

Odor characteristics of swine manure and nutrient balance of grow-finish pigs fed diets with and without distiller's dried grains with solubles. M.J. Spiels*, M.H. Whitney, G.C. Shurson, and R.E. Nicolai, University of Minnesota, St. Paul.

A 10-wk trial was conducted to determine odor characteristics of swine manure and energy, nitrogen, and phosphorus balance of grow-finish pigs fed diets with and without distillers dried grains with solubles (DDGS) from ethanol plants in the Minnesota-South Dakota (MNSD) region. Sixteen PIC barrows weighing 57.5 ± 4.1 kg were randomly assigned to one of two dietary treatments (8 pigs/treatment): control (0% DDGS) and 20% DDGS. A three-phase diet sequence was fed. Total lysine and P levels were identical for diets in each phase. Manure from each pig in collection cages was collected daily except during the last 3 d of wk 2, 6, and 10, when total fecal and urine collection was conducted for the nutrient balance measurements. Urine and feces were mixed and emptied into simulated pits according to dietary treatment. Air samples were collected weekly from the headspace above each simulated pit and analyzed for H_2S , and NH_3 . Air samples collected during wks 2, 5, and 8 were evaluated for odor. Dietary treatment had no effect on H_2S , NH_3 , or odor detection levels ($P > .10$) over the 10-wk trial. Pigs fed the DDGS diets had greater N and GE intake in all three phases ($P < .01$) but ADFI was not different among treatments. DE and ME (kcal/kg) did not differ among diets ($P > .15$). Nitrogen retention (%) was not different between dietary treatments, but feeding DDGS increased N excretion during all three phases ($P < .10$). Phosphorus retention (%) was not different between dietary treatments ($P > .15$), but urinary P excretion tended to decrease ($P < .15$) when DDGS diets were fed during phases 2 and 3. These results suggest that feeding 20% DDGS does not reduce H_2S , NH_3 , and odor levels over a 10-wk manure storage period. Feeding DDGS increases GE intake and improves P utilization during late finishing phases, but also increases N excretion.

Key Words: Pigs, Distillers dried grains with solubles, Odor

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