

The effects of improving air quality on performance and mortality in 20 groups of finishing pigs

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Airborne dust (potentially carrying infectious agents) and ammonia negatively impact the environment inside swine barns. In the past, improving air quality required increased air movement. With the recent introduction of barn-friendly electrostatic particle ionization devices (EPI Air®), improving air quality inside swine barns has become more feasible. When EPI Air® is implemented, particles in the air are charged causing them to settle and “stick” to surfaces in the barn (Vansickle, 2013; Rosentrater, 2004). As a result, EPI Air® may improve pig performance by reducing health issues caused by poor air quality (coughing, respiratory- and gastrointestinal irritation, etc.; Colina et al., 2000). Additionally, improving air quality may reduce transmission of airborne infectious agents (Vansickle, 2013).

To test the efficacy of using EPI Air® to improve performance and reduce mortality in finisher pigs, pigs from the same sow source were placed in curtain-sided, quad-room barns with tunnel ventilation. The first group started on March 1, 2012 and the last finished September 16, 2012. Four groups (head = 4,174) were placed in barns equipped with EPI Air® (EPI) and 16 groups (head = 17,737) were placed in barns not equipped with EPI Air® (Control). Both treatment groups were placed in identical barns as describe previously. At the start of test, pigs in the EPI groups averaged 70.8 lbs. and the control group averaged 71.4 lbs. At the time of marketing, pigs in the EPI group averaged 245.8 lbs. (average days on test = 108) and pigs in the control group averaged 266.7 lbs. (average days on test = 138).

The EPI group with the poorest ADG (1.67) was poorer than control group 13, but better than control groups 1-8, 10-12, and 14-16 (Figure 1).

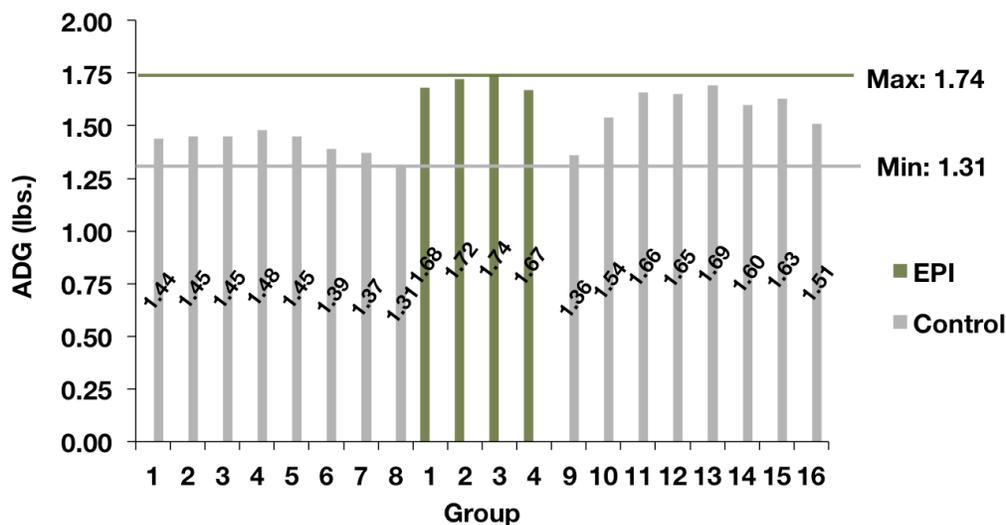


Figure 1. Average daily gain for 4 groups of EPI and 16 control groups (total head = 21,911)

The poorest feed conversion in the EPI groups (2.71) was better than the feed conversion in any of the control groups (Figure 2).

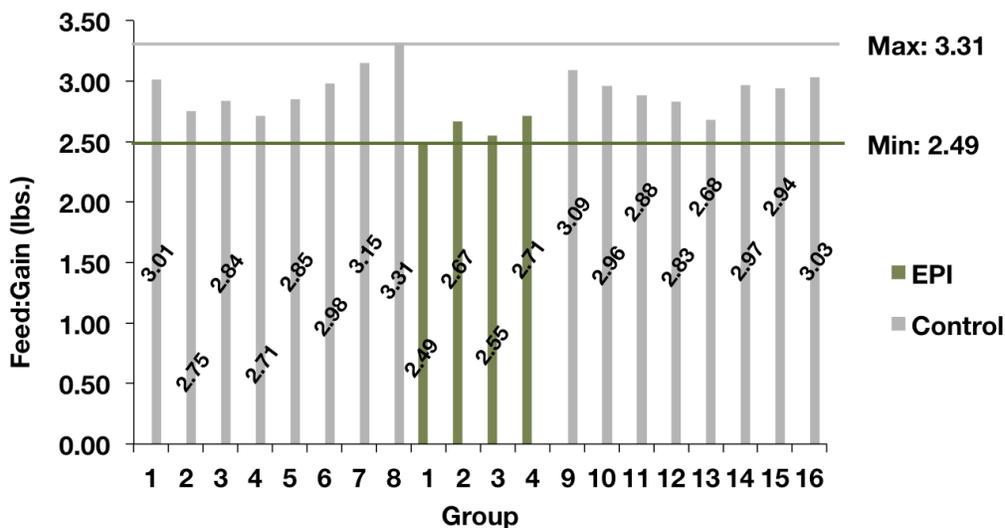


Figure 2. Feed conversion for 4 groups of EPI and 16 control groups (total head = 21.911)

The EPI group with the highest mortality (5.6 %) had more mortalities than control groups 1, 3, 5, and 10-15, but had fewer mortalities than control groups 5, 6-8, and 16 (Figure 3).

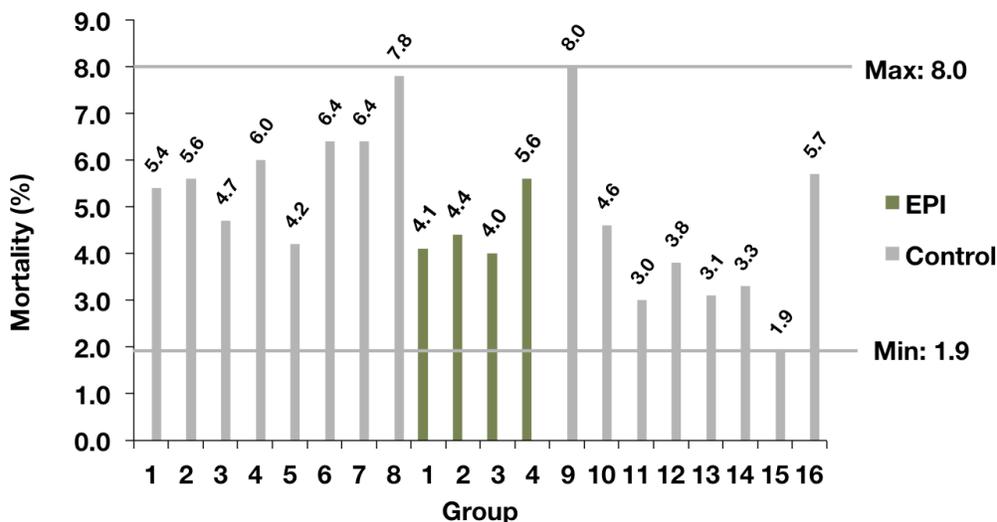


Figure 3. Mortality for 4 groups of EPI and 16 control groups (total head = 21.911)

When averaged over all groups, EPI groups had 13.6 % better ADG, 16.1 % better feed conversion, and 9.4 % fewer mortalities than control groups (Figure 4).

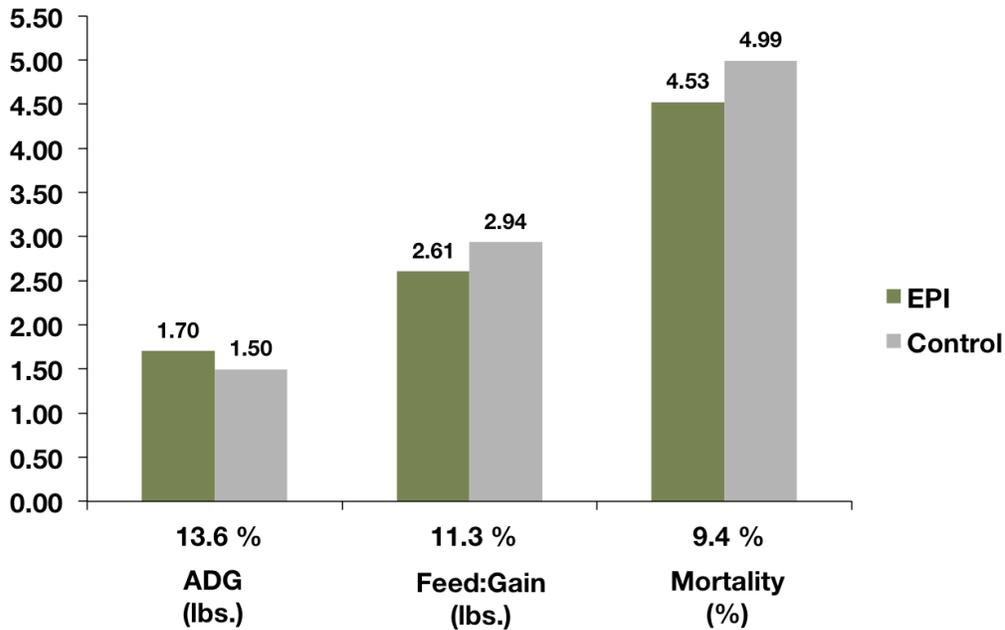


Figure 4. Average of ADG, Feed:Gain, and Mortalities for 4 groups of EPI and 16 control groups (total head = 21.911)

It is important to consider the potential sources of variation in this data. First, since EPI and control were not conducted within the same barn at the same time it is not possible to rule out barn and management variation. Additionally, the control groups had about 4 times more pigs than the EPI groups. Starting weight differed as much as 43 lbs. between the control groups and the EPI groups. Ending weight differed as much as 56 lbs. between control groups and EPI groups. The number of days on test differed as much as 52 days between EPI and control groups. Despite these potential sources of variation, EPI Air® seems to hold promise that, by improving air quality in the barn, mortality can be reduced and performance enhanced.

Literature Cited

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