
Feeding Hogs to *Manage Dollars, Nutrients*

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Until now, writing greenhouse gas (GHG) articles has been fairly straightforward, allowing me to rely on manure management training to suggest ways for producers to reduce on-farm GHG production. However, animal nutrition tends to be a much more complicated field than manure storage covers or manure tanker calibrations. It was therefore necessary to tap the minds of Canadian extension and research professionals to put this article together.

Essentially, as producers, you attempt to produce the greatest amount of pig with the least amount of feed possible. Traditionally, diets have been formulated with corn or barley and soybean or canola meal to provide energy and protein, respectively. The problem is, in order to provide sufficient lysine, the first limiting amino acid, protein meal was often over-fed, resulting in excessive nitrogen excretion in manure. This represents a loss in productivity and profitability, as finish hogs are only about 30 per cent efficient in feed nitrogen usage.

The problem then becomes that the excreted nitrogen will end up in the manure storage and it will have to be dealt with during field application. Further, if your manure storage is not covered, manure nitrogen is prone to loss to the atmosphere as ammonia gas.

So, your pigs are 30 per cent efficient at using nitrogen in the barn, and now you are losing between 30-50 per cent more of the nitrogen you bought as feed protein to the atmosphere. Perhaps the nitrogen fertilizer bill could use some re-evaluation and a storage cover system should be considered.

The ultimate goal in reducing GHG emissions will be to minimize the flow of feed carbon, nitrogen and phosphorus to the manure storage. Here are some quick options that you have likely heard before. Perhaps they deserve another look or a mention to your feed manufacturer.

To minimize feed carbon loss to the manure stream, eliminate feed wastage. Check feeder settings regularly, don't open the gate too much, and let the animals work a bit for the feed. Also, consider feeder design, if a hog raises its head to chew, is the overflow being caught in the feeder basin or the slatted floor? Further to feeder design, look into wet/dry or liquid feeding systems if you are currently using dry feeders. Both liquid based systems have been shown to increase daily gains and reduce overall barn water usage. Consider pelleting your feed, if the price is right, additional feeding efficiency gains will likely result.

To minimize nitrogen loss from your production system, use synthetic amino acid balancing techniques to provide your hogs with exactly what they need to grow efficiently. Split-sex and phased

feeding will also reduce excess manure nitrogen output from the barn and minimize your feed:gain ratio.

Phosphorus excretion can be minimized by including the phytase enzyme in your ration, but will also provide a roughly 10 per cent increase in feed conversion efficiency. Phytase is *at least* cost neutral in most cases and a must for farms pushing the envelope with soil phosphorus concentrations.

Quite truthfully, we don't have all the answers on the balance between feeding strategies and GHG emissions. Basically:

- Keep feed in the pigs, not on the floor or in the pit
- Get feed protein levels down, and get the phytase enzyme working for you on your operation
- Protein management and phytase addition can also pay other dividends beside GHG reduction
- Reducing feed protein can lessen animal water requirements
- Using phytase will reduce land-base requirements for manure phosphorus application

Virtually any practice that makes you more efficient in your animal feeding strategy will reduce your GHG emissions as well. Feed is an expensive component of raising hogs. Make sure that least-cost formulation is least-cost in all aspects, economical and environmental

