Organic carbon being touted to reduce nitrates

Engineer says it can improve effectiveness of septic systems

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SARASOTA COUNTY – Organic carbon, such as sawdust and wood chips, are the keys to improving the effectiveness of a septic system, says Steve Suau, one of three authors of the Community Playbook for Healthy Waterways and principal of Progressive Water Resources.

That extra filtration the organic carbon provides, known as a denitrification, significantly reduces the amount of nitrates in water.

"It's all-natural biology, we're not using any chemicals at all," Suau said. "We're using biology to attract the natural bacteria that converts nitrate to nitrogen gas and puts it back in the atmosphere and finishes the nitrogen cycle."

When he lived in South Venice, Suau envisioned a similar denitrification barrier between homes on well and septic systems there and Alligator Creek.

Something similar may be an option in North Port, where there are access roads between homes and the canals originally dug by GDC to make the land marketable.

Many modern septic systems include a denitrification layer. In northern Florida, the source of several freshwater springs, that is required through the 2016 Florida Springs and Aquifer Protection Act.

Last September, Suau installed a denitrification system in a pond in the Prestancia development that is used to hold reuse water from Sarasota County and repurposed for irrigating lawns in the subdivisions, as well as the golf course.

"We test the water going in and we test the water going out, and we are getting astounding results in terms of nitrate reduction," Suau said.

The system is essentially two big gabion baskets containing wood chips that the water is pumped through.

"We're getting a 72% reduction in nitrate there," Suau said, noting that's been a consistent reading.


Suau

The community wanted the system installed to reduce algae in stormwater retention ponds, which were also receiving irrigation runoff.

"If we can reduce the source of the food for algae, then we have a better chance of controlling the algae downstream," Suau said. "Nobody that's using reclaimed water is aware that they're using liquid fertilizer on top of the fertilizer that they apply."

In July, a denitrification system in Lakewood Ranch, meant to clean reclaimed water from Manatee County, went live. Early results show more than 90% reduction of the nutrients.

"I don't know if we'll be able to hold on to that, but we're only after getting rid of maybe 50%.

The Lakewood Ranch denitrification system consists of four cells, each about a half-acre in size – one contains sawdust, one mulch, and two with wood chips.

Downstream of that, the reclaimed water flows into a trench filled with biochar – a byproduct of forest fires – which is designed to reduce the levels of phosphorus.

So far, the Lakewood Ranch system is cleaning about 500,000 gallons of reclaimed water a day. Suau is testing to see if that can be increased to about a million gallons a day.

"For a half-a-million, we're getting an incredible reduction," he added.

A study conducted for the Gulf Coast water quality playbook – which used Sarasota County as a template but included techniques that could be used everywhere – noted that the central wastewater treatment systems were contributing more nitrogen pollution than septic systems.

Or, as Jon Thaxton, senior vice president for Community Investment at the Gulf Coast Community Foundation, noted in January, "basically, all septic tanks are not created equally."

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