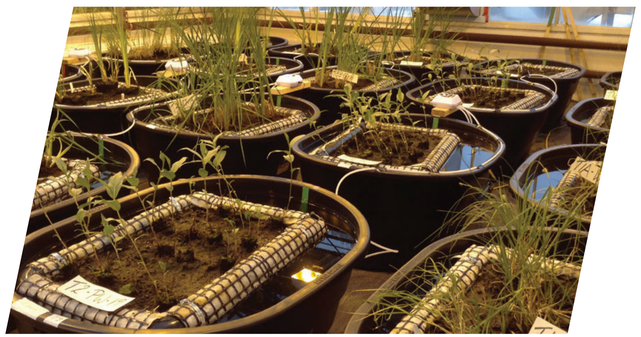
SMART Farm

OLDS COLLEGE OF AGRICULTURE & TECHNOLOGY

Floating Island Technology for Livestock Water Remediation

Remediation Timeline



PHASE 1

Use of Native Wetland Plants on Floating Island Systems for the Phyto-Remediation of Water with Excess Nutrients (2018 - 2019)

This project examined the effectiveness of select native wetland species in removing excessive, synthetic plant nutrients — namely nitrogen, phosphorus and potassium (NPK) — from contaminated potable water in a greenhouse study.

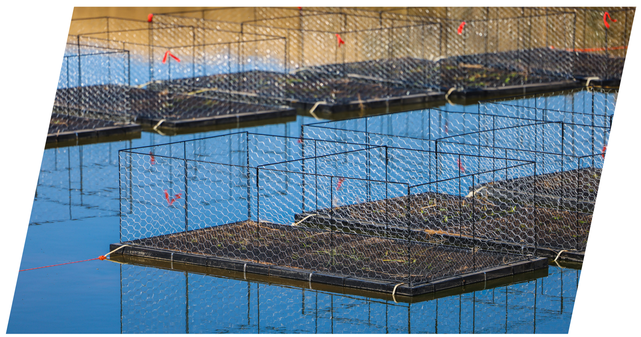
All select plant species performed well by removing and retaining 6.4% to 84.9% of the excessive nutrients or contaminants from the water.

PHASE 2

Remediation of Contaminated Water from a Livestock Farm Using Floating Island Technology and Native Wetland Plants (2019 - 2020)

Similar native wetland plant species were used to treat feedlot runoff water in a greenhouse study. The contaminated water was expected to contain excessive nutrients, heavy metals and other contaminants.

Performance of native plant species was mixed with some plant species removing up to 84% of phosphorus and 45% of potassium. Concentrations of nitrogen and heavy metals in the stored feedlot runoff water were undetectable.



PHASE 3

On-Farm Livestock Water Remediation Using Native Wetland Plants and Alberta Cold Climate Floating Island Technology (2021 - 2024)

Floating islands with select native plant species were deployed in 2022 on catch basins on commercial feedlots to see if they can improve water quality to irrigation or livestock drinking water standards. Concentrations of nutrients, heavy metals and chlorophyll a will be monitored. Various digital technologies will monitor weather parameters, precipitation and contaminant concentrations.

Feedlot operators could adopt sustainable, low-cost management practices that improve runoff water quality and support alternative uses of good quality water on the farm.