

Swine Research Update

Weanling pig growth and health are not adversely affected when consuming water recycled from a manure lagoon and then disinfected and treated with a novel Water and Nitrogen Management System

Water consumption by U.S. pig farms exceeds 40 billion gallons annually. Good quality water is therefore a critical resource, making conservation essential for a sustainable pork industry. One potential approach to decrease water usage by pig farms is to treat wastewater reclaimed from generated manure so that it could be used for drinking water. Such a system, however, requires that consumption not adversely affect pig health or growth performance measures such as weight gain, feed intake, and feed conversion efficiency (feed required to produce a pound of body weight). In a study recently completed at the Tidewater AREC Swine Research facility, researchers assessed health and growth performance in pigs consuming water reclaimed from manure storage and disinfected and treated with a novel Water and Nitrogen Management System developed by Pancopia, Inc. (Hampton, VA). A total of 72 weanling pigs were placed in pens of three pigs each, and pens were randomly assigned to one of three treatments: well water (control), water reclaimed from a manure lagoon and treated, or a 50/50 mixture of control and treated water (8 pens per treatment). Although hematological and blood chemistry measures in pigs revealed evidence of elevated nitrate/nitrite in reclaimed wastewater, weight gain, feed consumption and feed conversion efficiency were not adversely affected (see Table 1). In fact, pigs consuming the 100% treated water displayed the best feed conversion efficiency for the duration of the trial. These results provide preliminary evidence that wastewater reclaimed and appropriately treated may be suitable for drinking and could increase sustainability by decreasing water usage by pig production units.

Table 1. Growth performance measures in nursery pigs consuming well water (control) or water substituted at 50% or 100% with water reclaimed from a manure lagoon and disinfected and treated using a novel Water and Nitrogen Management System (Pancopia, Inc., Hampton, VA).

Item:	Reclaimed Water			SE	P-Value
	Control	50% treated	100% treated		
Number of pens ¹	8	8	8	---	---
Growth performance					
Day 0 to 28 (Overall)					
Daily gain, pounds	0.79	0.81	0.84	0.04	.54
Daily feed intake, pounds	1.30	1.25	1.28	0.04	.84
Feed:Gain	1.65 ^a	1.54 ^{a,b}	1.52 ^b	0.02	.02

¹Each pen had three pigs.

^{a,b} Within rows, means with different superscripts significantly differ ($P < .05$).