

## **From ‘Vagabonds’ to Ethnobotanical Relevance: Weeds of the Campus Sites of Olabisi Onabanjo University, Ago-Iwoye, Nigeria**

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**Issued April 1, 2010**

### **Abstract**

A survey of the weed flora of the campus sites of the Olabisi Onabanjo University was undertaken. Several visits were made to the disturbed and undisturbed vegetation of the sites for collection of weeds after which the weeds were prepared in accordance with conventional herbarium practice. A total of seventy-three (73) weed species belonging to twenty-seven (27) families were identified and found to be present within the area of study. The family Poaceae seems to have the highest number of weed species (twelve) available within the area followed by Asteraceae with ten (10) species. Amaranthaceae, Cyperaceae and Euphorbiaceae are also in abundance. These weeds have been discovered to be useful, against the mindset of the uninformed that they are useless or ‘vagabond’ plants. Medicinal uses as well as percentage occurrence of each family are presented. From this study it is obvious that the University sites are not only rich in plant biodiversity but that the plants are also very rich in socio-economic values. It is therefore advisable that these plants should be protected from going into extinction so that all would not be lost due to developmental activities.

**Key words:** Weeds, ‘Vagabonds’, Ethnobotany, Medicinal uses, Olabisi Onabanjo University.

### **Introduction**

Weeds are literally everywhere which make them a perfect object to observe. The richest soil if uncultivated produces the rankest weeds. An uninformed mind regards weeds as plants growing where they are not wanted; they are undesirable and considered to be pests just as insects. Harper (1944) defined weed as a plant that grows spontaneously in a habitat that has been greatly modified by human actions. As opined by Thomas (1956), a weed is a useless, undesirable and often very unsightly plant of wild, usually found in land which has been cultivated or in areas developed by man for specific purposes other than cultivation. Other authors (Bunting, 1959; Baker, 1965; Harlan and De Wet, 1965; Aldrich, 1984) have also given different definitions of weed. However Akobundu (1987) suggested that a plant is a weed either because it interferes with human activity and/or welfare or because it occurs spontaneously in human disturbed habitats. From the above it can be deduced that a good number of people regard weeds as ‘vagabond’ plants with no homes and no useful purpose and can therefore migrate from place to place in different ecological systems where they are not wanted! A plant taxonomist will however agree with the definition of weed as a plant whose virtues have not been discovered (Blatchley, 1912). It is in this light that the so called weeds of our University campus sites at Ago-Iwoye were studied.

Classification of weeds on the basis of where they are found (habitat) is widely used by agriculturists (Akobundu, 1987). This method of classification groups weed into upland (terrestrial) weeds, aquatic weeds, arable crop weeds, weeds of plantation crops etc. some weeds such as *Chromolaena odorata* (L) R. M. King

& Robinson are classified as weeds of plantation crops while others such as *Ageratum conyzoides* Linn., *Aspilia africana* (Pers) C. D. Adams and *Tridax procumbens* Linn. are classified as weeds of arable crops. Binomial system of nomenclature is also used for the scientific classification of weed as in all other plant species (Akobundu, 1987, Soladoye and Oyesiku, 2008). HoIm (1982) noted that two families account for nearly 40 percent of the world's most troublesome weeds. Terrestrial weeds are 23 percent grasses, 69 percent broadleaves and only 6 percent sedges, 2 percent ferns and fern allies. Among the aquatic weeds, 60 percent of the water weeds are monocots, 30 percent are dicots and 10 percent are ferns. Families of major weeds in the World include Poaceae (Gramineae), Asteraceae (Compositae), Cyperaceae (Nutsedge), Polygonaceae, Amaranthaceae, Fabaceae, Convolvulaceae, Euphorbiaceae, Malvaceae and Solanaceae (Akobundu, 1987).

King (1966) and Baker (1974) outlined some characteristics of weeds among which are: high productive capacity, harmfulness to humans, animal and crops, spontaneous growth appearing without being sown and aggressiveness to mention but a few. Similarly, Batra (1981) suggested that an "ideal weed" should have characteristics that include ugliness, no wildlife value, numerous and easily dispersed seeds, unpalatability, spininess, allergenicity, toxicity, rapid vegetative growth etc. However, there is no single weed species that possess all the above listed characteristics since weed species with prolific seed production potential usually lacks well developed vegetative reproduction, so they cannot have the same or all the features of weeds (Johnson and Mullinix, 1998).

Weeds have several economic and medicinal values. They provide a vegetative cover that protects the soil surface against erosion action of rain and wind; they play an important role in nutrient recycling. Some weeds serve as hosts for beneficial insects at the same time provide nectar for bees, weeds add organic matter to the soil. Some weeds play important role as sources of drugs used in orthodox 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). Some examples of weeds that yield useful drug extracts for modern medicine include African vine (*Strophantus gratus* (Hook.) Franch - a source of the drug Strophanthin which is used for heart disease and *Zanthoxylum zanthoxyloides* (Lam.) Waterm which yield antisickling agent called NIPRISAN (Lehane, 1977; Soladoye *et al.*, 2006). It is known that more than 40,000 species of tropical flowering plants have medicinal properties; this has made traditional medicine cheaper than modern medicine (Akpalu *et al.*, 1994). Some plant decoctions are of great value in the treatment of diarrhea or gastrointestinal disorders, urinary tract infections, skin infections, infertility, wound and cutaneous abscesses (Meyer *et al.*, 1996).

Weeds are also important source of pesticides. An example is *Chrysanthemum cinerariifolium* (Trev.) Bocc, which provides the insecticide pyrethrum. The present study aims at identifying a number of weeds found in the two sites (Permanent site and Mini Campus) of Olabisi Onabanjo University, Ago-Iwoye, Nigeria. This work also outlines the ethnobotanical importance of these weed species identified on the campus sites.

### **Materials and methods**

The location, climate and vegetation of the study areas had been described in our earlier paper (Soladoye *et al.*, 2005). Briefly, the Olabisi Onabanjo University campus situated in Ago-Iwoye falls within the equatorial belt of Nigeria at longitude 30° 55" east of the Greenwich Meridian and latitude 6° 56", north of the equator. Ago-Iwoye is about 7km from Oru and about 5km from Ijebu-Igbo, which are the two major towns in the Ijebu North Local Government area. The town is about 100km southeast of Abeokuta, the Ogun State capital (Master plan, 1985). The site lies to the south-western part of Ago-Iwoye approximately 35km from the centre of the town and is bounded on the north by Ijebu-Igbo/Oru/Ago-Iwoye/Ijesha-Ijebu/Ilishan road and on the east by Ago-Iwoye/Imodi-Imosan/Ijebu-Ode road. The perimeter roads are connected to Lagos-Benin expressway and the Ijebu-Ode/Ibadan road.

The tropical rain forest to which the vegetation of the campus belongs constitutes an evergreen plant community

rich in trees, shrubs and herbs. The climate is characterized by high temperature and a bimodal rainfall pattern. The annual rainfall ranges from 1250 to 2190 mm beginning from mid-March to mid-November, with the peak in July and September. The mean annual minimum and maximum temperatures are about 20°C and 30°C respectively, while relative humidity is approximately 60% in the dry season and 90% in the rainy season. The survey involved several visits to the campus sites for collection of samples. Specimens were collected across the undisturbed and disturbed vegetation of the sites. Care was taken to make sure that the entire, vigorously growing typical specimens of individuals representing almost all of the natural population was collected. Insect-damaged specimens were avoided likewise those rare or uncommon plants appearing to be the only plant of a species at a locality. In accordance with conventional herbarium practice, the samples were dried, poisoned and mounted on mounting sheets.

The poisoning was done with a mixture of mercuric chloride and phenol in 70 % methylated spirit. Identification of the specimens was done by the senior author and confirmed by experts by comparison with herbarium specimens in both Elikaf herbarium of the Olabisi Onabanjo University (not listed in Holmgren and Keuken 1974) and the Forest Herbarium, Ibadan (FHI). The field note which indicates the collectors name, date and place of collection, determinavit, habit, name and description of specimen was also attached to each of the mounting sheets on which the specimens were mounted. All voucher specimens were deposited at the Elikaf herbarium.

### Results and Discussion

From the survey, a total of seventy-three (73) weed species (Table 1) belonging to twenty-seven (27) families were identified as constituting the major part of the weed vegetation of both sites. The family Poaceae has the largest number of species (twelve) followed by Asteraceae (ten). Amaranthaceae and Cyperaceae both have seven species each while Euphorbiaceae has six (Table 2). The dominance or superiority of the Poaceae and Asteraceae could be due to several climatic and environmental conditions as well as the soil type. It could also be as a result of seed dispersal mechanism of the members of the families. Figure 1 shows the Bar chart representing the number of species belonging to each family and Figure 2 shows the Pie chart which represents the percentage occurrence of the families to which the species belong. *Chromolaena odorata* (L.) King and Robinson, *Ageratum conyzoides* Linn, *Phyllanthus amarus* Schum, *Bryophyllum pinnatum* (Lam.) Oken, *Gomphrena celosioides* Mart, *Cyperus esculentus* Linn, *Heliotropium indicum* Linn, *Imperata cylindrica* (L.) Beauv, *Momordica charantia* Linn, *Talinum triangulare* (Jacq) Willd, *Vernonia cinerea* (Linn.) Less and Thom *Aspilia africana* (Pers.) C.D. Adams were found in almost all areas of the sites. This supports the fact that weeds are notorious and inevitable in all vegetation types (Soladoye *et al.*, 2005).

The weeds studied have rapid growth and cover extensive areas. They grow in mass when they have been controlled by weeding, showing the degree of aggressiveness of the weed. These weeds are ruderal weeds as described by Holzner (1982). These weeds are weeds of disturbed non-crop areas such as rubbish heaps, landfills, path and roads, compost heaps and drainage. From the present study, weed persistence is affected by climatic, soil and biotic factors. These weeds are observed to persist because animals like goats do not graze on them. The climatic condition is also observed to be conducive as the weed, that need rain to grow, get enough at appropriate time while the ones that require dry season are also favoured during dry season. The major factor that is observed to affect their persistence is man in the course of maintaining a clean and neat surrounding but the weeds still sprout in places where they cannot be controlled easily.

These weeds generally provide vegetative cover to protect the soil surface against water and wind erosion. In addition to their agricultural uses, many weeds, such as *Alternanthera sessilis*, *Acalypha fimbriata*, and *Mariscus flabelliformis* have medicinal properties and are used extensively in homeopathic and naturopathic medicine. As seen in Table 1, the weeds have their respective medicinal/ economical uses. The leaves and fruits of *Momordica charantia* Linn are used as an anthelmintic and a purgative (Adesina *et al.*, 1995). *Chenopodium ambrosioides* Linn when fresh is used as anthelmintic and ascaricide. It is also used for hookworm and

in veterinary. *Boerhaavia diffusa* L have also been used to treat convulsions and as a mild laxative and febrifuge. The roots and leaves have an expectorant action and the roots are applied as a poultice to draw abscesses and to encourage the extraction of guinea worms (Adesina *et al.*, 1995).

Many published reports have also shown the effectiveness of traditional herbs including weeds against microorganisms; as a result, plants are the bedrock for modern medicine to attain new principle (Evans *et al.*, 2002). In this regard, plants have given western pharmacopoeia about 7,000 different pharmaceutically important compounds and a number of top-selling drugs of modern time e.g. quinine, artemisinin, taxol, etc (Odugbemi 2008). It is therefore important to note that there is the urgent need to preserve the genetic diversity of all plant resources of known and unknown economic importance (including weeds) which will guarantee the availability of all potentials for use for the benefit of our children and grandchildren (Olowokudejo 1987). Gbile *et al.* (1981, 1984) revealed that about four hundred and eighty plant species of the Nigerian flora have been described as endangered or rare, out of which many of these are being studied at the Forestry Research Institute of Nigeria, Ibadan. Oguntala (1993) noted clearly that, apart from the gradual loss of biodiversity, the devastating environmental disasters in urban and rural areas of Nigeria indicate that these environments are under stress and require urgent intervention. Lack of conservation measures will amount to an increase in the number of endangered species and this will ultimately result in extinction, which is the gradual but sure elimination of taxa (Allaby, 1998).

In the light of the ethnobotanical, ecological, and other socio-economic importance of these weeds it will be inappropriate to consider this group of plants as ‘vagabonds’. However, weeds have also been known to cause several damages to crops, reduce quality of harvested agricultural products and impede water flow in irrigated canals.

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**Table 1.** Alphabetical list of weeds collected from the area of study with their medicinal/other uses.

S/N	Botanical name	Family	Common name	Local name	Medicinal and other uses
1.	<i>Acalypha fimbriata</i> Schum & Thonn	Euphorbiaceae	Acalypha	Jinwinini	Ulcer, rheumatism, asthma, syphilis and antifungal infections.

2.	<i>Ageratum conyzoides</i> Linn.	Asteraceae	Billy goat-weed	Imi-esu	Wounds, ulcer, digestive disturbance. Concoction of the leaves is also used as tonic.
3.	<i>Alchornea cordifolia</i> (Schum & Thonn)	Eupobiaceae	Christmas bush	Ipa, esinsin, eepa	Fever, rheumatism, antimicrobial, diuretic, purgative, toothache
4.	<i>Alternanthera pungens</i> H. B. & K	Amaranthaceae	Khaki weed	Saje/ ewe owo	Whole plant pounded and leaf sap used for medicinal purposes
5.	<i>Alternanthera sessilis</i> (Linn.) DC	Amaranthaceae	Sessile joy-weed	Saje/ewe owo	Leaf sap used for medicinal purposes.
6.	<i>Amaranthus hybridus</i> Linn.	Amaranthaceae	Smooth pigweed	Tete-oyinbo	Rich in diuretic properties
7.	<i>Amaranthus spinosus</i> Linn	Amaranthaceae	Thorn pigweed	Tete-elegun	Leaves are edible and are a good nutritional values
8.	<i>Amaranthus viridis</i> Linn.	Amaranthaceae	Pig weed	Tete, atetedaye	Used for dysentery, diuretic, gonorrhea and eye diseases
9.	<i>Andropogon tectorum</i> Schum and Thonn	Poaceae	Giant bluestem	Eruwa-dudu	Have potential as a source of honeybees.
10.	<i>Aspilia africana</i> (Per) C. D Adams	Asteraceae	Haemorrhage plant	Yunyun	Stomach disorders, guinea worms, gonorrhea, tuberculosis
11.	<i>Axonopus compressus</i> (Sw.) P. Beauv.	Poaceae	Broadleaf carpet grass	Idi	It's useful as a grass for lawn/ malaria fever, breast swelling
12.	<i>Bidens pilosa</i> Linn.	Asteraceae	Black jar Spanish needle	Abere Oloko	Diarrhea, abdominal disorders, rheumatism
13.	<i>Boerhavia diffusa</i> Linn.	Nyctaginaceae	Hogweed	Etiponla	Leaf-sap instilled into the eye for conjunctivitis.
14.	<i>Boerhavia erecta</i> Linn.	Nyctaginaceae	Hogweed	Etiponla	Plant infusion used as mild laxative.
15.	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	Resurrection plant	Abamoda	Leaf sap used as diuretic and antemetic
16.	<i>Celosia trigyna</i> C.C. Townsend	Amaranthaceae	Celosia	Ajefawo, Ajitan	Chest pains, Anthelmintics, diuretic
17.	<i>Chloris pilosa</i> Schum.	Poaceae	Finger grass	Eeran	Forage and pasturage

18.	<i>Chromolaena odorata</i> (L.) R. M King & Robinson	Asteraceae	Siam weed	Akintola, Awolowo	Dysentery, malaria fever, leaf sap used for blood clothing.
19.	<i>Cleome viscosa</i> Linn	Capparaceae	Consumption weed	Ekuya	Leaves used as counter — irritant for headache
20.	<i>Cnestis ferruginea</i> Linn.	Connaraceae	Shortpod, Alum plant	Akaraaje, Omu-aja, elemesan	Use as an antidote for Snake bite, eye drops, migraine, gonorrhoea
21.	<i>Combretum hispidum</i> Laws.	Combretaceae	Bush willow	Okan	Black tongue, appetizer, weakness, anti pyretic.
22.	<i>Commelina diffusa</i> Burm. F	Commelinaceae	Spreading day flower	Godogbodo, Itopere	Yellow fever, oedema, sore, boils, pregnancy promotion
23.	<i>Commelina erecta</i> Linn.	Commelinaceae	Wandering Jew	Godobgo	Feeds for horse.
24.	<i>Conyza sumatrensis</i> Retz walker	Asteraceae	Fleabane/conyza	Olowojeja	Antipyretic, asthma, tuberculosis
25.	<i>Cyperus esculentus</i> Linn.	Cyperaceae	Yellow nutsedge	Ofio, Omu	The whole plant is used to induce menstrual disorders, vomiting, diuretic,
26.	<i>Cyperus rotundus</i> Linn.	Cyperaceae	Purple nutsedge	Abo Keregun	Tuber is edible and occasionally eaten. Roots are aromatic
27.	<i>Dactyloctenium aegyptium</i> (Linn.) P. Beauv	Poaceae	Crow foot-grass	-	It is used as cover crop.
28.	<i>Diodia sarmentosa</i> Sw.	Rubiaceae	-	Dasa	Taken with pepper and salt for dysentery
29.	<i>Eleusine indica</i> Gaertn.	Poaceae	Wire grass	Ese-kannakanna	Venereal diseases, haemoptysis, antipyretic
30.	<i>Emilia coccinea</i> (Sims) G. Don	Asteraceae	Yellow tassel flower	Odundun owo	Leaves have mild laxative properties.
31.	<i>Emilia praetermissa</i> Milne-Redh	Asteraceae	-	-	Eaten as Spinach
32.	<i>Eragrostis tremula</i> Hochst. ex Steud.	Poaceae	Feathery lovegrass	Ariran	Used to improve memory
33.	<i>Euphorbia heterophylla</i> Linn.	Euphorbiaceae	Spurge weed	Emile	Cultivated as ornamentals.

34.	<i>Euphorbia hirta</i> Linn.	Euphorbiaceae	Garden spurge	Emile	Plant induce mammary development and milk secretion
35.	<i>Ficus exasperata</i> Vahl.	Moraceae	Sand paper leaf	Epin	Scabies, gonorrhoea, urinary ailments, antipyretic.
36.	<i>Gomphrena celosioides</i> Mart	Amaranthaceae	Gomphrena	Ipopo ale	Good for yarning, Laxative
37.	<i>Heliotropium indicum</i> Linn	Boraginaceae	Indian Heliotrope	Agogo-igun	Convulsion, anticancer, worms, mouth wash
38.	<i>Hyptis lanceolata</i> Poir	Labiatae	Hyptis	Jogbo	Fever, malaria, carminative, insect repellent, laxative
39.	<i>Imperata cylindrica</i> (L.) Beauv	Poaceae	Spear grass	-	Astringent, febrifuge, diuretic, tonic and styptic action
40.	<i>Ipomoea involucrata</i> P. Beauv	Convolvulaceae	Morning glory	Ododo-oko	Asthma, antipyretic, gynaecological diseases, gonorrhoea, arthritis.
41.	<i>Ipomoea triloba</i> Linn.	Convolvulaceae	Morning glory	-	Convulsions, purgative, asthma, gonorrhoea, arthritis
42.	<i>Kyllinga erecta</i> Schumach Var	Cyperaceae	-	-	Used for cover crop
43.	<i>Laportea aestuans</i> (Linn.)	Urticaceae	Tropical nettle weed	Fiya-Fiya	Boiled leaf taken to cure constipation.
44.	<i>Leptochloa caerulescens</i> Steud.	Poaceae	-	Kupuruku	Cover crop
45.	<i>Ludwigia decurrens</i> Walt.	Onagraceae	Water primrose	Ako ewuro odo	Leaf-infusion is laxative.
46.	<i>Ludwigia octovalvis</i> (Jacq.) Raven	Onagraceae	Primrose willow	Ako ewuro odo	Leaf-infusion is laxative.
47.	<i>Luffa cylindrica</i> (Linn.) M.J Roem	Cucurbitaceae	Loofahgourd	Kankan Oyinbo	Fruit is a source of vegetable sponge.
48.	<i>Manniophyton fulvum</i> Mull.-Arg.	Euphorbiaceae	Fulvum	-	Heart problems, insanity, leprosy, ear treatments
49.	<i>Mariscus alternifolius</i> Vahl.	Cyperaceae	Mariscus	Alubosa eranko, Ikeregun	Gonorrhoea, rhizome is aromatic; edible after cooking

50.	<i>Mariscus flabelliformis</i> Kunth	Cyperaceae	-	Abo Keregun	Root is aromatic
51.	<i>Mariscus umbellatus</i> Vahl.	Cyperaceae	-	Alubosa eranko	Rhizome is aromatic, edible after cooking
52.	<i>Mitracarpus villosus</i> (Sw.) DC	Rubiaceae	Botton grass	Irawo ile	Used against stomach complaints.
53.	<i>Momordica charantia</i> Linn	Cucurbitaceae	African cucumber	Ejinrin	Fruit infusion in oil applied to burns.
54.	<i>Paspalum scrobiculatum</i> Linn.	Poaceae	Koda millet	-	Cover Crop
55.	<i>Pennisetum pedicellatum</i> Trin	Poaceae	Matting grass	Esu	Grass provides good forage for cattle.
56.	<i>Peperomia pellucida</i> (L.) B. B &K	Piperaceae	Cow foot	Rinrin	Mental disorders, leaf also applied to cancer of the breast.
57.	<i>Phyllanthus amarus</i> Schum and Thom	Euphorbiaceae	Phyllanthus plant	Eyin Olobe	Leaf infusion used for hemorrhoids.
58.	<i>Physalis angulata</i> Linn.	Solanaceae	Wildcape, gooseberry	Koropo	Infertility, diarrhoea, asthma, fever, rheumatism
59.	<i>Ptatostoma africanum</i> P. Beauv	Labiatae	-	Efinrin	Treatment of fever
60.	<i>Setaria barbata</i> (Lam.) Kunth	Poaceae	Bristle	-	Antipyretic, haemostatic
61.	<i>Setaria longiseta</i> P. Beauv.	Poaceae	-	Ase-olongo	Mental disorders, venereal diseases
62.	<i>Sida acuta</i> Burm. F.	Malvaceae	Broom weed	Osepotu	Leaf infusion taken for catarrh, dysentery and nephritis.
63.	<i>Solenostemon monostachys</i> (P. Beauv) Brig	Labiatae	Catrip	Aranpolo	Tuberculosis, stomach ache, convulsion.
64.	<i>Spermacoce ocymoides</i> Burm. F.	Rubiaceae	Ocymoides plant	-	Cover crop
65.	<i>Spigelia anthelmia</i> Linn.	Loganiaceae	Worm wood	Aparan	Intestinal worms, convulsions

66.	<i>Stachytarpheta cayennensis</i> (L.C.Rich) Schau.	Verbenaceae	Rat tail verveine	Agog-Igun	Fever and stomach ache.
67.	<i>Synedrella nodiflora</i> Gaetn	Asteraceae	Node weed	Ewe popo	Infusion of leaves drunk as laxative.
68.	<i>Talinum triangulare</i> (Jacq) Willd.	Portulacaceae	Waterleaf	Gbure	Weak infusion taken as a diuretic and vegetables.
69.	<i>Trianthema portulacastrum</i> Linn.	Ficoidaceae	Horse purslane	Akisan	Dropsy Gonorrhoea diuretic
70.	<i>Tridax procumbens</i> Linn.	Asteraceae	Tridax	Igbalode/Kodele yin	Green feed for poultry.
71.	<i>Triumfetta rhomboidea</i> Jacq	Tiliaceae	Chinese bar	-	Cover crop
72.	<i>Vernonia cinerea</i> (Linn.) Less.	Asteraceae	Little Iron-weed	Bojure	Leaves are used as vegetables in soup.
73.	<i>Waltheria indica</i> Linn.	Cyperaceae	Sleeping morning	Ewe-epo	Cough. fever, external hemorrhage, toothache

**Table 2.** Distribution of the families showing their percentage occurrence.

Family	No. of Species	% occurrence
Amaranthaceae	7	9.6
Asteraceae	10	13.7
Boraginaceae	1	1.4
Capparaceae	1	1.4
Combretaceae	1	1.4
Commelinaceae	2	2.7
Connaraceae	1	1.4
Convolvulaceae	2	2.7
Crassulaceae	1	1.4
Cucurbitaceae	2	2.7

Cyperaceae	7	9.6
Euphorbiaceae	6	8.2
Ficoidaceae	1	1.4
Labiatae	3	4.1
Loganiaceae	1	1.4
Malvaceae	1	1.4
Moraceae	1	1.4
Nyctaginaceae	2	2.7
Onagraceae	2	2.7
Piperaceae	1	1.4
Poaceae	12	16.4
Portulacaceae	1	1.4
Rubiaceae	3	4.1
Solanaceae	1	1.4
Tiliaceae	1	1.4
Urticaceae	1	1.4
Verbenaceae	1	1.4

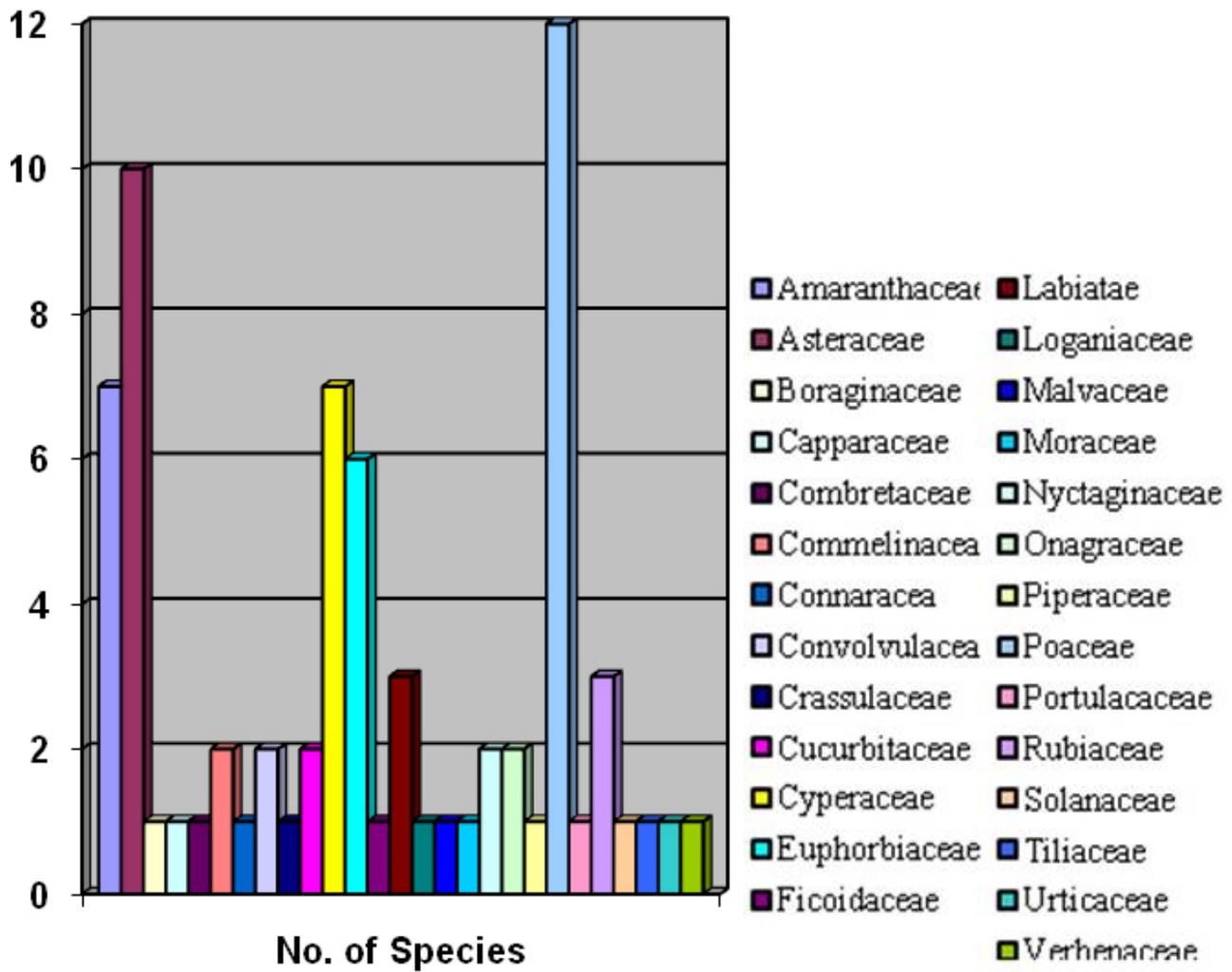


Fig. 1. Bar chart showing the no. of species belonging to each family.

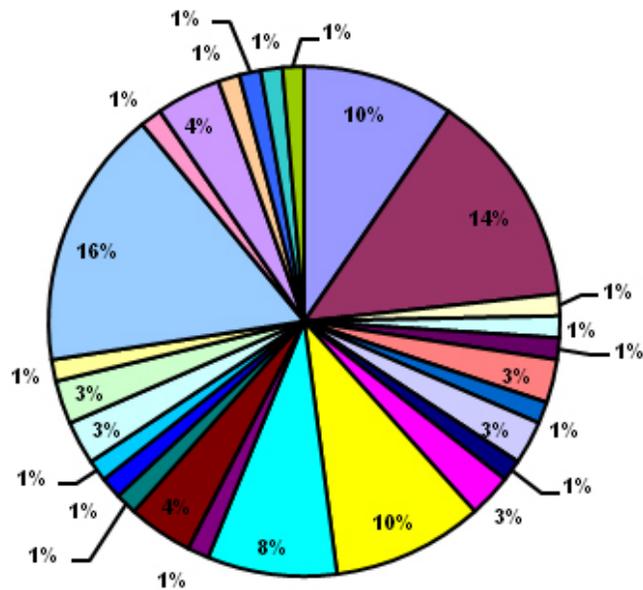


Fig. 2. Pie chart showing the percentage family occurrence of the weeds.

