

# IMPROVE WATER QUALITY ON YOUR FARM



Animal waste and nutrients used in agriculture can increase the amount of nitrates in your farms soil. Through crop watering and weather events, these nitrates can travel from your farm into nearby water systems and impact water quality.

How to help filter your agricultural runoff:



## ON YOUR FARMLAND

Help filter water on your farmland with a woodchip bioreactor. Woodchip bioreactors are water treatment systems that can be added to your farm to improve water quality. Their simple design (as outlined on page two), helps enhance the natural denitrification process that takes place in soil.



## BORDERING YOUR FARM

Allow for a riparian buffer zone along the edge of your farmland. Riparian buffer zones are areas of vegetation planted along the edge of waterways. These zones help slow down, absorb and filter water that has run off farmland before entering the waterway.



## DOWNSTREAM FROM YOUR FARM

Wetlands can intercept water from streams before it makes its way to the ocean. By preserving and caring for the wetlands near your farm, you will help keep local water sources and our oceans healthy.



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# BUILD YOUR OWN BIOREACTOR

Follow these steps to build your own bioreactor and filter water on your farm.



## DIG A TRENCH

Dig a trench on the edge of your farm to capture water drainage and runoff from weather events and crop watering.

**Tip:** We recommend your trench be a minimum depth of 1 metre, a width of 2.5 metres and length of 20 metres.



## ADD AN OUTFLOW POINT

Create an outflow point to allow filtered water to exit the bioreactor. Place this exit point at the bottom of the trench facing away from your farm. This placement will help ensure water is retained in the bioreactor long enough for the denitrification process to complete.

**Tip:** We recommend using perforated PVC piping to create your outflow point.



## FILL WITH WOODCHIPS

Soil contains bacteria and other microbes that naturally act as a water filter. Woodchips are a source of carbon that provides fuel for the existing bacteria found in soil. Allowing the bacteria to work faster, quickly converting nitrate into a harmless nitrogen gas before exiting the bioreactor into nearby water sources.

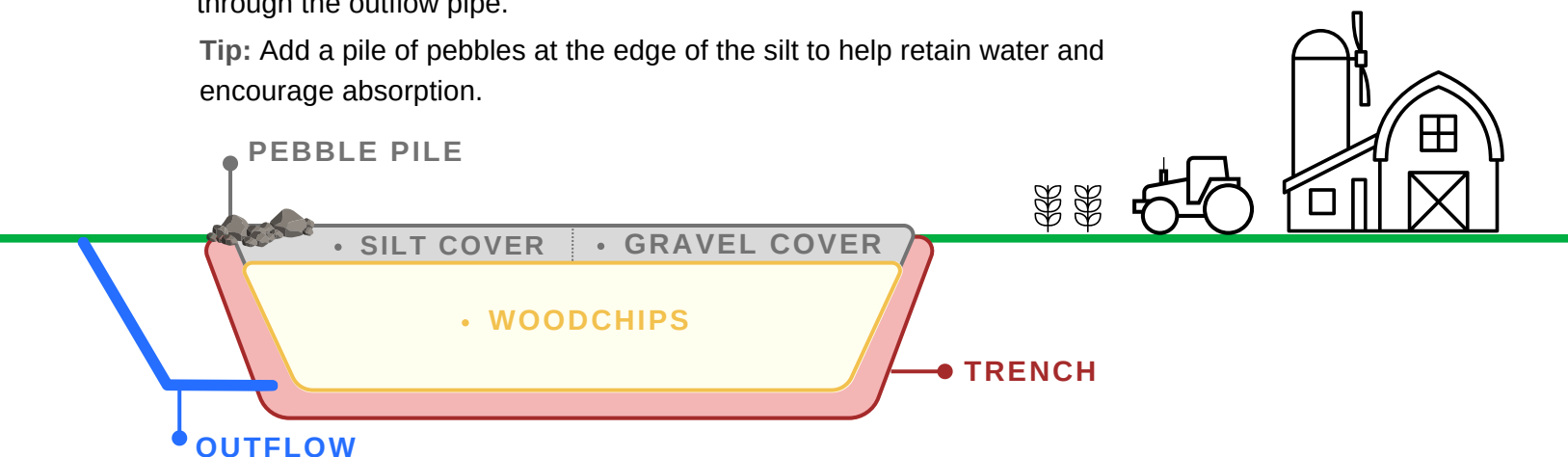
**Tip:** Any carbon source can be used, we recommend woodchips because they are lightweight, affordable and can be purchased in bulk. We recommend a depth of 80 cm for this bed.



## TOP WITH GRAVEL AND SILT

Cover the first half of the woodchips with a layer of gravel. This will slow down the flow of water draining off of your farm and allow water to enter the bioreactor. Cover the second half of the woodchips with a layer of silt. This will help absorb water into the bioreactor and direct it through the outflow pipe.

**Tip:** Add a pile of pebbles at the edge of the silt to help retain water and encourage absorption.



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