

BOT 431: Weed Ecology

by

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A weed is not always a weed depending on where and under what circumstances it is growing.

The decision of what is a weed can be quite complex. A plant species may be both a weed and a desired species

Not dislike weeds, but some plants compete with gardens for nutrients, water, light, harbor diseases and pests.

Economic Importance of Weeds

Weeds have certain effects in agriculture, which are mostly in the form of different harmful results but somehow there are also some beneficial effects.

They are responsible for substantial losses of farm production and extensive damage to the environment.

Weeds, through competition with other plants, would almost always have deleterious effects on them and can have a lethal effect on livestock through consumption of weeds containing poisonous chemicals in the pasture.

Weed invasion has become the most dreaded and deleterious impact of weeds in nature; it adversely affects agriculture, alters the balance of ecological communities, disrupts the natural diversity and interferes in the aesthetic value of the environment. Weeds can interfere in water management, thereby reducing the economic value of water.

Weeds, however, besides their deleterious impacts in nature, have many beneficial properties, which include, but not limited to benefits of weeds to companion plants, ethnomedical and ethnopharmaceutical uses of weeds, ethnobotanical uses of wild edible weeds, and the use of weeds as feed for livestock.

In the light of myriads of deleterious effects and benefits accompanying weeds, it is suggested that more studies should be carried out on weed control and weed management. Also, further explorations on the potential uses of weeds to man, his environments and livestock should be undertaken.

Direct Losses by weeds

1. Weeds cause reduction in crop yield through competition for light, nutrient, water and space.

They can also reduce the yield of crop through the release of toxic substances or exudates which inhibit crop growth. This is called allelopathy.

Uncontrolled weed infestation can lead to 95% yield loss in cassava, 40% in maize and 53% in cowpea, soybean etc.

2. Weeds can reduce the quality of harvested agricultural products.

3. Weeds interfere with harvest operations and increase the cost of harvesting in both small holder and large scale farms.

4. Weeds may poison animals e.g. *Amaranthus* spp can adversely affect livestock because of the high nitrate content of the shoots.

5. The cost of controlling weeds is high.

6. The presence of weeds can impede water flow in irrigation canals.

7. The presence of weeds in lakes and reservoir can increase loss of water by transpiration.

Indirect Losses caused by weeds

1. Weeds serve as alternate hosts to many plant diseases and animal pests e.g insects, rodents, birds that attack crops.
2. The presence of weeds imposes a limit on farm size.
3. The presence of weeds can also reduce the economic value of lakes by preventing or limiting fishing activities.
4. Weeds such as *Imperata cylindrica* become fire hazards in the dry season throughout the savanna vegetation zone.

Non Agricultural Losses

- 1. Weeds affect health of humans, stinging nettle can cause skin rashes and the flowers of some other weeds can be associated with allergies in humans
- 2. Weeds impair visibility along roads and railway lines.
- 3. Uncontrolled weed growth reduces the value of real estates.
- 4. In situations where farmers depend on human labour for weeding, children have to miss school at peak of weeding periods. This reduces the quality of education that these children can get during their early years.

Beneficial Effects of Weeds

“Weeds” aren’t inherently bad. Many weeds stabilize the soil and add organic matter. Some are edible to humans and provide habitat and food for wildlife, too.

1. Weeds provide vegetative cover that protects soil surface against erosion from rain and wind
2. Weeds play an important part in nutrient recycling. Roots of weeds tap nutrients from the lower soil depths and return these to the soil surface as litter when the weeds shed their leaves or when the entire plant plants dies and decays.
3. Weeds add organic matter to the soil both from the roots and from the above ground parts.
4. Many plants that are designated weeds are used as potherbs e.g *Talinum triangulare*.
5. Weeds are sources of pesticides e.g *Chrysanthemum cinerariifolium* which provides insecticide pyrethrum.
6. Weeds provide food and cover for animal. Wildlife has weeds for survival as food and shelter.
7. Weeds serve as an important source of genetic materials for crop improvement such as breeding for resistance to pests and diseases which are made possible by genetic materials provided by wild species of the crop plants.
8. Weeds serve as hosts beneficial insects, and at the same time provide nectar for bees.
9. Many weeds help to beautify the landscape. e.g a good ground cover of *Cynodon dactylon* beautifies the home.

Are pond weeds good for fish? In most cases, **pond** vegetation is **good** for the **fish**. Those green plants produce oxygen as a byproduct of photosynthesis. They also serve as a place for insects and small **fish** to hide from predators. ... Remember, a **weed** is simply a plant growing where it's not wanted

Aesthetics: The rosette leaves of Water Lettuce are beautiful when viewed from above. When viewed from the side, the dangling roots create a unique aesthetic touch in tanks. ...

Benefits of Having Water Lettuce in Your Aquarium Absorbing toxins: Water Lettuce is **one of the best plants to absorb nitrates from tanks**. It will also consume nitrites...

Protection: Water Lettuce's roots can reach adequate lengths to provide shelter to creatures in the tank.

Water lettuce (*Pistia stratiotes*) is classified in the Araceae family. Its name is derived from its rosettes that mimic small heads of lettuce. The plant can develop extensive colonies that can be difficult to eliminate. The structure of the water lettuce promotes buoyancy and helps it to become **free-floating**. It has thick yellow-green leaves that join in floating rosettes. Short hairs shoot out from the leaves to retain water and make the plant buoyant

Water lettuce is among the world's most productive freshwater aquatic plants and is considered an invasive species. In waters with high nutrient content, particularly those that have been contaminated with human loading of sewage or fertilizers, water lettuce can often exhibit weedy overgrowth behavior. It may also become weedy in hydrologically altered systems such as canals and reservoirs.

Why is aquatic weed control necessary?

Plants are natural and important components of the aquatic environment. Microscopic plants (algae) form the base of the aquatic food chain. Larger algae and plants provide habitat for fish and food organisms, and all plants produce oxygen as they photosynthesize during the daylight hours. However, excessive growths of these plants can have a detrimental effect on a body of water and its inhabitants. Many shallow, nutrient-rich ponds, lakes, and drainage ditches provide ideal conditions for abundant aquatic weed growth.

Some of the problems caused by aquatic weeds are as follows:

- Interfere with or prohibit recreational activities such as swimming, fishing, and boating.
- Detract from the aesthetic appeal of a body of water.
- Stunt or interfere with a balanced fish population.
- Fish kills due to removal of too much oxygen from the water. Oxygen depletion occurs when plants die and decompose.

Photosynthetic production of oxygen ceases, and the bacteria, which break down the plant material, use oxygen in their own respiration. Fish kills in summer are frequently caused by die-offs of algae blooms. Fish kills in winter occur when snow accumulates on ice cover. Light is blocked thus preventing photosynthesis by any living plants or algae. Decomposition of plants that died in the fall causes further oxygen depletion. Fish kills also can be caused by insecticide runoff, ammonia runoff from feedlots, and diseases.

- Produce quiet water areas that are ideal for mosquito breeding.
- Certain algae can give water bad tastes and odors.
- Impede water flow in drainage ditches, irrigation canals, and culverts, causing water to back up.
- Deposition of weeds, sediment, and debris, can bodies of water to fill in.

Five Benefits of Having Water Lettuce in Your Aquarium

1. Absorbing toxins: Water Lettuce is one of the best plants to absorb nitrates from tanks. ... It will also consume nitrites...
2. Protection: Water Lettuce's roots can reach adequate lengths to provide shelter to creatures in the tank. ...
3. Algae Control: Most algae bloom in moderate to high lighting environments. ...
4. Propagation: Water Lettuce propagates easily from runners and may create runners even in poor conditions. ...
5. Aesthetics: The rosette leaves of Water Lettuce are beautiful when viewed from above. When viewed from the side, the dangling roots create a unique aesthetic touch in tanks. ...

Weeds specific uses

Here and there, you can find these plants (that are not always as useless as you might think) growing next to your crops and in your gardens. We have decided to tell you about some of the most prevalent ones, so that you can know what you are dealing with. Without further ado, here are the Nigerian common weeds and their botanical name:

1. Speargrass (*Imperata cylindrica*) It is a relatively tall type of grass (growing up to 3 m), and it looks very beautiful, with its long thin stems and fluffy flowers. In some countries, it is used for decoration, roof thatching and even medicine, but in Nigeria, it is mostly considered useless and troublesome, as it hampers agricultural production.
2. Siam weed (*Chromolaena odorata*) It is known as devil weed in some places, this weed is not quite as bad as you think. A mostly useless plant that grows on the land that lies fallow, but it can keep other weeds away that are much harder to get rid of.

3. Nutgrass (*Cyperus rotundus*) It is a sedge and type of weed with triangular stems and tubers that resemble nuts, hence the name. The plant prefers dry conditions, but it can survive in moist soil, which makes it hard to get rid of, so Nigerian farmers hate it.

4. Milkweed (*Euphorbia heterophylla*) This plant has false flowers with no petals, and it might lose colour if it grows as a weed. One of the worst things about this plant is that it might cause anaphylaxis and dermatitis in people who are sensitive to latex, so be careful when you are dealing with it.

5. Nuke-Noh (*Tridax procumbens*) Despite the fact that most farmers consider it a weed and even a pest, nuke-boh is actually a medicinal plant. It is said to be helpful for people who are dealing with diabetes. It has lovely flowers, which is why it is also called tridax daisy. This weed is really hard to get rid of, as it is quite invasive.

6. Witchweed (*Striga* genus) As you might have guessed from the name, witchweed is not a very pleasant plant. It is a parasite, and it robs other plants of their nutrients by penetrating their root systems. Cereal grains suffer from this weed the most.

7. Couchgrass (*Digitaria abyssinica*) This is a perennial grass that has long flat blue-green leaves, the roots of which form a mat underground, and that definitely is not good for the crops. This and other species of *Digitaria* can be found all across West Africa. READ ALSO What to eat for losing weight

8. Dayflower (*Commelina benghalensis*) **Commelina spp.** in times of famine leaves and young shoots used either fresh or boiled as a vegetable. Rhizome can also be eaten. *C. africana* used to treat leprosy, eye problems and colds. While the leaves of this plant are considered edible, most farmers do not appreciate seeing it on their fields. It can cause serious harm to crops of peanuts, cassava, coffee and tea, and it can host a harmful virus that can attack the crops.

9. American bushmint (*Hyptis spicigera*) Herbs to get pregnant fast Compared to some of the other common weeds on this list, American bushmint is not that bad. It belongs to the mint family, and it actually has some redeeming qualities. For instance, its oils are considered as insecticide that can control some agricultural pests.

10. Bahama grass (*Cynodon dactylon*) Similarly to nuke-noh, Bahama grass has potential of being used in medicine. It is said to help with constipation and diabetes. It is also useful for grazing animals, so consider it twice before getting rid of this weed.

11. Wild sunflower (*Aspilia africana*) It seems like a lot of weeds that are found in West Africa (particularly Nigeria) have lots of uses, as this plant is capable of stopping bleeding, accelerating wound healing, treating rheumatic pains and stings from bees or even scorpions.

12. Elephant grass (*Pennisetum purpureum*) This plant can survive with little water and nutrients, which makes it perfect for some of Nigeria's dry lands. However, as most other types of weeds on this list, it has its redeeming qualities, as it can improve the fertility of the soil and keep it from eroding, and it can be used in manufacturing ethanol.

13. Carpet grass (*Axonopus compressus*) Best herbs for weight loss in Nigeria This weed loves the sun and wet soil, as most crops do, so it is hard to get rid of it. On the other hand, it can be used to beautify non-crop lands, such as parks or roadside areas, as it is fairly low-maintenance.

14. African Club Moss (*Selaginella kraussiana*) As the name suggests, this plant is native to Africa, particularly to its tropical and southern regions. It is very adaptable, so good luck getting rid of it. However, it is rather attractive, so you might not even want to

15. African Feather Grass (*Cenchrus macrourus*) This grass is also adaptable, as it can thrive in cold and hot conditions, and it can tolerate winds and salty ground. It has strongly ribbed, tough leaves that are light green on top and dark green on the bottom.

16. African Olive (*Olea europaea*) Even though you might think that this plant might be good, it is, in fact, not. While it resembles a young olive shrub, it is not quite as useful as its other relatives. Moreover, African olive shrubs are very hard to kill, and their seeds are easily spread by birds.

17. Buffalo grass (*Stenotaphrum secundatum*) Buffalo grass is known to crowd other plants and weeds, so it is not great if it grows next to your crops. That said, if you plant it in a pasture or ranch, it might be useful for your animals, and it is easy on the eye.

18. Falsethistle (*Acanthus montanus*) Unless you have crops in the forest or in the shade, you should not be bothered by this weed. If you do encounter it, protect your hands, as it is very prickly. The plant has rather pretty flowers, so you can enjoy it from afar.

19. Creeping foxglove (*Asystasia gangetica*) This plant can mostly be found roadside and in waste areas, which might seem strange as it has such lovely flowers. Even though it is considered a common weed, it should cause no harm to your crops. On the contrary, its leaves can be consumed as food or used in medicine.

20. Yellow justicia (*Justicia flava*) This common weed that can be found in most soils of compound farms and waste areas is actually very useful. Its leaves can be used in making soups and vegetable salt, and they are also known to be used in medicine, along with the other parts of the plant. So next time you see it, do not destroy it right away. There are lots more common weeds in Nigeria and West Africa as a whole. If you are interested in them, we recommend you to read 'A Handbook of West African Weeds' by C. W. Agyakwa and I. O. Akobundu, as it contains numerous species we could not fit in this article.