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Insectivorous Plants and their Habit

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ABSTRACT: Insectivorous plants, also termed carnivorous plants, are a group of greenery that actually eats insects as a survival mechanism. These plants were initially found in areas lacking a nutritious soil base, so they evolved over time and adapted to eating bugs to fill in for the lack of nourishment in the soil.

These plants are not a modern finding, as you can even read about them in the works of Charles Darwin, who apparently claimed that they were the most wonderful thing he had ever seen! It was after his book on insectivorous plants that people could grasp the idea of such greenery.

KEYWORDS-insectivorous, carnivorous, bugs, survival, protein

I.INTRODUCTION

Carnivorous plants are found in habitats that lack well-nourished soil, like beaches, swamps, nutritionally-lacking water bodies, etc. Nonetheless, they look like a piece of beauty despite the surroundings around them! In contemporary times, gardeners worldwide opt to propagate them to witness nature's awesomeness!

Why Do Insectivorous Plants Eat Insects?

Insectivorous plants have developed a survival technique to continue breathing even in areas that lack good soil support. Such greenery utilizes adhesive traps, sticky traps, and pitfalls that are actually a part of their body. Usually, you will catch these plants smacking their lips over invertebrates like bugs, but some species are also noted for their love of vertebrates, like lizards, birds, etc.

Whatever they choose to eat, they are picky on the nutrition side. The Carnivorous plants only eat animals that are rich in nitrogen, sulfur, and phosphorous to fill the absence of such nutrients in the soil. Also, their love for non-vegetarian meals doesn't mean that they are not photosynthetic.

What Are The Top 10 Insectivorous Plants?

Although there are about eight hundred species of carnivorous plants, here's a list of the most popular insectivorous plants names that stand out due to their attractiveness:[1,2,3]

1. Butterwort

A beautifully dangerous plant, this one bags its name from its butter-like greasy leaflets that carry a sticky substance that assists in catching the bugs. Once the bug sticks onto its leaflet, the plant curls the leaves up to make a cup-like appearance, trapping the bug inside its digestive tract forever. Besides, butterwort looks gorgeous with buttery green leaves and long stems that carry pretty purple blooms on the edges.



2. Pitcher Plant

This plant borrows its name from its leaves that shape like an actual pitcher; however, these leaflets can differ in size from plant to plant, as not all plants have gregarious foliage. The pitcher plant produces delicious nectar along its glands to captivate all sorts of insects. The bugs get caught in the deception following the trail of nectar; they reach the plant's throat and sacrifice themselves in the plant's digestive enzymes. However, this plant is one of the most popular varieties of insectivorous plant beauties.

3. Sundew

This plant grows with erect and tall bright green leaves that are surrounded by tentacles responsible for producing nectar as an invitation call to the bugs, along with a sticky adhesive to trap the invited guests. Once an insect comes across, the plant curls the leaves to smother the so-called guest. However, these tentacles produce colorful droplets on the ends that allow a genuinely magnificent vibe to the plant.

4. Venus Fly Trap

The Venus fly trap appears like a pocket wallet meant for storing coins, the difference being it doesn't have a closing zip and does have numerous spikes on the leaf's edges. These leaves are light green on the outer surface and carry a mouth-red shade in the inner trap. The plant traps the bug inside these trappy leaves once the bug lends on the open leaves and creates tension on the plant's sensitive hair. The digestion process takes about ten days to complete, after which the Venus fly trap is again ready for another feast!



5. Cobra Lily

This plant is one of the siblings of the pitcher plant and gets the name from its resemblance to the cobra. The leaves are tube-like and shaped like a Cobra's head that ends with a fork-like leaf, resembling the reptile's fangs. This plant's hue ranges from yellow to greenish purple, and it produces a sticky sap to attract insects. Unlike the original pitcher plant, this one doesn't store rainwater; however, it does look breathtaking with its tall yellowish-purple blooms.[4,5,6]

6. Nepenthes

Also known as monkey cups, this plant is primarily found in the tropical regions of Asia. It also belongs to the family of pitcher plants, but what makes it different is its availability in the tropics. This plant first produces tiny buds that later develop into pitcher-shaped leaves carrying nectar glands and a sticky sap to invite and drown the bugs, respectively. Once inside the pitcher, the bugs find it impossible to crawl upwards due to the presence of the sap produced internally by the plant.

7. Bladderwort

Mostly known for its beautiful blooms, this plant is often compared with orchids, especially by carnivorous plant gardeners. The bladderwort grows in water bodies that lack nourishment and produces stunning flowers that peak from above the water's surface. Its bladder-shaped leaves are responsible for producing a sweet sap to attract insects, plus a sticky solution to trap them inside. This plant is found everywhere across the globe except in the freezing regions of Antarctica.

8. Aldrovanda

It is an aquatic insectivorous plant that is commonly known as the waterwheel plant due to its leaves that rise from the stem into a whorl-like appearance. This plant floats in the nutritionally lacking water bodies with a single stem and works almost like the Venus fly trap to catch the prey in sight. It also produces tiny white flowers and has an affinity for mineral-rich water bodies.

9. Cephalotus

Another member of the pitcher plant family, the Cephalotus plant, is a low-lying herbaceous plant that grows with small pitcher-shaped leaves. This plant functions like the original pitcher plant, welcoming the insects inside the trap through the peristome, also responsible for becoming an obstacle for their exit. The plant appears red in the light-casted areas and green in shaded regions.[7,8,9]



10. Brocchinia

This plant's adaptive skills make it a fit for growing in the worst soil conditions and even rocks. Its overlapping leaves assist the plant in forming a water-storing cup that also emanates a sweet fragrance responsible for attracting bugs. These leaves are also covered with numerous scales that reflect UV light which apparently sends an invitation call to the bugs. These loose scales also make it impossible for the insects to set a strong foothold, leading them to drown in the water-filled cup.

How To Grow Insectivorous Plants In India?

Propagation of carnivorous plants mostly depends on how well you can imitate their natural environment. It also makes it necessary to gauge the requirements of the chosen plant, as not all of them need the exact prerequisites. However, here's a general guide on how to work with these bug-eating plants:

★ Weather Needs

The first point to check on your list is to provide these plants with the climate that suits them best - hot, humid, and airy. One may pick a terrarium to create a suitable imitation; however, one may also use floor planters, but ensure creating enough humidity around them. The intensity of temperature is something very personal to every plant specie, so learn about them beforehand.

★ Light Exposure

It is best to expose such greenery to have proper conversations with the mighty sun; however, when indoors, place them on windowsills receiving morning sunlight. You can also pick grow lights to offer adequate lighting requirements.



★ Soil Base

These plants, on the contrary, love a soil base that is not rich in nutrients at all. If your plant soil is top quality, brimming with nutrients, that's precisely what you don't use to propagate these naughty species. Instead, mix peat moss with sand to create your own soil. Also, some plants like *Nepenthes* might need a draining agent like perlite. Such mixes are perfect for creating an acidic base for these plants to flourish.[10,11,12]

★ Hydration

The insectivorous plants are so used to the barren conditions that you can't feed them with mineral-rich water. Use distilled water or rainwater to fulfill their hydration needs, keeping the soil wet in the hot months and moist in the winters.

★ Insect Meals

If you are growing them indoors, then take them on outdoor strolls to let nature feed them tasty meals. However, you can also feed them yourself with a bug of your choice, like spiders, crickets, flies, etc. Ensure the living-bug meal is set only once a week, as that's enough for this bug-eating greenery.



★ Nourishment Boosters

The reason why insectivorous plants eat bugs is due to the lack of nutrients. As nature would have it, these plants live at their happiest when they consume their prey, which also fulfills any lack of nourishment. So, feeding them with an additional booster is not required. However, if feeding them bugs is a prospect you can barely accept, it is best to treat them with an organic fertilizer once or twice in thirty days during the growing season.

★ Maintenance

Most of these plants fall into the herbaceous category, so maintaining them through pruning is not a big deal, as all you need to trim is the dead and decayed growths, if any. Moreover, when you catch them overgrowing in their respective containers with outgrowths, it is time to transport them to bigger metal pots.



Take Away:

Insectivorous plants examples are not famous house plant greenery, but they are gaining popularity in modern times. Some of these plants are also prone to get endangered, which is why several plant parents are turning towards carnivorous greenery to save such species. Nonetheless, they look like a piece of dream coated in rainbow hues. Growing such plants will make your garden stand out with the efforts you put into cultivating carnivorous greenery. All you need to do is imitate their natural environment to make it seem like their home. You can purchase these plants from online gardening stores like ours to receive perfectly healthy plant specimens through the smoothest delivery service in India! [13]

II.DISCUSSION

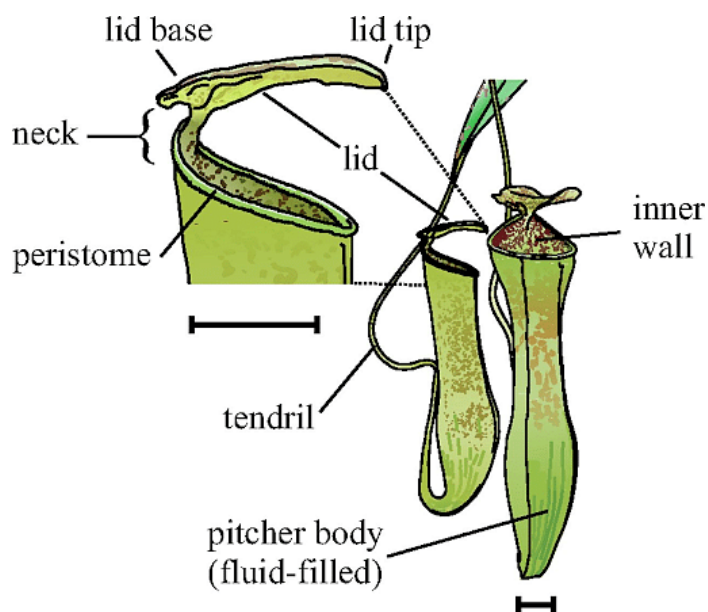
There are certain important characteristics of insectivorous plants that eventually make them unique.

Nitrogen Deficiency

Insectivorous plants are grown in the nitrogen deficient soil which ultimately makes them lack the enough amount of nitrogen. Therefore, as a result, they tend to entrap the insects and digest them, considering it their food, to satisfy their nitrogen requirement.

Attractants

Another important characteristic of the insectivorous plants is their colourful and the shiny texture. These plants are immensely beautiful in appearance which works as a bait to attract the insects. They often have nectars and a pleasant odour as well which also contribute a lot in attracting the insects.



Insectivorous Plant

Wet and Damp Habitats

Insectivorous plants are found only in wet, damp and humid environments. The presence of acidic soil that is deficient in nutrients, such as swamps, bogs, wetlands, coastal plains, etc. is another important characteristic of insectivorous plants. For instance, they are found in the wet regions of North America, Australia, and tropical regions.

Digestive Enzymes and Organisms

These insectivorous plants have the phenomenon of secreting a type of digestive enzyme that ultimately dissolves insects for better absorption. Some insectivorous plants also have some kind of bacteria or mites in their digestive tract that mimic the functions of the human digestive tract. They digest the prey for the absorption of the nutrients by the plants.

Inescapable Traps

The defining characteristic of insectivorous plants is their inescapable traps. Many insectivorous plants have the special or modified parts of the plant for trapping the insects. The hair-lined edges are present on the mouth of insectivorous plants that consist of the characteristic of shutting the mouth as soon as the insect touches the hair, thereby, trapping the insects. The presence of the sticky mucus-like substances on the plants' stalks allow the insects to get trapped there, thus, preventing any kind of movement.[14,15,16]

III.RESULTS

Insectivorous plants exhibit diverse varieties of physical features, such as leaves, roots, etc. The leaves of these plants are usually modified into the traps for the insects. The trapping mechanisms are designated as active or passive depending upon whether they move to capture the prey or not. So, let us see the different types of traps that are found in insectivorous plants.

Pitfall Traps: These traps contain a hollow leaf along with a lid that is filled with liquid to digest the prey. These traps are found in the insectivorous plant known as pitcher plant.

Snap Traps: These are the traps which are found in the Venus flytrap. They act by shutting their leaves rapidly as soon as the prey touches the trigger hair.

Flypaper Traps: Flypaper traps are the kind of traps which are again sticky in nature. The leaves in this case are covered in the stalked glands that secrete the sticky mucilage.

Lobster - pot Traps: These traps are found in the corkscrew plants. They possess downward-pointing hair that pushes the prey deep inside the trap.

Bladderwort Traps: These traps are commonly found in the insectivorous plant called Utricularia. The bladderwort trap simply uses a partial vacuum-like structure that allows it to trap the small organisms.[17,18]

Insectivorous plants digest their prey with the help of the enzymes and bacteria that are secreted by them. It facilitates the chemical digestion and absorption of the insects. The end products of this chemical breakdown are absorbed by the plants in the form of the nutrients which help them to survive under unfavourable conditions

IV.CONCLUSION

- Insectivorous plants are carnivorous plants that trap and eat insects via chemical processes to gain nutrition.
- Examples of Insectivorous plants include Venus Flytrap, Bladderwort, Pitcher Plant, Round leaved Sundew, etc.[19]
- Characteristics of Insectivorous Plants include: Nitrogen Deficiency, Attractable features, Wet and Damp Habitats, Presence of Digestive Enzymes, Inescapable Traps, etc.
- Mostly, the leaves of insectivorous plants are modified to create traps. Some of the different types of traps are: Pitfall traps, Flypaper traps, Snap Traps, etc. [20]

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