

Ca b, a a ab, da c , a : , a a d , a d, a , a . , a .
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Brandon Goeller is the PhD student working intensively on the Harris farm and has developed a great working relationship with the team. The CAREX proposal was to reduce the nitrate loading into the waterways by building bioreactors at the points in the paddock where the water drains into the waterway. In one paddock the bioreactor has intercepted a tile drain that served the purpose of draining the paddock. In two other places the bioreactors have replaced low lying ground where water naturally pooled.

What is a bioreactor? Well, put simply a bioreactor is a hole in the ground, in this case about two metres by ten metres and one and a half metres deep. The hole is placed in the paddock near the edge of the waterway where water would normally drain through to get into the waterway.

The hole is usually lined with an impermeable fabric, filled with woodchips, covered over with a permeable geotextile fabric, then covered with soil and can be regressed over the top. This hole or bioreactor is now providing low-oxygen conditions combined with carbon from the woodchips to enable microbes to convert the nitrates in the water that is now flowing through the woodchip-filled hole, into nitrogen gas that then enters the atmosphere and is harmless.

Early results from the bioreactors on the Harris farm have shown an average 10% reduction in waterway nitrate levels from this one bioreactor. The idea is that if bioreactors were

placed all over farms where water moves from the surface into the drains then the nitrate loading into the waterways would be significantly reduced. And this is good news for the biodiversity of these living waterways which are also home to a variety of life such as eels, fish and other invertebrates.

“Using the bioreactor tool in combination with riparian planting reduces the nitrate load but also helps to reduce sediment run-off into the waterway,” says Dr Febria. Native Carex sedges planted along the edge of waterways will out

