The nitrate catcher trial: Drakes Hill Farm, Waituna

This field trial tests an innovative wood chip filter to remove nitrate from agricultural runoff. It aims to provide a cost-effective and practical tool for farmers to reduce their environmental footprint and ultimately help improve the health of the Waituna Lagoon.

The study trials the ‘nitrate catcher’ under New Zealand conditions to help understand how much nitrate can be removed, what a well-designed system looks like and how much it will cost.

Background

Tile drains are an important feature of Southland’s agricultural landscape. They provide essential drainage for pasture production. Drainage also accelerates the transportation of nutrients off-farm. Particularly nitrate, a form of nitrogen, readily leaches through the soil profile with water. To improve downstream water quality and ecosystem health, we’re looking at ways to capture nitrates before they leave the farm.

How does the nitrate catcher work?

The ‘nitrate catcher’ removes nitrate as it passes slowly through a wood chip filter bed. Naturally occurring denitrifying bacteria, typically found in wet soils, convert nitrate to nitrogen gas. The bacteria use carbon from the wood chip as a food source and nitrate in the water as part of their respiration process. The two-year study will also look into how environmental conditions such as flow and temperature influence how much nitrate can be removed.

Funded by: Delivered by:

With thanks to Drakes Hill Farming and Waituna catchment farmers.