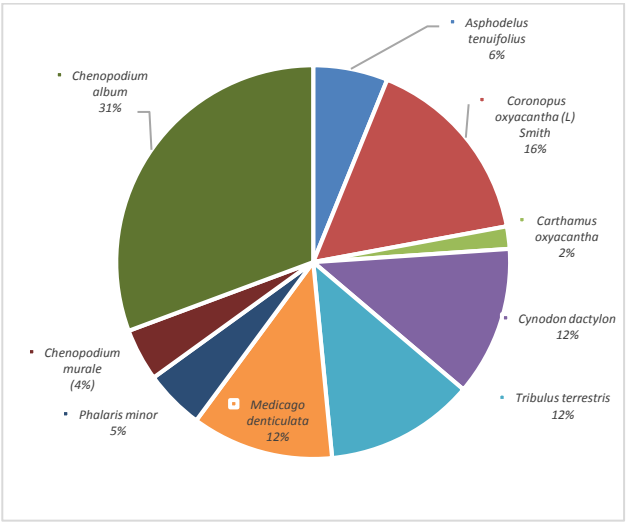

Figure 4: Density of weed infesting wheat field at fethpur district Layyah

4.3 Weed flora of wheat flora at Karor Lali e Son site at District Layyah

This site is 25 km away towards south from Layyah. Wheat field were selected to collect data; weed species were recorded by using quadrate method each quadrate measuring 1meter square the number of weed species. It indicated the presence of nine weed species. The data relating to frequency and density of weed infesting in wheat field at this site have been represented in table 5 & 6 and Figure 5& 6. Medicago denticulata appeared to occur in all quadrats with 50% frequency level. Thus, it ranked as the very abundant weed species of this area. Cynodon dactylon was found abundantly at 37%. Remaining weeds species are less than 20%. Density calculation revealed very dense stand for Medicago denticulata is 15% level. There was very wide gap between below mentioned weed. The second dense level were Pharalis minor 11% density. The remaining species were represented by single figured digit.

Table 5: Frequency (%) of weed infesting the wheat field of Karor Lali e son District Layyah

Name of species	Local name	Family	Frequency (%)
Melilotus alba Ders	sinjhi	Papionlanaceae	30
Chenopodium album	Bathoo	Chenopodiaceae	10
Tribulus terrestris	Bhakra	Zygophyllaceae	7
Medicago denticulata	Maina	Papionlanaceae	50
Cynodon dactylon	Khabal	Poaceae	37
Circium arvensis	Leih	Asteraceae	3
Asphodelus tenuifolius	Piazi	Asphodeliaceae	7
Chenopodium murale	Karund	Chenopodiaceae	10
Phalaris minor	Dumbi sittee	Poaceae	17

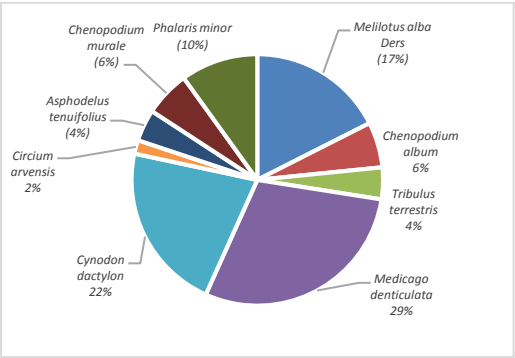

Figure 5: Frequency (%) of weed infesting of wheat at Karor site District Layyah.

Table 6: Density (%) of weed infesting the wheat field at Karor Lali e Son District Layyah

Name of species	Local name	Family	Density (%)
Melilotus alba Ders	sinjhi	Papionlanaceae	5
Chenopodium album	Bathoo	Chenopodiaceae	2
Tribulus terrestris	Bhakra	Zygophyllaceae	4
Medicago denticulata	Maina	Papionlanaceae	15
Cynodon dactylon	Khabal	Poaceae	6
Circium arvensis	Leih	Asteraceae	2
Asphodelus tenuifolius	Piazi	Asphodeliaceae	3
Chenopodium murale	Karund	Chenopodiaceae	5
Phalaris minor	Dumbi sittee	Poaceae	11

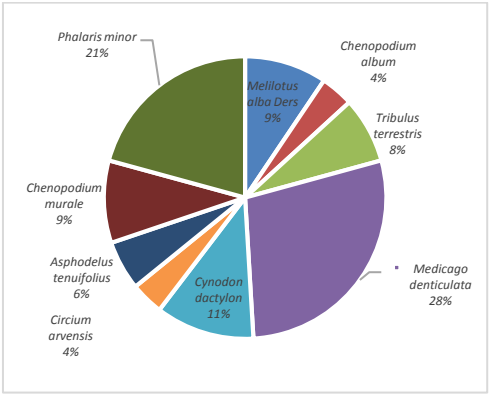

Figure 6: Density (%) of weed infesting the wheat field at Karor Lali e Son District Layyah.

4.4 Frequency of weed infesting wheat field at Chok Sarwar Shaheed District Muzaffargarrh

Taxonomic and ecological analysis of data weed spectrum in wheat field at Chok Sarwar Shaheed have been represented in Table 7 and 8 along with Figure 7&8. It was observed that weed flora at this site consisted on 9 species falling in 10 genera belonging to 5 taxonomic families. Five species from dicot while four species represented by monocot species. Among monocot Poaceae was largest family having three genera while Asphodeliaceae had single genus representation. Papilionaceae family stood as largest family among dicots consisting of three genera followed by Chenopodiacae with two genera (table 7). The frequency level of weed species Avena sativa was noted as the widest spread weed in this site.

Asphodelus tenuifolius with 70% frequency level. Remex dentatus occupied the 3th position and was noted in 60% quadrats. At this site it was noted that monocot weeds were more frequently distributed than the dicot species. Avena sativa and Asphodelus tenuifolius were observed abundantly at this site. Poa annua was frequent weed in this area. Melilotus alba was observed occasionally while all other weeds species occurred rarely. Table 8 indicates that the most density were formed by Avena sativa (31%) while second position was occupied by Poa annua with 26% density. The third position Remex dentatus and Asphodelus tenuifolius having 17% density level.

Table 7: Frequency (%) of weed infesting wheat field at chok Sarwar Shaheed District Muzaffargarah

Name of species	Local name	Family	Frequency (%)
Asphodelus tenuifolius	Piazi	Asphodeliaceae	70
Avena sativa	Janglli jai	Poaceae	80
Chenopodium murale	Krund	Chenopodacae	10
Cynodon dactylon	Khabal	Poaceae	10
Melilotus alba	sinji	Papilionaceae	10
Rumex dentatus	Jangli palak	Polygonaceae	60
Poa annua	Poa	Poaceae	50
Vicia sativa	Rewari	Papilionaceae	10
Chenopodium album	Krund	Chenopodiaceae	10

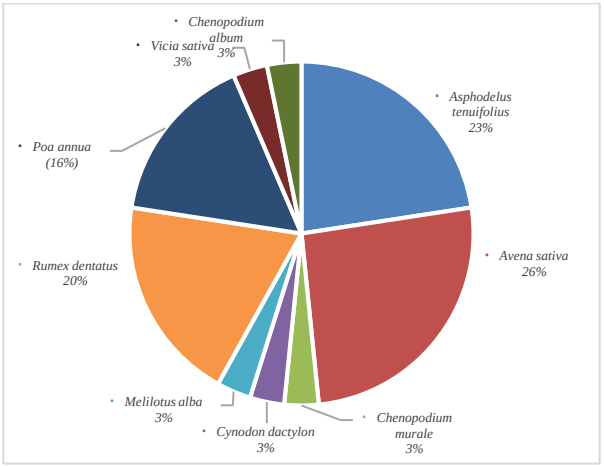

Figure 7: Frequency (%) of weed infesting wheat field at chok Sarwar Shaheed District Muzaffargarrh.

Table 8: Density (%) of weed infesting wheat field at chok Sarwar Shaheed District Muzaffargarah			
Name of species	**Local name**	**Family**	**Density (%)**
Asphodelus tenuifolius	Piazi	Asphodeliaceae	17
Avena sativa	Janglli jai	Poaceae	31
Chenopodium murale	Krund	Chenopodacae	2
Cynodon dactylon	Khabal	Poaceae	1
Melilotus alba	Sinji	Papilionaceae	4
Rumex dentatus	Jangli palak	Polygonaceae	17
Poa annua	Poa	Poaceae	26
Vicia sativa	Rewari	Papilionaceae	1
Chenopodium album	Krund	Chenopodiaceae	2

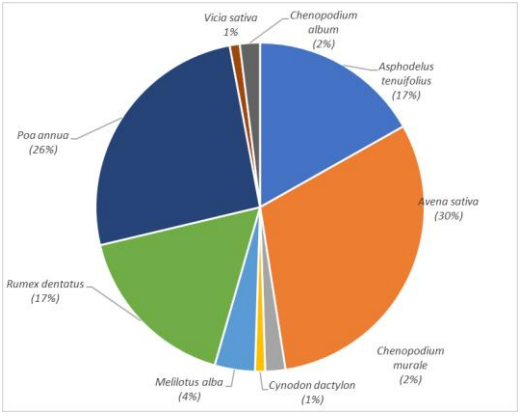

Figure 8: Density (%) of weed infesting wheat field at chok Sarwar Shaheed District Muzaffargarah

4.5 Frequency of weeds infesting in wheat field at Kot Addu District Muzzaffargarrh

Weed flora collected from wheat crop Kot Addu site have been analysed according to ecological and taxonomic pattern. These have been depicted in Table 9-10 and Figure 9-10. Weed flora at this site comprised of 9 species falling in six families and seven genera. Two of the genera belonged to monocot group of the plants and in classification under the one family Poaceae. Another monocot genus was cyperaceae family. Out of five dicot two genera belonged to Chenopodacae family. The other four dicot genera were assigned to three families comprising one genus each named Papilionaceae, Polygonaceae and Primulaceae. Chenopodium album was most abundant species in the field of Kot Addu 90% frequency level. Remex dentatus was abundantly distributed at 80% frequency level and Cynodon dactylon also abundant class 70% frequency level. Melilotus alba was frequent weed in this site. Phalaris minor occurred occasionally while Chenopodium murale, Anagallis arvensis and cyperus rotundus observed rarely. Density of weed at Kot Addu revealed a different pattern from the other sites studied. Chenopodium album grow in very dense stand at 36% value followed by Rumex dentatus was also prominent at 21% value. Cynodon dactylon 6% Phalaris minor 7% density. The remaining species was indicated poor existence.

Table 9: Frequency of weed infesting in wheat field Kot Addu district Muzzafargarh			
Name of species	**Local name**	**Family**	**Frequency (%)**
Cyperus rotundus	Cyperus	Cyperaceae	20
Anagallis arvensis	Bili boi	Primulaceae	10
Chenopodium murale	Krund	Chenopodacae	10
Cynodon dactylon	Khabal	Poaceae	70
Melilotus alba	sinji	Papilionaceae	60
Rumex dentatus	Jangli palak	Polygonaceae	80
Pharalis minor	Dumbi sitti	Poaceae	30
Vicia sativa	Rewari	Papilionaceae	10
Chenopodium album	Batho	Chenopodiaceae	90

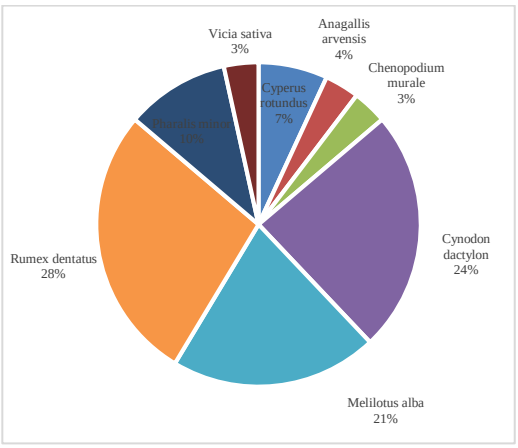

Figure 9: Frequency of weed infesting of wheat field district kot Addu district Muzaffargarh.

Table 10: Density of weeds infesting wheat field at Kot Addu site District Muzzafargarh			
Name of species	**Local name**	**Family**	**Density (%)**
Cyperus rotundus	Cyperaceae	2	
Anagallis arvensis	Bili boi	Primulaceae	1
Chenopodium murale	Krund	Chenopodacae	2
Cynodon dactylon	Khabal	Poaceae	6
Melilotus alba	sinji	Papilionaceae	26
Rumex dentatus	Jangli palak	Polygonaceae	21
Pharalis minor	Dumbi sitti	Poaceae	7
Vicia sativa	Rewari	Papilionaceae	1
Chenopodium album	Batho	Chenopodiaceae	36

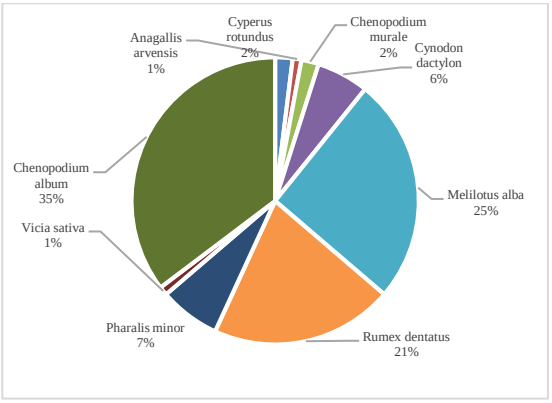

Figure 10: Density of weed infesting in wheat field Kot Addu District Muzaffargarh

4.6 Weed flora of wheat at Sultan Nagar site district Muzaffargarh

Data for weed flora occurring in wheat field at Sultan Nagar District Muzzafargarh were analyzed for taxonomic and ecological features. These have been represented in Table 11&12 and Figure 11&12. The frequency Table 11 shows that Chenopodium album was only abundant weed at Sultan Nagar site occurring in 80% samples. Anagallis arvensis was noticed frequently and occupied 60% quadrats. Melilotus Alba and Rumex dentatus and stood slightly below frequent level to gain 40% frequency level. Three weeds species Cyperus rotundus, Medicago sativa and Phalaris minor got 30% frequency value. As such this site consisted of one abundant weed species, one frequent species a major portion was occasional weeds with 6 species and only one species occurred rarely. Density value list (Table 12) indicates the most densely occurring weed was Chenopodium album securing 54% value. All the other weeds formed poor stands.

Table 11: Frequency of weed infesting wheat field at Sultan Nagar district Muzaffargarh

Name of species	Local name	Family	Frequency (%)
Chenopodium album	Bathoo	Chenopodiaceous	80%
Anagallis arvensis	Billi boti	Primulaceae	40
Cynodon dactylon	Khabal	Poaceae	10
Cyperus rotundus	Cyperus	Cyperaceae	30
Lathyrus asphaca	Dokani	Papilionaceae	60
Melilotus alba	sinji	Papilionaceae	40
Medicago denticulata	Maina	Papilionaceae	30
Phalaris minor	Dumb siti	poaceae	30
Rumex dentatus	Jangli palak	Polygonaceae	40

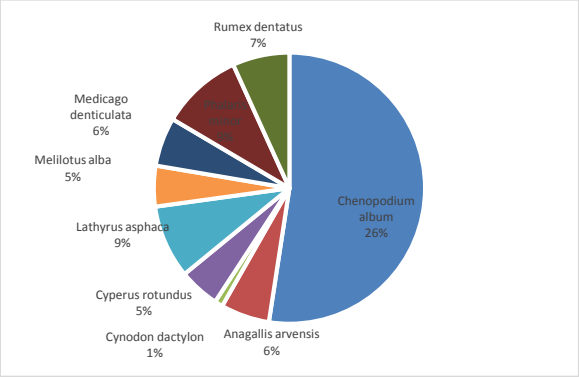

Figure 11: Frequency of weed infesting wheat field at Sultan Nagar district Muzaffargarh

Table 12: Density of weeds infesting wheat field Sultan Nagar District Muzaffargarh

Name of species	Local name	Family	Density (%)
Chenopodium album	Bathoo	Chenopodiaceous	54
Anagallis arvensis	Billi boti	Primulaceae	6
Cynodon dactylon	Khabal	Poaceae	1
Cyperus rotundus	Cyperus	Cyperaceae	5
Lathyrus asphaca	Dokani	Papilionaceae	9
Melilotus alba	sinji	Papilionaceae	5
Medicago denticulata	Maina	Papilionaceae	6
Phalaris minor	Dumb siti	poaceae	10
Rumex dentatus	Jangli palak	Polygonaceae	7

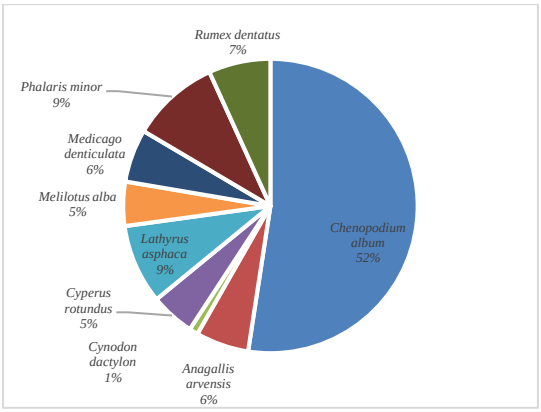

Figure 12: Density of weeds infesting wheat field Sultan Nagar District Muzaffargarh.

4.7 Soil-weed species relationship

The soil features of each site as investigated, were correlated with the existence of particular weed species in that area. The result has been represented as fellows. The soil samples were collected from wheat fields at Nawan Kot district Layyah site were analysed and result have been represented in Table-14. At this site wheat field had different types of soil. At majority of wheat field surveyed the soil looked sandy in nature. The pooled samples were analyzed. Mean pH of this soil was 7.41 and EC was 116. Sodium concentration was very low (22.5ppm) while Potassium contents was 32.43ppm and Calcium contents was 33.45ppm. Keeping all these parameters in mind the sandy nature soil was apparent in most of field surveyed.

A variation was noted for weed spectra in different fields. Overall Anagallis arvensis was dominant species on this site. This species was flourishing in the sandy soils, while it was limited at the field which possessed normal type of soil. High percentage of EC concentration could be linked to the emergence of this weed. At Fethpur site the soil of various fields was collected and pooled for analysis given in table- 13. It consisted of pH 7.05 and EC 46.7. Analysis of ionic content revealed that Na existed at 34.5ppm Potassium 39ppm and Calcium 23ppm. Overall appearance of soil indicated that it to be sandy type of soil. Regarding weed infestation in wheat field at this site was observed that there was the dominance of one dicot species. Coronopus oxyacantha was dominant species of this site. The occurrence of Coronopus oxyacantha is the characteristic of such region where water table is very deep.

At the Karor Lal –E-Son site the soil samples was collected for the analysis given in table -13. It consisted of pH 7.62dSm-1 and EC value 56.5. The sodium ions concentration were 255ppm calcium concentration 44ppm and Potassium 33ppm.The sodium ions concentration was highest in this site soil. The appearance of the soil in general was slightly sandy. Among the weed species infesting in this area was Medicago denticulata formed the dense as compared to all other weeds species noted as this site. It was observed that most of the weeds were observed this area belonged to monocot families' dicot group poor existence.

Soil samples collected from wheat field at Sultan Nagar was pooled and analyzed. The results have been given in table13.These indicated pH value of 7.2 and EC level 100.1. Regarding ions concentration the soil of Sultan Nagar site possessed Potassium at 70ppm level which was noted to be highest concentration of this sites among all sites. The sodium ions concentration was calculated to be 654ppm. Calcium ions contents were calculated 40ppm. The soil of the Sultan Nagar site was less sandy. Chenopodium album and Anagallis arvensis were most abundant species of this site. Chenopodium album has been regarded as weed species reported in almost all the areas of Pakistan. Table: 13 indicates the analysis for various parameters of soil of soil samples collected the wheat field of Chok Sarwar Shaheed.

The pooled soil samples showed the pH 7.7dSm-1 and EC at 153.0. The sodium ions concentration existed at 72.7 Calcium 173ppm while Potassium ions concentration were calculated to be 38ppm.The soil in different field showed variation in general appearance. The soil of this site was slightly sandy. Chok Sarwar Shaheed site monocot weeds were dominant in the wheat field. Asphodelus tenuifolius Avena sativa and Poa annua formed very dense stand at these fields. Asphodelus tenuifolius is weed of slightly deeper water table in soil. Dicot weeds species was rarely present in this site. Soil samples were collected from wheat field at Kot Addu. These samples were analysed and results have been. At this site wheat field had different types of soil. At majority of field surveyed the soil looked like slightly saline. The soil samples were analysed. Mean pH of this soil was 7.1 and EC 79.2. Sodium ions concentration was very high 261 Calcium 237 and Potassium ions concentration was 145. Chenopodium album was dominant species of this site.

Table: 13: Analysis of soil samples collected from wheat field of various site of district Layyah and Muzaffargarh

Sites name	E.C(dSm-1)	pH	Na(ppm	Ca(ppm)	K+(ppm)
Nawan Kot	116	7.41	22.5	33.45	32.43
Fethpur	46.7	7.05	34.0	23	39
Karor lal e son	56.5	7.62	255	44	33
Chok Sarwar Shaheed	153.0	7.7	72.7	173	38
Kot Addu	79.2	7.1	261	237	145
Sultan Nagar	100.1	7.2	654	57	70

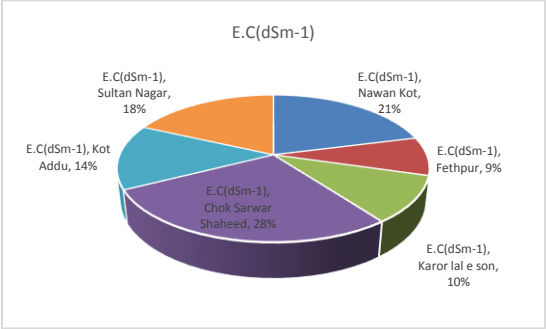

Figure 13: EC (dSm-1) of different sites of districts Muzaffargarh and Layyah.

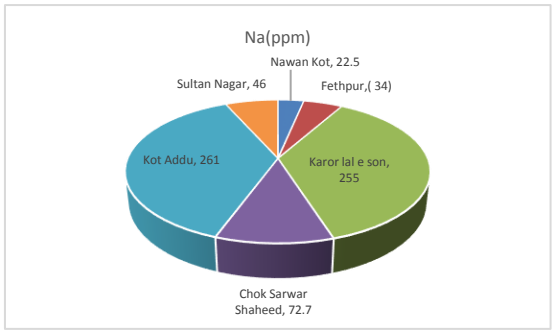

Figure 14: Sodium concentration of different sites of Layyah and Muzaffargarh.

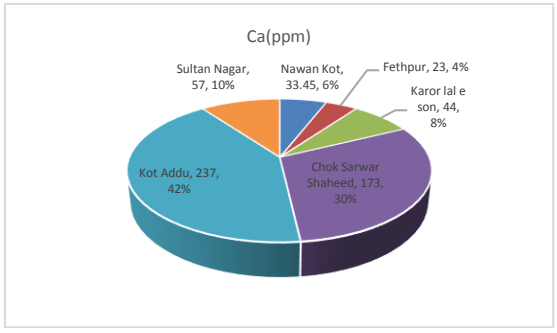

Figure 15: Calcium ions concentration vales of the Layyah and Muzzafargarh sites.

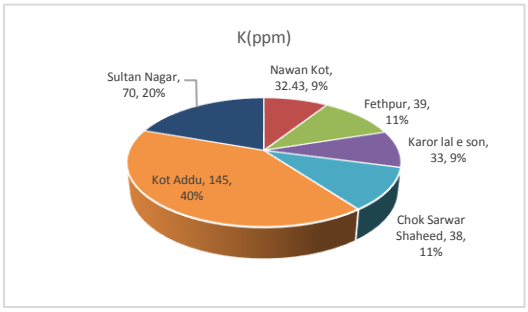

Figure 16: Potassium concentrations of soil samples of district Layyah and Muzaffargarh sites.

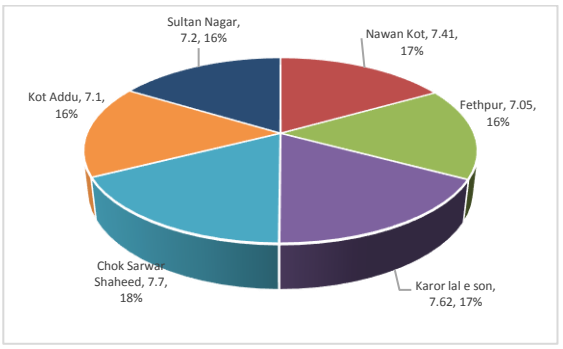

Figure 17: pH values of soil samples of Layyah and Muzaffargarh sites.

4.8 Family wise classification of weeds

Table 13 has shown the family wise classification 17 weeds species infesting wheat field in various site of districts Layyah and Muzzafargarh. The table reveals that two families shared the top position in this respect. Poaceae among monocots group comprised of the largest number of five species each and family Papilionaceae from dicot: The next largest species containing family were Chenopodiaceae with two species. The remaining six families were represented by single species each. These includes Polygonaceae, Cyperaceae, Asteraceae and Primulaceae representative the monocot. Asphodeliaceae and Brassicaceae were indicated the monocot species dicot species.

Table 14: Family wise distribution of weed species infesting wheat field in District Muzaffargarh and Layyah

Family	Species
Poaceae	Avena sativa L Cynodon dactylon Phalaris minor Poa annua L.
Papilionaceae	Melilotus alba L. Lathyrus aphaca Medicago denticulate Vacia sativa
Chenopodiaceae	Chenopodium album Chenopodium morale
Polygonaceae	Rumex dentatus
Cyperaceae	Cyperus rotundus
Asteraceae	Carthamus oxyacanthus
Primulaceae	Anagallis arvensis
Asphodeliaceae	Asphodelus tenuifolius
Brassicaceae-	Coronopus didymus

5. Conclusion

It was observed that seventeen weeds species (8 monocot and 9 dicot species) were infesting wheat field of the districts Layyah and Muzaffargarh sites. Anagallis arvensis, Medicago denticulata were found prevailing wheat field in district Layyah at about 60% sites studied and thus emerged as the most dominant and abundant weed species of these areas. Chenopodium album was found prevailing wheat field in district Muzzafargarh at about 50% sites studied and thus emerged as the most dominant and abundant species of this area. Anagallis arvensis, Rumex dentatus and Asphodelus tenuifolius in 25% sites of area studied. Regarding the number of dicot species family Papilionaceae and monocot family Poaceae were the largest families including the highest number of weed species infesting in these areas. Other weeds species existing in noteworthy position were Anagallis arvensis Rumex dentatus Medicago sativa and Poa annua in districts Muzzafargarh. Avena sativa and Cynodon dactylon were rarely present in districts Layyah sites. This study will help to check out the effective measures for controlling weeds in these regions.

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