

December 2017

Investment Insight

Recent Research Results

There have been a lot of bioreactor stories in the news lately as various groups sponsor the construction of these underground nitrate gobblers. The Illinois Nutrient Research and Education Council (NREC) has been an integral part of the bioreactor buzz – on the research side. NREC has invested nearly \$420,000 over four years with Dr. Laura Christianson and several of her colleagues at the University of Illinois to study the overall effects of using bioreactors as a nitrogen loss reduction strategy tactic – and to determine *the best designs to maximize their effectiveness without negatively affecting yields.*

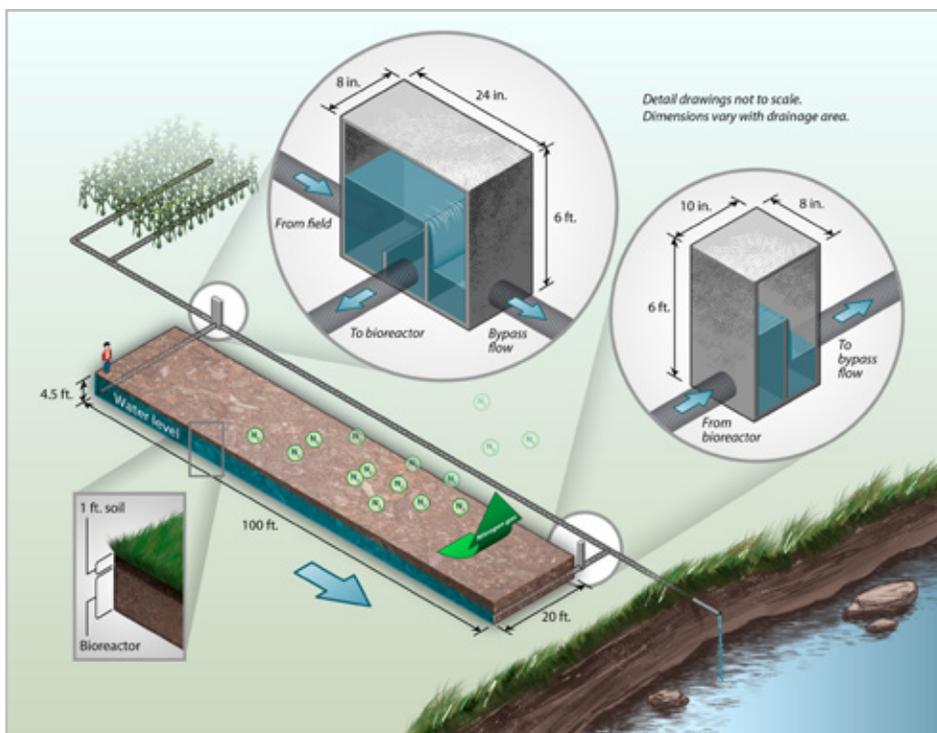
Dr. Christianson does the discovery work for you. First, you can determine if bioreactors are practical for your operation and the

appropriate edge-of-field option. Second, her research, carried out in actual field locations, will help you choose the best design and placement for your field conditions. Third, you will have a head start in enhancing water and environmental quality without impacting your crop production.

With each bioreactor construction and novel design, Dr. Christianson will learn (and share through demonstrations) which is the best bioreactor design. She is studying which design removes nitrates more effectively under both high and low flow rates. Ultimately, she hopes that this work will improve performance and increase the adoption of bioreactors to improve water quality in Illinois and across the Mississippi River Basin.

So far Dr. Christianson's team has found that bioreactors work in reducing the amount of nitrogen leaving field drainage tile by up to 75%, but more generally about 25-45%. *Why is that important to farmers?* Bioreactors represent one nutrient loss reduction practice that demonstrates that Illinois Nutrient Loss Strategy goals can be met with voluntary action with regulation. Researchers estimate that a bioreactor has a life of 10 to 15 years.

If you need assistance in planning and designing a bioreactor on your farm, help is available from the USDA Natural Resources Conservation Service. NREC will also be providing updates to research findings that you can utilize on your farm.



Dr. Christianson currently has bioreactors installed at:

- Monmouth Research Station in Warren County.
- University of Illinois in Champaign County
- Spring installations are planned for at least one Central Illinois farm.