Bioreactors

FACT sheet

Bioreactors utilize a carbon source, typically wood chips, to remove nitrates carried in tile water. They work by using a control structure to divert a portion of the tile flow through an underground bed of wood chips. The water saturates the wood chips creating anaerobic conditions suitable for denitrification. Current bioreactors are designed to have a 3 – 8 hour retention time and treat 15% of the expected peak tile flow.

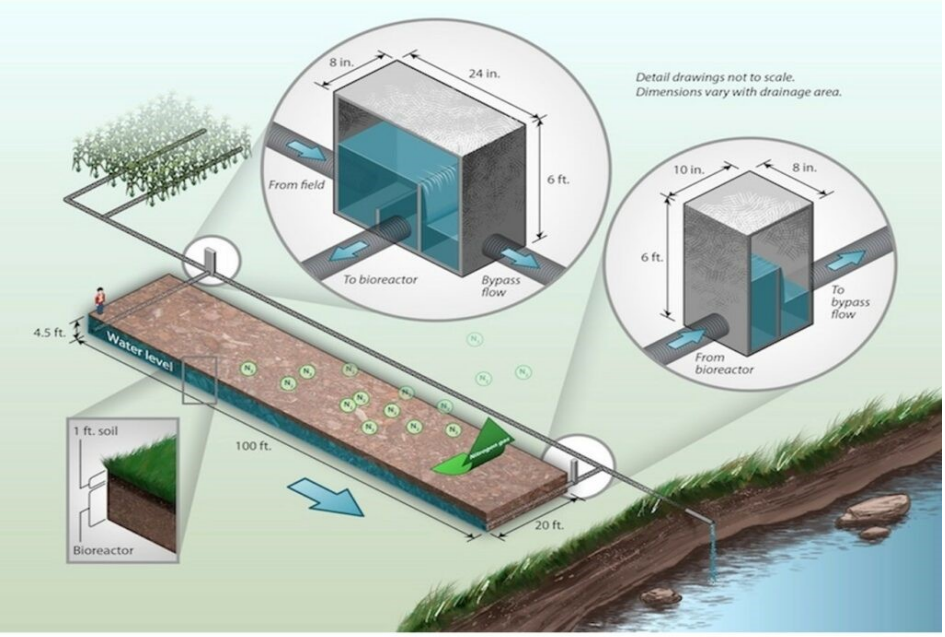

Image courtesy of Iowa State University Extension, John Peterson

Location

It is important to install on tiles with consistent flow. Bioreactors often treat 30-100 acre drainage systems with 6 - 10 inch mains.

Footprint

Size varies with the capacity of the tile system they service, but on average they are around 100 feet in length and 20 feet wide.

Performance

Performance varies based on distribution of rainfall. Bioreactors perform best under base flow conditions. The Iowa Nutrient Reduction Strategy shows that bioreactors remove an average of 42% of the nitrate load.

Dollars & Sense

$10,000

INSTALLATION COST

Typical installation costs range from $8,000-$12,000

$0.95

Practice cost per pound of N removed

ADMC Agricultural Drainage Management Coalition

www.admcoalition.com

NRCS CPS 605 Denitrifying Bioreactor