

Animal and Poultry Waste Management Center

A candidate technology of the North Carolina Agreements Project: Development of Environmentally Superior Technologies per Agreements Between the Attorney General of North Carolina and Smithfield Foods, Premium Standard Farms and Frontline Farmers

Solids Separation/Reciprocating Wetland

This project is located on Corbett Farm #2 in Duplin County, North Carolina. It has been in operation since late 2002, treating waste from 1,600 finishing pigs. This technology employs wetland cells or basins in which alternating anaerobic and aerobic conditions are created to remove nitrogen from the waste stream. The technology provider is BioConcepts, Inc., Al Privette, president.

The waste stream from the houses in which pigs are housed flows first to a settling tank for solids separation. The remaining liquid then flows to the reciprocating wetland cells. The cells are earthen basins with synthetic liners. Each cell is filled with gravel, which acts as a surface on which microbes reside. The liquid from the settling tank is pumped back and forth between the cells. As a cell fills with liquid, anaerobic conditions are created, which promotes denitrification (the conversion of nitrate to nitrogen gas, which enters the atmosphere). As liquid is removed from a cell, aerobic conditions are created, which promotes nitrification (the conversion of ammonia in the waste stream to nitrate). The system is designed to remove nitrogen (in the form of ammonia) from the waste stream by turning it first into nitrate, then into nitrogen gas. The atmosphere is predominately nitrogen gas, so this form of nitrogen is harmless. Liquid has a six-c recycled to the pig houses to be used to move v land.



Reciprocating wetland cells

Technology Evaluation

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