



Royle and Jo Duncan, who farm near Alden, opened up their property for the Southfork Watershed Alliance Field on June 22. The tractor ride was part of a tour for the SFWA to talk about water-quality structures and their batch-and-build plan.

PUTTING THE 'FIELD' IN FIELD DAY

Southfork Watershed Alliance's batch-and-build water project

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The Southfork Watershed Alliance (SFWA) is "a grass-roots watershed conservation group devoted to improving water quality." So it makes sense that when they hold a field day event, it's a little less focused on fun and games like the lo-

cal schools do, for example, and more on agriculture and the surrounding area's water bodies. Out in the fields belonging to Alden residents Royle and Jo Duncan on Thursday, June 22, the SFWA showcased its Keep Nutrients in Your Field and Out of the Stream campaign as part of a batch-and-build movement meant to construct three types of water filtration and nutrient-retention structures: bioreactors, saturated buffers, and rejuvenated multi-use oxbows. So as the Duncans toted around a group of a couple of dozen community members and SFWA members, explanations were given on the whats and hows of the Alliance's batch-and-build method for emphasizing those three features.

While the names and terminology can be overwhelming in its jargon, the three types of water-management structures are dedicated to keeping nutrients (like nitrates) in a field's soil, where they can maximize crop yield, and out of waterways, where they become pollutants. So the goal is double-pronged.

On the Duncans' property, they utilize all three features; some are considered in-field, while others are better suited as edge-of-field constructs — hence the tour during the field day.

The first kind of structure, with its full name of a denitrifying bioreactor, is an "excavated trench filled with woodchips that filter tile drainage water," according to the SFWA's

website. The bioreactors are built to work jointly with a farm's tile layout so that water already passing through can be circulated into an underground, woodchip-filled basin where bacteria "utilize the carbon in the woodchips to convert nitrates in the water into nitrogen gas." According to the SFWA's definitions, the bacteria on and within the woodchips essentially "eats' carbon and 'breathes' nitrogen."

More so, the water levels can be changed accordingly depending on the individual field. Each bioreactor can process up to 100 acres of land. Through research on the bioreactor's effectiveness, the denitrification process can remove up to 54 percent of the transported water's "nitrate load" with an average removal rate of 40 percent. Since the bioreactors are an edge-of-field practice, they pose no threat to crop production and do not cause any water flow or drainage restrictions.

A saturated buffer, on the other hand, is defined as an "area of perennial vegetation between agricultural fields and waterways where tile outlets drain," stated the SFWA. Also using a tile system, water is distributed into a "control structure" and then redistributed lateral-

ly along that buffer. From the SFWA, the buffers "remove little to no land from production, require little maintenance, and do not affect crop yields when placed in ideal sites."

So as water is pushed through the buffer, the "perennial vegetation" is then present to absorb that water through its root systems, entering the water into a denitrification process. During that time, the absorbed nitrogen is converted into nitrogen gas. According to research within the Iowa Nutrient Reduction Strategy, the saturated buffers can remove upward of 50 percent of nitrates and nitrogen from the water it circulates.

Additionally, "It also decreases the murkiness and volume of water in waterways, stabilizes stream banks, and provides wildlife habitat," according to the Southfork Watershed Alliance.

And third, oxbows are a fluvial feature where a winding, tortuous stream had formed meanders naturally that have been cut off and since dried up. Sometimes by erosion and sometimes by manmade machinations, the oxbows were once part of the stream's original path, but they now appear as oblong pools scattered about. So when that portion of the

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