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Kerala's Pinkbloom: A warning or an opportunity

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During the past few months, Kerala has been trending on social media for an unusual reason- The pink bloom phenomenon by an invasive aquatic weed Forked Fanward (*Cabomba furcata*) which is being a scenic attraction to thisrural dwelling Avalapandi near Perambra, Kozhikode. This flowering plant Forked Fanward also known as 'Mullan payal'in native language, belongs to the family of Cabombaceae. The plant which is native to the Central and South America is widely used in aquarium trade lead to being introduced to other parts of the world. It can grow up to the height of 30-80cm wide with long bushy leaves, is widely seen in less stagnant water of lakes, ponds, flood plain and even in rivers. Their flowers can vary from purple to pinkish color.

But beyond its visual appealing nature; it possess a great threat to our water bodies and has analogous effect just like water hyacinth. Kerala has a record of biological invasion since from 19th century resulting the loss of biodiversity and is fear experiencing still today. Because this is not the first time *C. furcata* is been reported in Kerala. In the Year 1952; it was authentically reported from the environs of Cochin in a study by the University of Madras, Chennai. And in the later years 1977 and then on 2003, it was reported from the

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industrial areas of Aluva and around the same time in Eranakulam, Alapuzha, Kottayam, Pattanamtitta and currently now in Kozhikode.

Effects of this Wicked-Beauty

Although it is a mesmerizing sight to be seen, it reverberate an alarm. They can reproduce both sexually and asexually in a geometry progression. This invasive alien plant takes advantage of presence of various metals in water resources which are a result of various human activities.

1. **Reduce water quality**: The huge biomass of this species suck up higher levels of oxygen than other aquatic lives. And this results in condition of lower oxygen levels (Anoxia) as it drop below minimum level. Moreover the remains of this plant take up oxygen for decaying process.
2. **Reduce biodiversity**: Depletion of available resources such as oxygen and other useful nutrients forces other aquatic lives either to die a slow death or to migrate. Obstruction of sunlight due to the dense mat over the water affects the life of benthic organisms.
3. **Displace the native species**: Dominance of this plant over food, space and other resources results in displacement of native species including freshwater fishes. This in turn disrupts the food chain of birds. .
4. **Health risks**: The dense mat spread over the water bodies make an ideal breeding ground for mosquitoes. This further increases the risk of mosquito-borne diseases.
5. **Economic risks**: The management of this wicked beauty ends up in utilizing money meant for other social concern.

Its effects can be seen at its threshold level by the end of December, when the fields are prepared for cultivation and when canals are opened, it will flow towards the river and subdue another aquatic ecosystem. However, its spread can be restrain by taking the urgent steps by our administration followed by an effective study on these species. Classifying the specific geographic area as containment zones can also prevent their spread. Mechanical picking or the application of ‘Fluridone'- a systemic herbicide doesn’t seems an easy option as it may even more aggravate the present situation. Our inability to control the growth of common water hyacinth is a nasty fact before us.

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Advantages of *Cabomba furcata*

At this point of time the strategy of "USE TO REDUCE" seems worthy. Above all it seeks a solution to change waste products to a useful one. There may be a question of feasibility, however finding a solution to the cause is quite important before us. Also the benefits from utilizing the opportunities are quantifiable.

1. **Biogas production**: Biogas is produced from the decomposition of variety organic matter at anaerobic conditions can be a substitute for other energy consumptions. The potential of producing biogas through the anaerobic treatment *C. furcata* is found to be effective. It is found that production percentage is considerably high as the retention time is increased. Therefore it opens up the door for a potential future renewable energy.
2. ***Pharmaceutical significance***: GC-MS Analysis of ethanolic extract of this plant has founded various constituents are Identified as biologically active and are pharmaceutically significant. Future of our pharmaceutical fields finds a new path; thereby finding a solution to this issue. It has been found out that a group of 25 compounds are present such as the fatty acid, alcohol, and hydrocarbon. The first step towards this exploration opens up a new way for our hope. Some of the compounds identified along with their uses are listed below:

Name	Uses
Vitamin E	Posses antioxidant property
Azelaic acid	Have antimicrobial effect and bacteriostatic nature
Hexa decanoic Acid	Good antioxidant
9,12-octa deca dienoic acid	Have an anti-inflammatory effect and anti cancer activity

3. **Others:** The environment benefit of protection against bank and bed erosion is noteworthy. Besides this plant is a biomarker to check the water quality of aquatic system. It is unclear whether the native fish and other aquatic life readily utilize it as a habitat and a study on this matter needs clarification. Despite this lock down the fascinating blooming tales has drawn an attention to many opens up a hope for local

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tourism during its blooming period May-September just like the Neelakurinji of Nilgiris Hills.

The strategies of managing invasive species in a developing country, isn't an easy task. Once the plant gets established it will dominate over our native species utilizing all resources available for them. However spending our money, time, effort doesn't seems an ideal opinion so the only possible way is – **STRIKE WHILE THE IRON IS HOT** - the opportunity is with you.