Fecal Fiber Content of Finishing Pigs in Hoop Structures and Confinement

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ASL-R1779

Introduction

Pigs housed in hoop structures may have an increased amount of fecal fiber compared with pigs housed in confinement because the hoop pigs have access to bedding and may consume bedding. The objective of this study was to determine whether the pigs housed in hoop structures consume the cornstalks that are used for bedding.

Materials and Methods

Fecal samples were taken from 22 pigs housed at the ISU Hoop Research Complex, ISU Rhodes Farm in Marshall County, Iowa. Eleven pigs (six gilts and five barrows) each from a confinement building and a hoop building were sampled. Both groups were fed the same corn/soy ration *ad libitum*.

Initially, pigs from each group were selected based on similar weights. Pigs housed in hoop buildings and in confinement housing had fecal samples taken from pigs with an average weight of 217 pounds on January 21, 2001.

The 22 fecal samples were analyzed for dry matter (%). However, some samples were not large enough to run individual analysis. To still use the small samples, seven of the hoop samples were combined and labeled combined H group. Also, seven samples from the confinement pigs were combined and labeled combined C group. There were four remaining individual pig samples from hoop and confinement pigs respectively.

Results

The laboratory analysis and calculations were neutral detergent fiber (NDF) and acid detergent fiber (ADF) on the fecal samples. The NDF residue is similar to crude fiber value and the ADF indicates the amount of indigestible ligin and cellulose. The combined H group was analyzed three times with an average NDF of 56.7% and an ADF average of 19.8%. The combined C group also was analyzed three times with an average NDF of 44.3% and an average ADF of 13.4% (Table 1).

The range was determined from duplicate analysis of the four individual pig samples and then taking the average of the eight results. The individual pig fecal samples from hoop buildings had a NDF range from 49.4 to 58.0% with an average NDF of 53.0%. The individual pig fecal samples from confinement resulted in a NDF range from 40.2 to 58.8% with an average NDF of 52.0%. The individual pig fecal samples from hoop buildings had an ADF range of 14.5 to 29.14% with an average ADF of 18.9%. The individual pig fecal samples from confinement buildings had an ADF range of 10.2 to 21.4% with an average ADF of 14.9%.

Overall, pigs housed in hoop buildings had a higher percentage of fiber in their fecal samples (Table 1). The NDF and ADF values from the group and individual tests were similar within the hoop and confinement groups, respectively. There was a larger variation of fecal fiber content for hoop pigs than pigs housed in confinement with the exception of individual pig NDF.

Conclusions

This study shows that pigs in hoop buildings consume cornstalk bedding. An excess of 7 to 10% of fiber in the growing pig diet exhibits an inhibitory effect on growth. This could be caused by fiber mineral interactions, decreased nitrogen and energy utilization, or increased ingesta rate of passage. The increased rate of passage accounts for the majority of the decrease in feed utilization observed in pigs fed high-fiber diets. The less degradable the fibrous material, such as cornstalks, the greater the digesta rate of passage.

If the level of fiber consumption is lower (<7%), there is probably no major adverse effects. It is important to note that the growth rate of hoop pigs is generally equal to or greater than the growth rate of pigs in confinement. However, it may be beneficial to know the amount of cornstalks that the hoop pigs are ingesting and then determine the utilization rate.

Table 1. Fecal fiber content from pigs housed in hoops and confinement.

	Hoop				Confinement			
	Combined	S.D.	Individual	S.D.	Combined	S.D.	Individual	S.D.
NDF	56.7	3.2	53.0	2.4	44.3	1.5	52.0	7.7
ADF	19.8	1.8	18.9	5.6	13.4	1.4	14.9	2.6