

Reduced phosphorus discharge from sow facilities

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Abstract

This trial was conducted in the period 2004-2007 in four herds with group-housed sows and aimed at establishing the basis of the standards for digestible phosphorus to sows. The trial comprised 3,526 gilts that were given different levels of phosphorus in the feed after their first service. The subsequent reproduction results, maternal traits, longevity and bone strength of these gilts formed the basis of the conclusions of this trial.

Four different levels of phosphorus supply were studied. The sows in the control group were given 3.2 g digestible phosphorus per FUsow, which is considerably more than recommended by the current standards. The sows in the other groups were given reduced phosphorus levels in the gestation period or in the entire cycle. In the gestation period, the mineral phosphorus was eliminated from the feed and 1,500 units phytase were added (RonoZyme P 5000). This made it possible to reduce the phosphorus content of the diet to 2.0 g digestible phosphorus per FUsow. In the lactation period, only 1.0 g mineral phosphorus was added per FUsow to the feed in the form of mono calcium phosphate and 1,500 units phytase were added (RonoZyme P 5000). This made it possible to reduce the phosphorus content of the diet to 2.6 g digestible phosphorus per FUsow. The phosphorus content of the grain determined the level of phosphorus in the feed. In the two herds with the lowest content of plant phosphorus in the feed, the total phosphorus content was below 3.5 g per FUsow in the gestation period. In the lactation period, the total phosphorus content was 4.3 g per FUsow when phosphoric acid was used and 4.5 g when mono calcium phosphate was used.

Theoretical calculations showed that young gestating sows had a calculated theoretical phosphorus requirement of 1.9 g digestible phosphorus and this drops to approx. 1 g in older sows. In this trial, the sows in all the groups were at a slightly higher level than this and there were no significant differences in reproduction results, maternal traits, longevity and bone strength between the different phosphorus levels studied in this trial.

This trial demonstrated that sows' phosphorus requirements are met when they are given diets that contain 2.0 g digestible phosphorus per FUsow in the gestation period and 2.6 g digestible phosphorus per FUsow in the lactation period. With the productivity and feed conversion of the trial herds, this amount of phosphorus made it possible to reduce the phosphorus discharge to 22-23 kg per hectare with 1.4 livestock units, which corresponds to the amount eliminated by plants annually. There was thus phosphorus balance at field level. An additional supply of phosphorus beyond the requirement of the sows cannot be recommended as this is related to higher feed costs and a greater environmental impact.