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A CSAE STUDY ON TYPES OF FRESHWATER AQUATIC WEDS CONTROL AND MANAGEMENT AND THEIR ROLE IN AQUACULTURE

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Abstract: Aquatic weeds plants are the primary producers of the aquatic ecosystem. They play the fishes in providing food, oxygen, shelter etc. Macrophytes are larger in size they are floating weeds, Emergent weeds, Rooted weeds etc.floating weeds float on the surface of water Eg:-Azolla, Pistia, Lemna etc. rooted weeds have roots they grow from the bottom soil Eg:Ipomea,Marsilis etc. Emergent weed are emerge out of water Eg:-Typha, Vallisneria, Nymphaea etc.

IndexTerms - Weeds, primary producers, aquatic ecosystem, shelter and aquatic organisms

INTRODUCTION

Aquatic weeds or unwanted plants that grow in water bodies can have a significant impact on water quality, Biodiversity, navigation, recreation, and agriculture. These weeds grow in various aquatic environments such as lakes, rivers, ponds, canal, and reservoirs, they can cause ecological imbalances and economic losses. They can obstruct waterways, and reduce light and disrupting water use for human activities.

Common types of aquatic weeds:

1. **Floating weeds:** - Azolla, Pistia, Lemna
2. **Rooted weeds:** - Typha, Ipomoea, Marsilia
3. **Submerged weeds : -** Vallisneria, Hydria

1. Floating Aquatic weeds in fresh water aquaculture

1. Azolla [Azolla Pinnata]

Azolla is a small, fast growing aquatic fern that is highly beneficial in fish culture due to its multiple advantages. Here how it plays a role:

1. Nutritional Value: Azolla is a rich in protein [20-30 dry weight]. essential amino acids, vitamins, and minerals. It serves as an excellent supplement feed for fish species like carp, tilapia, and other herbivorous omnivorous fish.

2. Improved water quality: azolla helps in absorbing excess nutrients such as nitrogen and phosphorous, from the water this helpin prebventin algal blooms and maintaining balanced aquatic environment reducing the risk of water pollution.

3. Biofertilizer: azolla fixes atmospheric nitrogen through its symbiotic realtionshp with the cyanobacteria anabaenaazlla.

Fig1:-Azolla weed

2. Rooted weeds: -

1. Typha Latifolia

- It is rooted aquatic weeds
- The rhizomes are edible after cooking and removing the skin, while peeled stem ad leaf baseman be eaten raw or cooked. The young flower spikes, young shoots, and sprouts at the end of the roots stock are edible as well.

Fig2:-typha

- It is emergent aquatic weed.
- Hydrilla is known to have many digestive and health benefits. the plant contains vitamins, minerals and antioxidants, as well as being useful for fighting indigestion.
- The plant also knows for its extremely high concentration of calcium, vitamin B-12, iron andmagnesium.as such, the plant has become an extremely popular.

3. Submerged weeds: -

3. Hydrilla Verticillate

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Fig3:- Hydrilla weed

Methods of aquatic weed control and management

1. **Mechanical control of aquatic weeds**

1. Manual Removal: For small areas, physically removing weeds by hand or with tools like or weed cutters can be effective.

Fig4:-Removing the aquatic weeds with manpower labour

Harvesters: For larger infestations, mechanical harvesters can cut and remove weeds from the water.

Fig5:- Using harvesters for collecting the aquatic weeds

2. **Biological control of aquatic weeds**

Herbivorous fish: introducing fish species that feed on aquatic weeds [like grass carp] can help control weed populations a number of herbivorous fishes like grass crap

1. **Grass carp [Ctenophangodonidella]**
   They are known for their ability to control large amount of aquatic vegetation, making them effective for controlling overgrown water plants in freshwater systems like lakes, pond, and reservoirs.

Fig6: -Gras carp

2. Nile tilapia [Oreochromis niloticus]

Tilapia is versatile and adaptable fish with a varied diet depending on their environment and species. Here a breakdown of their feeding habits:

Fig7: -Tilapia fish

3. Gourami [osphraneusgorami]

Gourami fish, which belong to the osphronemidae, exhibit a range of feeding habits depending on the species and their environment. Here a detailed look at their feeding behavior.

1. Diet composition:

Omnivorous: Most gouramis are omnivores, meaning they eat both plant and animal matter. Their diet can include a mix of insects, small crustaceans, aquatic plants, and algae.

Plant Material: they also feed on aquatic plants and algae. Some species are known to graze on algae and other plant matter, which can help control algae growth
In their environments.

Fig8: - Gourami fish feeding plants in aquarium

3.Chemical control

Herbicides: aquatic herbicides can be used to control weeds. They must be chosen carefully to target specific weeds and minimize environment impact. Common types include systemic herbicides which kill the entire plant and contact herbicides [which kill only parts they touch.]

Fig9:-spraying chemical in the pond

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statics of Study Variables

With this we conclude that the domain at weed species were pontederia crassipes [Eichhornia]. water hyacinth grows and reproduces quickly, so it can cover large portion of ponds and lakes. The excess growth depletes dissolved oxygen [DO] in the water, often killing fish. by increasing the temperature, the growth of aquatic weeds is also seen simultaneously.

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