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Magical World of Carnivorous Plants

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ABSTRACT:
Carnivorous plants are the most wonderful creatures of the earth. These found only in lack of soil-nutrients. They confluently evolved nearly 2-4 times in the history of evolution. In order to trap their prey, they adopt leaves. The current survey on these flesh-eating plants. Reported that there are nearly 630 species, found conveniently. Because of poor-nutrients in the soil, they derive their nutrients from these animals. Thus, they are benefited from the animals and other small creatures. The most flesh-eating plants can consume reptiles, small mammals, large plants and in some rare cases humans too. Small carnivorous plants can accumulate protozoa and bacteria which are single celled organisms. Aquatic carnivorous plants also feed on mosquito larvae, small fishes and crustaceans etc., According to the report given by Flokerts in 1982, A single bog contain nearly 13 species of the carnivorous plants in 1857, Charles Darwin, the very first person to classify carnivorous plants on phylogenetic tree.

Keywords: Carnivorous Plants, Traps, Insectivorous, Poor-Nutrient.

INTRODUCTION

Carnivorous plants can be seen through a different perspective which provides an ideal example of how traits develop through natural selection and promotes the impressive growth and reproduction. These included in the era of biology based on evolution by Darwinism in a specific environment. Currently the carnivorous plants have been considered as one of the most endangered group of plants i.e., they are in the urge of extinction. For biologists, the incogitable accuracy and because of the occurrence of those adaptations the obtained final product is phenomenal. Incomparable example provides perfect mechanisms of that. Nature can tackle to sustain in those extreme conditions. A single glance at them allows the perception that carnivore; it is not specific to them. It provides a brief knowledge of understanding their adaptations, and their transformation strategy, of both morphologically and as well as functional nature as evidenced in carnivorous plants.

Plants have been considered as carnivore, if they have 5 basic adaptive characters.

- Ability to capture the prey by attracting it.
- Killing the captured prey.
- Digesting the prey.
- Absorbing the nutrients from that prey.
- Using those absorbed nutrients to development and growth.

What are carnivorous plants?

These are also known as insectivorous plants which are capable of consuming and digesting the insects by means of pitfalls and traps. The major families of carnivorous plants include Lentibulariaceae of order

lamiales which is characterized by flowers with bilaterally symmetrical. Petals are fused, have only two anthers. This family is fairly ubiquitous in distribution.

Evolution of the carnivorous plants:

At the end of the 19th century, lurid tales of tales of toxic plants started to manifesting up everywhere. The trees with horrifying grappler (tentacles) seized and swallowed. travellers who are in great distance away from them. Some insane professors put up some heinous sundews and pitcher plants, these turned into famished creations and destroyed everything.

Most people supressed to agree that plants can also eat animals because it is against the natural order of the environment. Darwin expended 16 years of his life in performing these experiments and he finally proved that plants can move and capture and consume small insects and preys, and they also digest them and get nutrients to survive. Darwin published his book named "Insectivorous plants" in the year 1857 in which he included all the details of his experiment and researches that he had discovered.

Important examples of carnivore's plants

Pitcher plant, Venus's flytrap, Sundew, Dionaea muscipula, etc

SOME PROMINENET CHARACTERS OF CARNIVORES PLANTS

1. **Deficiency of nitrogen:** These types of plants are most likely found in the places where there is a poor-nutrient content in the soil. Especially the nitrogen deficiency, thus they get nutrition to survive from the insects or animals they hunt. Important fact about these carnivorous plants is "They contain a compound that usually has antifungal properties, that acts as effective against the infections.
2. **Way of attracting the prey:** The strategies that carnivorous plants adapt in order to attract their prey are- release a strong odour of nectar, due to their ardent colouration of the flowers that attracts the insects and other arthropods.
3. **Inevitable traps:** Insectivorous plants develop specialized organs that help them in trapping the insects and other organisms. The mouth of the carnivorous plants contains hair-like edges that enclose immediately as the insect's touches the hairs. Sticky mucous like substances will cover the stalk of the plants. And once the insects fix, they cannot move.
4. **Digestive enzymes:** some of the carnivorous plants have digestive enzymes in their digestive tracts. They completely diffuse the organisms for absorbing nutrients from it. They literally imitate the activity of the human digestive part.
5. **Wet and damp habitats:** these carnivorous plants are constantly found in places which contain humid, acidic conditions of the soil, wet and damp etc. These contain poor-nutrient contents such as bogs, wetlands, coastal-plains, swamps etc. They are found to be introduced in the Australia and tropical regions of the world and wet regions of North America.

TRAPPING MECHANISM OF CARNIVORES PLANTS

Root system in carnivorous plants:

The adult plants of carnivorous plants show a great variety in root system. Radical is quite identical and found in only limited number of species. A very best example for this is, radical displaced by stem borne roots immediately after germination. Surprisingly, very long root hairs develop which are deep rooted. Symbolic representation of the numerous roots and underground organs of a diverse variety of carnivorous

plants are entailed in pietropaolo (1986). Carnivorous species includes wide range of root types. In literature survey the numerical data of size and morphology are rarely found.

The descriptions about the roots are mainly based on 3 types that is,

a. Fragile
b. Weak
c. Strong

According to the Nitschke 1860. Some plant species have deficient root development or lack of roots as given by slack 2000 and Taylor 1994.

Bybilis and Drosophyllum are the examples of radical of carnivorous plants. These have a wide range of root system. The radical barely able to report the seedlings to the substrate, so that at the total length of 30mm the plant can be relocated smoothly.

Correspondingly in the plant of Nepenthes gracilis,the radical is thin.It forms a cluster of deep roo hairs into the testa.The roots are very weak to produce sufficient amount of water and nutrients and as well as to anchor the seedlings.

Root system in aquatic carnivorous plants:

Aquatic carnivorous plants do not develop roots. The most prominent examples for this is the Aldrovanda that bears traps.Polypompholyx and various Utricularia species have the suctiontraps, Genlisea which is closely realated species that acts as predator to capture its prey with its eel traps. These take a little amount of minerals and nutrients from their leaves and stem.

Many terrestrial and epiphytic species are present in utricularia that grows in the moisture containning soil.This engulfed during a part of the year.In utricularia and genlisea,There is absence of developing roots.Instead they are replaced by specialized underground shoots and leaves.

Types of traps and their trapping mechanism:

There are basically 5 types of traps in the carniorous plants and they are mainly based on wheather they posses the ability to move and capture the prey or not,transversly called active and passive traps.This type of classification of traps is given by the botanists Francis Ernest
Lloyd in1942.This type of classification is followed till today.In order to attract the prey they do not posses movement.

This type of trap include 3 main types

1. **Pitfall traps**
2. **Passive flypaper traps**
3. **Lobster pot traps**

1. **Pitfall traps:** These are the simplest type of traps and contain nectar as a part of its potion. This nectar produces at the entrance of the trap.They are very darkly coloured. The leaves contain a moist medium that digest the prey. Once the prey got trapped and reach the underground surface of the plant,then its highly immposssible to evade from it. A very known examole for thid type of trap is Sarracenia purpurea also called as purple pitcher plant.

2. **Passive flypaper:** Here the sticky substances are secreted by a special type of glands. For example byblis,Australian genus.

3. **Lobster pot traps:** These are somewhat similar as pitfall traps. In this type of traps, it is easy for prey to get in, but difficult to go outfrom the traps
   Example: Sarracenia psittacina, contains leaves with tubular shape,enclosed at the underpart.act as a one-way valve.

Active traps: In order to attract the prey they posses a movement. This includes 3 main types of traps.

- Active flypaper trap
- Bladder trap
- Snap trap

1. Active flypaper trap: Same as in passive flypaper;secreation of sticky-jelly like substances to trap the insects.

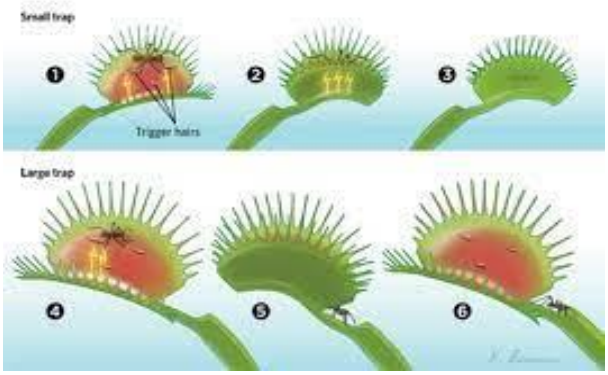
- If once it caught, the edges of the leaves around the prey enclose.
- Slow movement of capturing the prey takes place.
- Prevents the lack of nutrients containning liquid or moist medium.

Example:Sundew (Drosera)and butterflies (Pinguicula)Active flypaper trap in pinguicula.

2.Bladder traps: Usually these type of the traps are used by the aquatic carnivorous plants and contains 'Bladder' that are dense.

- The trap door opens when the prey touches the hairs of that door.
- The water flows inside when the trap door is opens,This type of traps seen in uticularia species.

3.Snap trap: This is most common type of traps in carnivorous plants.
Example:venusflytrap.



V. Conclusion:

From several decades its an intresting for a botanist to survey on the carnivorous plants. But still it seems to be incomplete survey. These type of carnivorous plants has been utilized for various miniature of ecological and evolutionary relationships. They show unique charaters from all other normal plants. Their adaptation to survive in the extreme conditions,such as acidic soil condition,poor nutrient contents. Their spec ialized way to trap the prey.How they derive the nutrients and energy from the organisms they hunt. The digestion process of prey in their body.These all things creates intrest to know more about thses carnivorous plants. In future generation more studies have to be done on the modification in leaves. More facts about the roots of carnivorous plant.Their survival feature in extreme climatic conditions is to be noticed. Most of these plant,in present day, are in urge of extinction. Measures should be taken in order to conserve these carnivorous plants,so that the plants do not become vulnerable.

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