

Ethnobotany of Weeds; Weed Flora of Ramat Polytechnic Teaching and Research Farm, Maiduguri Borno State of Nigeria

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ABSTRACT

This study was carried out to ascertain the species of weeds at Ramat Polytechnic Teaching and Research Farm, Maiduguri Borno State Nigeria. The objective of the study is to identify the weeds flora and ethnobotanical benefits of these weeds. Weed flora shows that 38 weed species were identified belonging to 18 different families out of which mostly, twenty-six (26) are annuals the remaining (8) are perennials. The distribution of these weeds further shows that *Cleome gynandra* L., *Commelina benghalensis* Schult. F., *Euphorbia hirta* Linn., *Crotalaria mucronata* L., *Senna occidentalis* L., *Boerhavia erecta* L., *Eragrostis tenella* (A. Rich) Hoschst. Ex Steud., *Cenchrus biflorus* (Roxb.), *Corchorus olitorius* L. and *Tribulus terrestris* L. have high (70%) occurrence at the farm. The dominant plant families are the Fabaceae, Poaceae and Malvaceae. Most of the samples weeds have uses ranging from medicinal, soup, fodder and mulch cover.

Key words: Weed Flora, Ethnobotany, Families, Uses, Maiduguri.

1. INTRODUCTION

Ethnobotany is the study of the relationship between plants and people Dhanam and Elayaraj (2014). Quite a number of plants considered as weeds in modern sciences have significant value. In ethnobotany, knowledge about local weeds is more important than local knowledge of insector plant diseases; some weeds are used as fodder, medicine, even toys, but others are just weeds Bentley *et al.*, 2005. Weeds have genetic and phenotypic ability Dhanam and Elayaraj (2014); such characters enable them to pass through successfully in adverse habitats. They easily invade crop fields which are favourite habitat for their fast growth (Randall 1996; Frohlich *et al.*, 2000; Hassan and Marwat 2001). The presence of weeds in the fields and their impact on the crop production and environment has been well documented. Sher *et al.*, (2011) stated that the unwanted weeds are responsible for the competitive and allelopathic behavior and rendering habitats to harmful organisms. Ethnobotany can help elicit demand for research in aculturally and ecologically sensitive way. Understanding the importance of weeds is useful for taxonomists, agriculturists and scientists involved in the management of weeds. Weeds 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). There are numerous benefits of weeds as reported by Soladoye *et al.*, (2010) such as economic and medicinal values, they protect the soil against erosion and add organic matter to the soil. Weeds also provide shelter for beneficial insects and provide nectar for bees, Some weeds serve as raw material for conventional medicine, while others have been used locally for decades for several traditional medicinal purposes ranging from simple laxative to cure dysentery (Hill and Ramsay, 1977; Soladoye *et al.*, 2006).

This study was carried out to ascertain the species of weeds at the experimental farm as this will enable researchers to be aware of the species of plants, their nomenclature and some vital information about the weeds.

- This paper study is to ascertain the species of weeds at Ramat Polytechnic Teaching and Research Farm, Maiduguri Borno State Nigeria.
- This paper is to identify the weeds flora and ethnobotanic benefits of these weeds.

2. METHODOLOGY

The study is conducted at the Ramat Polytechnic Teaching and Research farm (40000 m²), in Maiduguri Borno state, between June and July 2019 (at the establishment of rainfall when almost all weeds must have emerged). The ecological information (in the two months of June and July) from the area average temperature is 36.4⁰C-33.2⁰C, average rainfall of 73.8mm-147.1mm in the Sudan savanna region. The area being a research farm is characterized by numerous annual and perennial vegetation; among the tree crops are *Acacia* species, neem *Azadirachta indica*. Wet and dry season crops such as maize *Zea mays*, wheat *Triticum aestivum*, *Amaranthus* spp, Lettuce *Lactuca sativa*, Carrot *Daucus carota*, Onion *Allium cepa*, Cabbage *Brassica oleracea*, Sorrel *Hibiscus sabdariffa*, Okro *Hibiscus esculentus*, Tomato *Lycopersicon esculentus*. Weed samples were collected from 1 m² quadrant around the farm including climbing weeds on wire fence and trees. These weed samples were identified with the help of indigenous farmers, weed identification manual and elders around the community who have the knowledge about traditional medicine and are so familiar with these weeds.

3. RESULTS AND DISCUSSIONS

Table 1. Weed Flora of Ramat Polytechnic Teaching and Research Farm, Maiduguri Borno State

S/N	Weed Scientific name	Family	Common name	Lifecycle
1	<i>Amaranthus retroflexus</i> L.	Amaranthaceae	Smooth pig weed	Annual
2	<i>Amaranthus spinosus</i> L.		Thorn pig weed	
3	<i>Leptadenia hastata</i> (Pers)	Apocynaceae	Akamongot	Annual
4	<i>Calotropis procera</i> (Aiton) W. T.		Sodom apple	
5	<i>Cleome gynandra</i> L.	Cleomaceae	Stink weed	Annual
6	<i>Commelina benghalensis</i> Schult. F.	Commilanceae	Climbing day flower	Annual/perennial
7	<i>Commelina erecta</i> linn.		Wandering jew	
8	<i>Ipomoea eriocarpa</i> R. Br.	Convolvulaceae	Tiny morning glory	Annual
9	<i>Momordica balsamina</i> L.	Curcubitaceae	Balsam apple	Annual
10	<i>Cyperus rotundus</i> L.	Cyperaceae	Nutsedge	Perennial
11	<i>Euphorbia hirta</i> linn.	Euphorbiaceae	Asthma plant	Annual
12	<i>Crotalaria mucronata</i> L.	Fabaceae	Rattle pod	Annual/perennial
13	<i>Crotalaria medicaginea</i> L.		Rattle pod	
14	<i>Senna tora</i> L.		Sickle senna	
15	<i>Senna occidentalis</i> L.		Coffee senna	
16	<i>Tephrosia purpurea</i> (L.) Pers.)		Wild indigo	
17	<i>Swartzia madagascariensis</i> L.		Snake bean	
18	<i>Faidherbia albida</i> A. Cahev.		Acacia	Perennial
19	<i>Acacia nilotica</i>		Gum Arabic	
20	<i>Ocimum gratissimum</i> L.	Lamiaceae	African basil	Annual
21	<i>Englerina gabonensis</i> (Engl.) Balle	Loranthaceae	Mistletoe	Perennial
22	<i>Waltheria americana</i> L.	Malvacea	Sleepy morning	Annual
23	<i>Hibiscus asper</i> L.		wild sorrel	annual
24	<i>Sida cordifolia</i> L.		Flannel weed	annual
35	<i>Azadirachta indica</i> L.	Meliaceae	Neem	Perennial
26	<i>Boerhavia erecta</i> L.	Nyctaginaceae	Spiderling	Annual/perennial
27	<i>Eragrotis tenella</i> (A. Rich) Hoschst. Ex Steud.	Poaceae	Japanese love grass	Annual
28	<i>Eragrotis tremula</i> Hochst.		Cane grass	Annual
29	<i>Cynodon dactylon</i> (L.) Pers.		Bermuda grass	Perennial
30	<i>Cenchrus biflorus</i> (Roxb.)		Indian sandbur	Annual
31	<i>Mitracarpus hirtus</i> (L.) DC	Rubiaceae	Girdle pod	
32	<i>Borreria stadchydea</i> (DC) Hutch & Dalziel		-	
33	<i>Corchorus olitorius</i> L.	Tiliaceae	White jute	Annual
34	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Devils thorn	Annual

Weed flora collected and identified at the experimental farm is presented on Table 1. The weeds were identified with the help of local farmers around and later translated to its various common name, scientific names and families with help of the manual Hausa plant names by Roger Blench (2007). Further clarification and confirmation was done through Google search. Twenty six (26) of the weeds were annuals while the remaining eight (8) are perennials giving a total of thirty four (34) weed species belonging to eighteen (18) families. Two tree species (*Acacia* and *Neem*) were included, this is because the seeds of these trees were scattered around and germinate to constitute as the weeds due to the presence of their seedlings.

Table 2. Weed Flora of Ramat Polytechnic Teaching and Research Farm Maiduguri, Borno State, on Frequency of Occurrence.

S/N	Weed Scientific name	Frequency of occurrence
1	<i>Amaranthus retroflexus</i> L.	+
2	<i>Amaranthus spinosis</i> L.	+
3	<i>Leptadenia hastata</i> (Pers)	++
4	<i>Calotropis procera</i> (Aiton) W. T.	++
5	<i>Cleome gynandra</i> L.	+++
6	<i>Commelina benghalensis</i> Schult. F.	+++
7	<i>Commelina erecta</i> linn.	+
8	<i>Ipomoea eriocarpa</i> R. Br.	++
9	<i>Momordica balsamina</i> L.	++
10	<i>Cyperus rotundus</i> L.	++
11	<i>Euphorbia hirta</i> linn.	+++
12	<i>Crotalaria mucronata</i> L.	+++
13	<i>Crotalaria medicaginea</i> L.	+
14	<i>Senna tora</i> L.	+
15	<i>Senna occidentalis</i> L.	+++
16	<i>Tephrosia purpurea</i> (L.) Pers.)	+
17	<i>Swartzia madagascariensis</i> L.	+
18	<i>Faidherbia albida</i> A. Cahev.	++
19	<i>Acacia nilotica</i>	++
20	<i>Ocimum gratissimum</i> L.	+
21	<i>Englerina gabonensis</i> (Engl.) Balle	+
22	<i>Waltheria americana</i> L.	+
23	<i>Hibiscus asper</i> L.	+
24	<i>Sida cordifolia</i> L.	+
35	<i>Azadirachta indica</i> L.	++
26	<i>Boerhavia erecta</i> L.	+++
27	<i>Eragrotis tenella</i> (A. Rich) Hoschst. Ex Steud.	+++
28	<i>Eragrotis tremula</i> Hochst.	+
29	<i>Cynodon dactylon</i> (L.) Pers.	++
30	<i>Cenchrus biflorus</i> (Roxb.)	+++
31	<i>Mitracarpus hirtus</i> (L.) DC	++
32	<i>Borreria stadchydea</i> (DC) Hutch & Dalziel	++
33	<i>Corchorus olitorius</i> L.	+++
34	<i>Tribulus terrestris</i> L.	+++

KEY + 50% and below low
 ++ 51% -70% moderate
 +++ 70%-100% high

Table 2 shows the frequency of occurrence on the weed flora at the research farm. The frequency is categorized into three groups viz; 50% and below shows the occurrence of the weed in 20 quadrants and less. 51%-70% shows weed occurrence in 21 quadrants to 30 quadrants and 71%-100% shows the occurrence of the weed in all the sampled quadrants (40). In some special cases where parasitic weeds were identified, total number of trees in the whole farm were counted and parasitic weeds identified to give the frequency. This finding is in line with the work of Dhanam and Elayaraj (2014) who reported similar observation on the frequency occurrence of weed.

Table 3. Weed Flora of Ramat Polytechnic Teaching and Research Farm Maiduguri, Borno State, on Percentage of Weed Families

S/N	Weed Scientific name	Family	Percentage Total 100%
1	<i>Amaranthus retroflexus</i> L.	Amaranthaceae	5.88
2	<i>Amaranthus spinosis</i> L.		
3	<i>Leptadenia hastata</i> (Pers)	Apocynaceae	5.88
4	<i>Calotropis procera</i> (Aiton) W. T.		

5	<i>Cleome gynandra</i> L.	Cleomaceae	2.94
6	<i>Commelina benghalensis</i> Schult. F.	Commilanaceae	5.88
7	<i>Commelina erecta</i> linn.		
8	<i>Ipomoea eriocarpa</i> R. Br.	Convulvulaceae	2.94
9	<i>Momordica balsamina</i> L.	Curcubitaceae	2.94
10	<i>Cyperus rotundus</i> L.	Cyperaceae	2.94
11	<i>Euphorbia hirta</i> linn.	Euphorbiaceae	2.94
12	<i>Crotalaria mucronata</i> L.	Fabaceae	23.53
13	<i>Crotalaria medicaginea</i> L.		
14	<i>Senna tora</i> L.		
15	<i>Senna occidentalis</i> L.		
16	<i>Tephrosia purpurea</i> (L.) Pers.)		
17	<i>Swartzia madagascariensis</i> L.		
18	<i>Faidherbia albida</i> A. Cahev.		
19	<i>Acacia nilotica</i>		
20	<i>Ocimum gratissimum</i> L.	Lamiaceae	2.94
21	<i>Englerina gabonensis</i> (Engl.) Balle	Loranthaceae	2.94
22	<i>Waltheria americana</i> L.	Malvaceae	8.82
23	<i>Hibiscus asper</i> L.		
24	<i>Sida cordifolia</i> L.		
35	<i>Azadirachta indica</i> L.	Meliaceae	2.94
26	<i>Boerhavia erecta</i> L.	Nyctaginaceae	2.94
27	<i>Eragrotis tenella</i> (A. Rich) Hoschst. Ex Steud.	Poaceae	11.76
28	<i>Eragrotis tremula</i> Hochst.		
29	<i>Cynodon dactylon</i> (L.) Pers.		
30	<i>Cenchrus biflorus</i> (Roxb.)		
31	<i>Mitracarpus hirtus</i> (L.) DC	Rubiaceae	5.88
32	<i>Borreria stadchyea</i> (DC) Hutch & Dalziel		
33	<i>Corchorus olitorius</i> L.	Tiliaceae	2.94
34	<i>Tribulus terrestris</i> L.	Zygophyllaceae	2.94

A total of thirty four (34) weed species belonging to eighteen (18) families were identified as constituting the weed flora of the research site. Fabaceae has the largest family with a number of eight (8) weed species followed by the Poaceae family with a number of four (4) weed species. Malvaceae family having (3) weed species. All other families constituted the remaining species. This is better illustrated on chart as presented on Fig 1. The prevalence of the (3) three major families was in tandem with the families of the major weeds of the world (Akobundu, 1987).

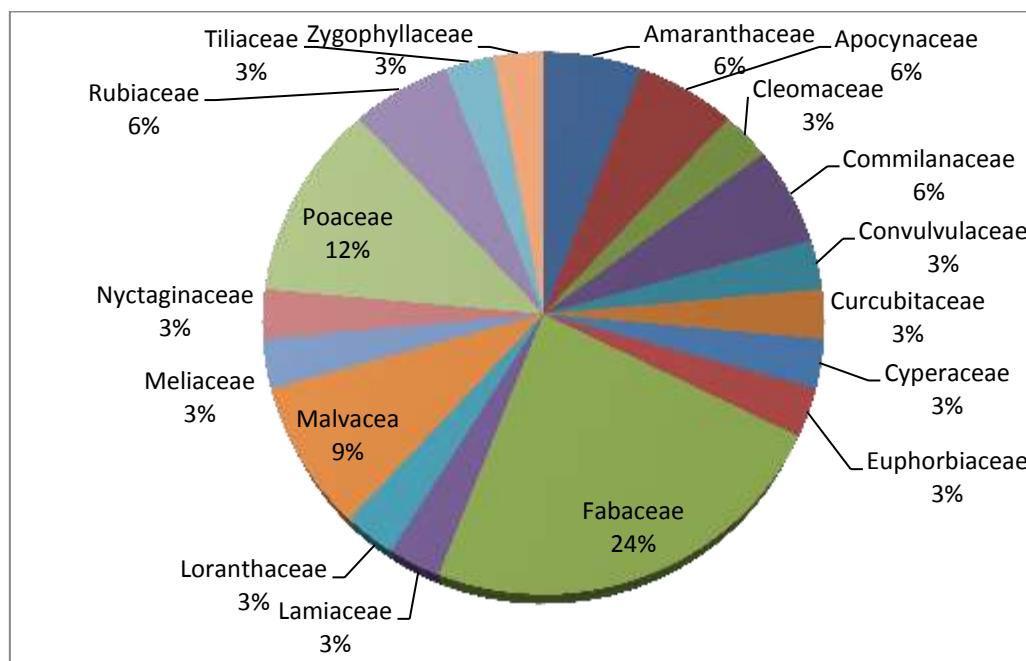


Fig 1. Weed Flora of Ramat Polytechnic Teaching and Research Farm Maiduguri, Borno State, on Percentage of Weed Families.

Table 4. Weed Flora of Ramat Polytechnic Teaching and Research Farm Maiduguri, Borno State, with Medicinal and other Uses

S/N	Weed Scientificname	Uses; Medicinal/others *
1	<i>Amaranthus retroflexus</i> L.	Fodder
2	<i>Amaranthus spinosis</i> L.	-
3	<i>Leptadenia hastata</i> (Pers)	Pot herb,
4	<i>Calotropis procera</i> (Aiton) W. T.	Medicinal ; Leaves and sap
5	<i>Cleome gynandra</i> L.	Soup
6	<i>Commelina benghalensis</i> Schult. F.	Fodder
7	<i>Commelina erecta</i> linn.	Medicinal
8	<i>Ipomoea eriocarpa</i> R. Br.	Fodder
9	<i>Momordica balsamina</i> L.	Soup, seeds are medicinal
10	<i>Cyperus rotundus</i> L.	-
11	<i>Euphorbia hirta</i> linn.	Medicinal
12	<i>Crotalaria mucronata</i> L.	Highly medicinal
13	<i>Crotalaria medicaginea</i> L.	Highly medicinal
14	<i>Senna tora</i> L.	Soup
15	<i>Senna occidentalis</i> L.	Soup
16	<i>Tephrosia purpurea</i> (L.) Pers.)	Highly medicinal
17	<i>Swartzia madagascariensis</i> L.	Medicinal
18	<i>Faidherbia albida</i> A. Cahev.	Fodder
19	<i>Acacia nilotica</i> L.	Fodder, gum
20	<i>Ocimum gratissimum</i> L.	Medicinal
21	<i>Englerina gabonensis</i> (Engl.) Balle	-
22	<i>Waltheria americana</i> L.	Medicinal
23	<i>Hibiscus asper</i> L.	Soup
24	<i>Sida cordifolia</i> L.	Medicinal
35	<i>Azadirachta indica</i> L.	Medicinal
26	<i>Boerhavia erecta</i> L.	-
27	<i>Eragrotis tenella</i> (A. Rich) Hoschst. Ex Steud.	Mulch
28	<i>Eragrotis tremula</i> Hochst.	Mulch
29	<i>Cynodon dactylon</i> (L.) Pers.	Fodder
30	<i>Cenchrus biflorus</i> (Roxb.)	-
31	<i>Mitracarpus hirtus</i> (L.) DC	Sap medicinal
32	<i>Borreria stadchydea</i> (DC) Hutch & Dalziel	Medicinal
33	<i>Corchorus olitorius</i> L.	Soup
34	<i>Tribulus terrestris</i> L.	-

*information given not on scientific findings but through oral interaction with the indigenous people around

Table 4 presents the weed flora of the research farm with their medicinal and other uses, most of the species are medicinal through their different parts (sap, leaves, stem, seeds, roots) fresh or dried, prepared with some other ingredients. Among these are the *Crotalaria* species and *Senna occidentalis* which are highly medicinal (as anti fever) especially in small children; as stated by Ogunkunle and Ladejobi (2006) local usage of the plant for these purposes and the presence of anthraquinones in its leaf extracts. Many out of the sampled weeds are used as pot herbs or soups according to different traditions. Other uses include fodder, mulching material and soil cover this is in line with the findings of many researchers on ethnobotany of weeds (Solodoye *et al.*, 2010; Muhammad *et al.*, 2018;)

4. CONCLUSION

In conclusion, weed flora of Ramat Polytechnic Teaching and Research Farm, Maiduguri Borno state shows that 38 weed species were identified belonging to 18 different families out of which mostly, twenty six (26) are annuals the remaining (8) are perennials. The distribution of these weeds further shows that *Cleome gynandra* L., *Commelina benghalensis* Schult. F., *Euphorbia hirta* linn., *Crotalaria mucronata* L., *Senna occidentalis* L., *Boerhavia erecta* L., *Eragrotis tenella* (A. Rich) Hoschst. Ex Steud., *Cenchrus sbiflorus* (Roxb.), *Corchorus olitorius* L. and *Tribulus terrestris* L. have high (70%) occurrence at the farm. The dominant plant families are the Fabaceae, Poaceae and Malvaceae. Most of the samples weeds have uses ranging from medicinal, soup, fodder and mulch cover.

RECOMMENDATION

Further studies should be conducted about the allelopathic effects of these weeds, their benefit as all plants are important in one way or the other.

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