

Revitalizing Pond Waste: A Novel Approach using Floating Wetlands and Electrolysis for Sustainable Agriculture, Including Wastewater Polishing

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INTRODUCTION & AIM

Sustainable agriculture faces challenges in managing pond waste. In Pakistan, approximately 60,470 hectares of freshwater ponds used for fish farming generate nutrient-rich wastewater, often discarded and causing environmental issues.

This study aims to present a solution by that utilizes a combination of floating wetlands and electrolysis to manage pond waste. This method treats wastewater and converts it into nitrogen-rich organic fertilizer, promoting sustainable agriculture and water conservation.



RESULTS & DISCUSSION

The method effectively manages pond waste through floating wetlands and electrolysis:

- **Wastewater Treatment:**

Floating wetlands filter pollutants, while electrolysis further purifies the water.

- **Fertilizer Production:**

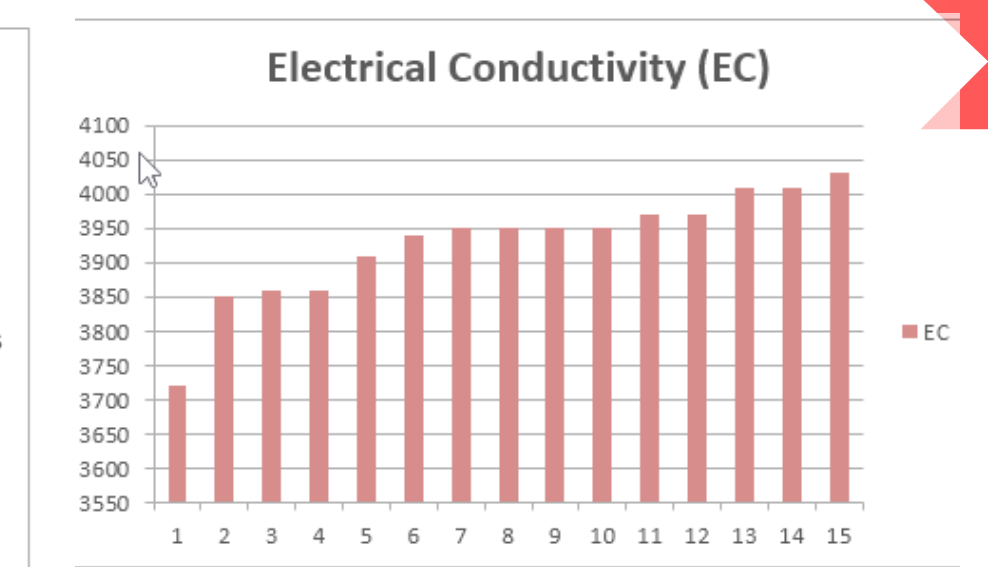
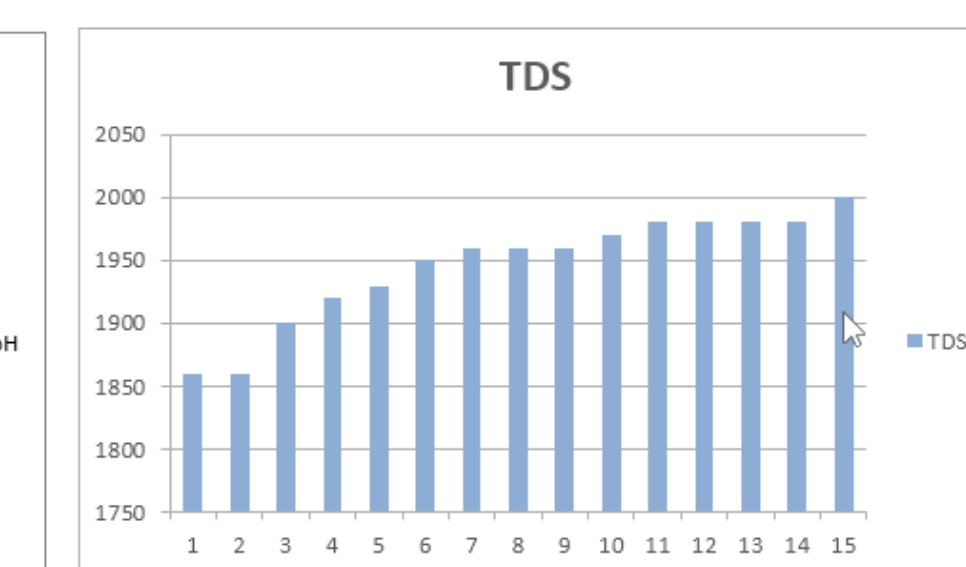
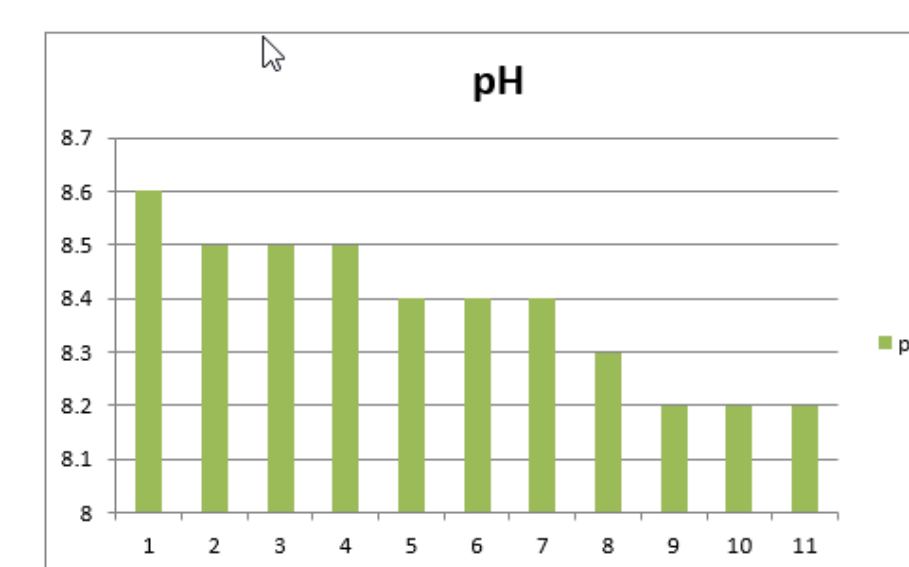
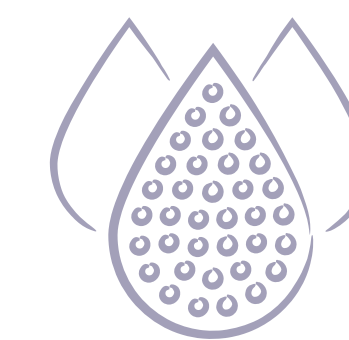
The process converts pond waste into nitrogen-rich sludge, serving as an organic fertilizer that replaces synthetic options.

- **Water Resource Management:**

Treated wastewater can be reused for irrigation and aquaculture, promoting water conservation.

- **Environmental Impact:**

This approach reduces reliance on chemical fertilizers and minimizes the environmental burden of fish farming.



METHOD

The innovative method developed for managing pond waste involves two key components:

FLOATING WETLANDS:

These plant-based systems are introduced into the ponds to filter and purify wastewater. The wetlands absorb pollutants and support the growth of beneficial microorganisms, enhancing water quality.

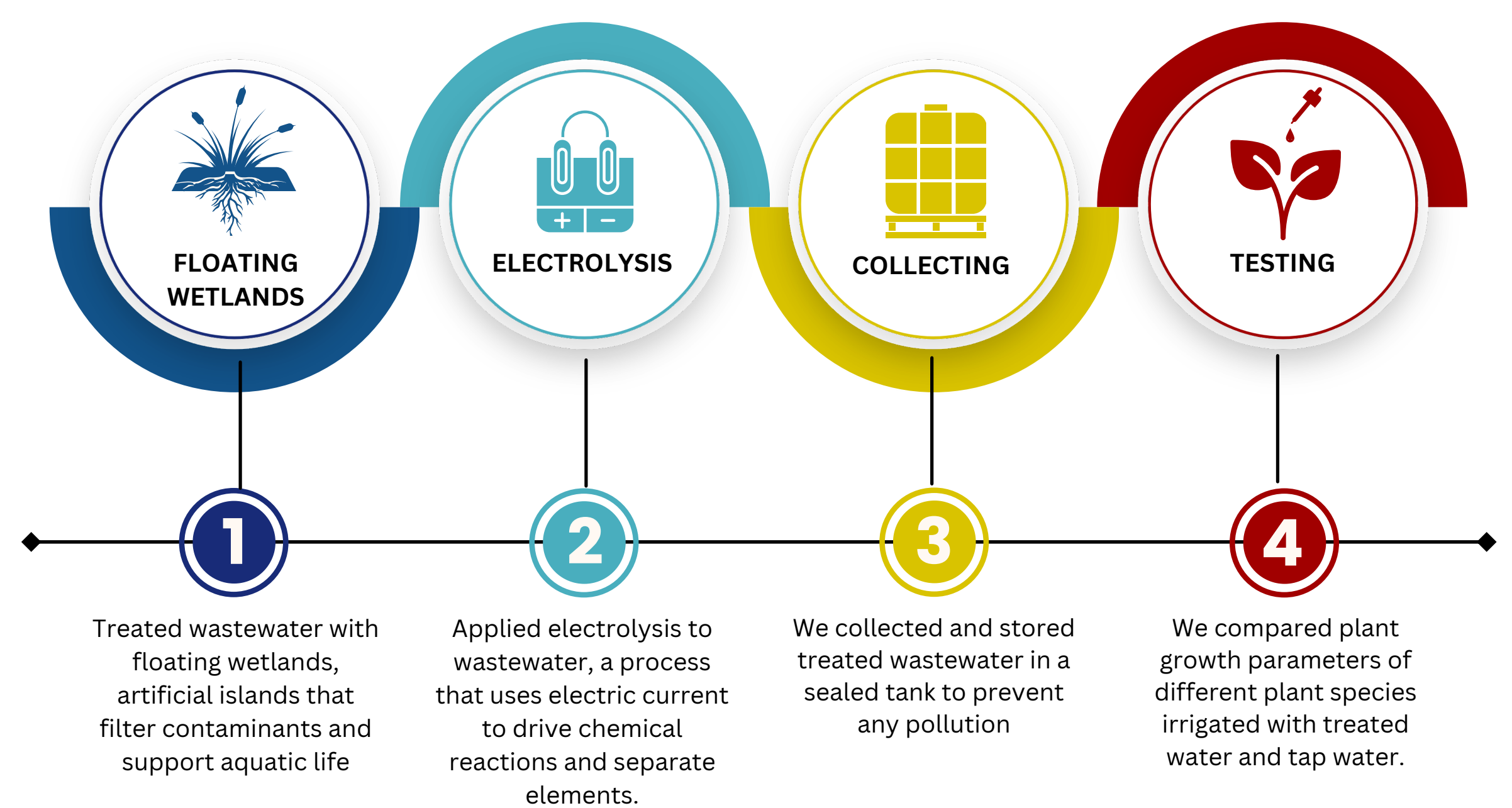


ELECTROLYSIS:

This process utilizes electricity to break down remaining contaminants in the wastewater. It further purifies the water and allows for the potential harvesting of valuable minerals.

ELECTRO-PHYTO WATER POLISHING:

POWERING CLEAN WATER WITH NATURE AND ELECTRICITY

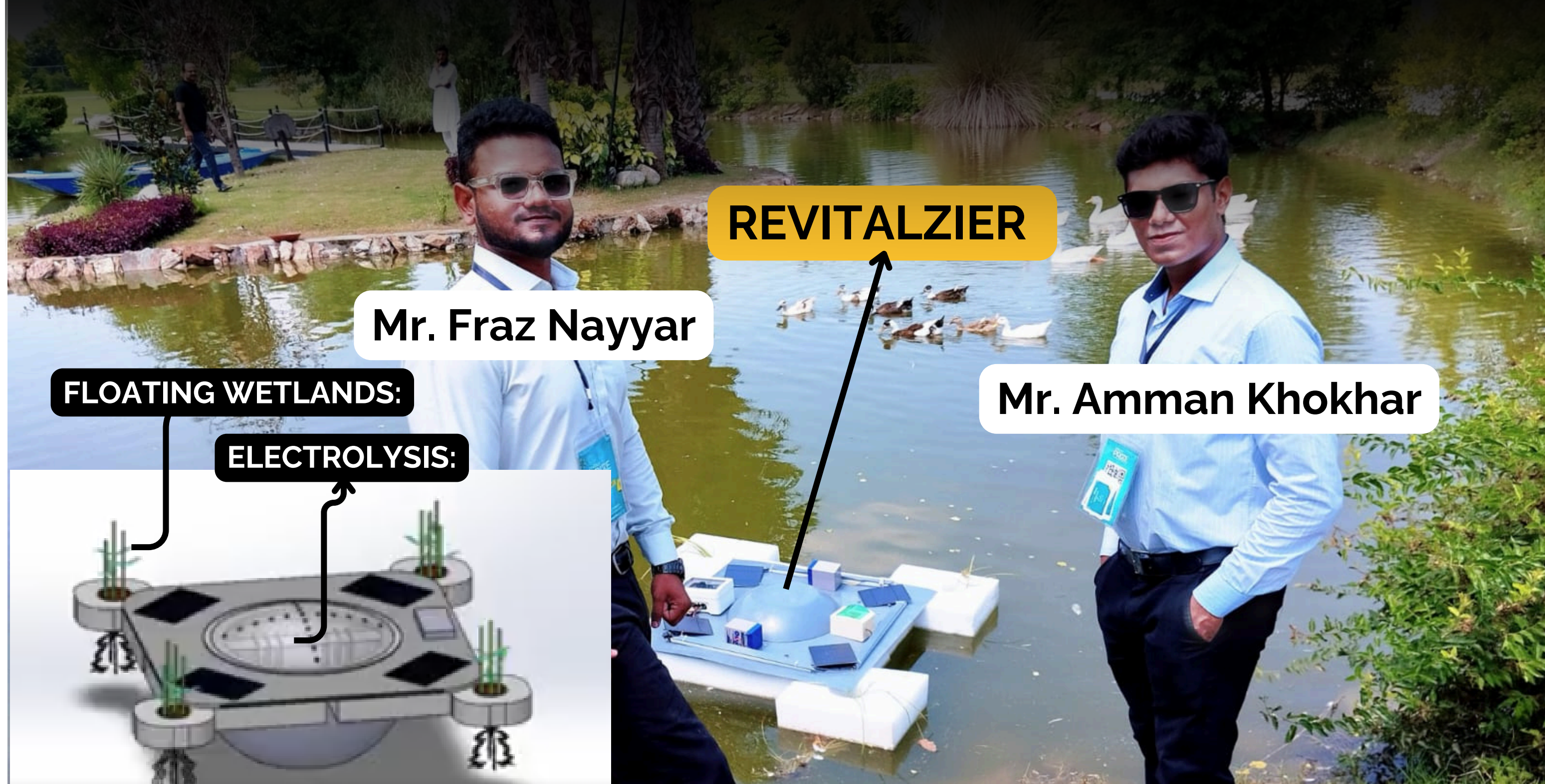


FUTURE WORK / REFERENCES

Students have integrated floating wetlands and solar-powered electrolysis into a machine called "Revitalizer."

Future work will focus on:

Field Trials: Testing the Revitalizer in various aquaculture settings.



CONCLUSION

This method for managing pond waste using floating wetlands and electrolysis offers a sustainable solution for agriculture in Pakistan. This approach effectively transforms nutrient-rich wastewater into valuable nitrogen-rich fertilizer while conserving water resources. By improving water quality and reducing reliance on synthetic fertilizers, it promotes environmentally friendly agricultural practices and enhances sustainability in fish farming.

