

Cattail farming could help save troubled lake

By Robert Arnason, Brandon bureau | June 3, 2010

Richard Grosshans thinks he may have discovered a remedy for the declining health of Lake Winnipeg: harvesting cattails from the mouth of the Red River.

Grosshans, who's working on his PhD in biosystems engineering at the University of Manitoba, said it's a simple idea.

Too much phosphorus is flowing into the lake, and cattails have a tremendous ability to store phosphorus. So why not remove the cattails from the marsh before they decompose and add to phosphorus levels in the lake?

Grosshans said the phosphorus from the cattails can also be processed into pellets and burned as an energy source.

"You're taking the problem on the landscape and turning it into a solution," said Grosshans, a former Ducks Unlimited employee who now works for the International Institute for Sustainable Development (IISD) in Winnipeg.

He wants to understand how the Netley-Libau marsh at the south end of Lake Winnipeg stores nutrients that flow into the lake from the Red River.

"What is the potential of this coastal wetland to help improve the water quality of Lake Winnipeg?" he said.

Scientists have warned that Lake Winnipeg is becoming eutrophic, which means too many nutrients are entering the world's 11th largest lake.

Environmental activists have blamed farmers and their agricultural practices for the poor condition of the lake.

Grosshans said cattails are part of the solution because the plant can store eight to 20 kilograms of phosphorus in one acre.

"Cattails have an amazing ability to absorb nutrients," he said.

However, the tricky part is to develop an efficient way to harvest a plant that grows in a swamp.



Research assistant Michelle Paetkau stands on a pile of cattails in Manitoba's Netley-Libau Marsh. The International Institute for Sustainable Development is studying the possibility of harvesting cattails at the mouth of the Red River as a way to reduce the amount of phosphorus entering Lake Winnipeg. | International Institute for Sustainable Development photo

Researchers have been using an all-terrain, amphibious vehicle called an Argo to tow a six-foot wide swather with a hydraulic cutting blade.

“Our little harvester can go in about a foot of water,” he said.

They have harvested two tonnes of the marshy plant using this method.

“Unfortunately, we have to go in there and manually collect it (the cattails).”

Grosshans said researchers still need to devise a system for cutting cattails into silage before the crop can reach a commercial scale.

“One of the design concepts is a forage harvester that could get in there and cut it and shred it and store it in a hopper. Then get it out of the marsh that way,” he said.

Nazim Cicek, a biosystems engineering professor at the U of M and Grosshans PhD supervisor, said inventors in other countries have devised machines to harvest cattails.

“There are actually some YouTube videos of these things working,” he said, primarily in Latvia, Finland and Estonia.

“Places where biomass is expensive and this apparently makes economic sense.”

He said the cattails are cubed and burned as a heat source in those northern European countries.

Cicek said harvesting cattails solely for a source of energy probably doesn't make economic sense in Canada, but it could be a practical way to reduce the amount of nutrients entering Lake Winnipeg.

“The primary objective is to look at it as an end of pipe treatment for the Red River,” he said.

“Per dollar invested in this phosphorus removal strategy looks much better than many of the points source investments we're making.”

Hundreds of millions of dollars are spent upgrading Winnipeg's sewage treatment plants.

Cicek said harvesting cattails is a nice environmental fit, given the growing interest in renewable energy and the political will to curb climate change.

“It is a bit of a perfect storm, as far as looking at green energy and greenhouse gas mitigation, while at the same time addressing the largest fresh water concern in the province.”