

Constraints on the use of co-products in liquid feeding diets

One such drawback is the high level of minerals they contain, especially potassium. Research is focussing on additives that can alleviate the problem

The high price of grain and the availability of co-products from other manufacturing processes make feeding liquid diets to swine an attractive alternative to more traditional feeding methods. Research is ongoing to discover how best to make use of these co-products.

Dr. Kees de Lange, animal and poultry science department, University of Guelph, continues to focus his research on using co-products in pig diets. He reports that interest in this research has in-

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creased, not only from Ontario producers, but also from other provinces and the United States.

De Lange and other researchers at the University of Guelph have identified several key constraints that limit the use of co-products in swine diets. These constraints are addressed in the research program.

The first constraint is the high

levels of minerals found in co-products, especially potassium. Typical swine diets based on corn and soybean meal already contain more potassium than the pig needs, explains de Lange. Co-products tend to have an even higher level of potassium.

Not only does a high dietary potassium level make the pigs dirtier and change the manure composition, but it also has an impact on the animals. "High potassium levels are affecting the pig itself," says de Lange. In extreme cases, and when dietary potassium levels approach 1.4 per cent, it can cause kidney damage in some pigs.

De Lange and his team have explored dietary means to overcome the effects of high potassium levels in diets using co-products. They have tried adding extra salt, extra sodium nitrate and extra calcium chloride, but calcium chloride has been the most promising option so far. Extra calcium chloride makes it easier for pigs to excrete excess potassium.

"It doesn't change manure characteristics, but it reduces the stress on the pig," says de Lange. "We can accommodate the excess potassium excretion in manure management plans as long as we are aware of it," he adds.

Dealing with high fibre levels in co-products is the second key area of study.


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When removing the starch from grains for ethanol or food production, the remaining material will have increased fibre contents. "Results with in-vitro testing in our laboratory show that fibre-degrading enzymes are more effective in liquid feeds than conventional dry feeds, which is consistent with our previous studies with phytase," says de Lange.

"These observations need to

be confirmed in practical feeding studies before we can make practical recommendations."

The third area of study has focused on the difference in nutrient composition between co-products originating in different plants. Most of the ethanol-manufacturing plants in Ontario produce co-products that differ from each other. Kees de Lange and his team are studying these differences in order to find the most efficient use of the products.

This research has direct implications for both liquid and conventional dry feeding. The aim here is to find simple predictors of the nutritional value of individual batches of co-products so that nutritionists can assess the feeding value of these co-products properly. 



LEFT TO RIGHT:
Julia Zhu, Douglas Wey,
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