



# PORK BRIEFS

## THE LATEST INFORMATION ON SWINE NUTRITION



### Water and Feed pH

By Ken Palen

The question about water and feed pH seems to surface about every 5 years. All of a sudden, the water pH is too high for weaned pigs or feed pH is too high to prevent bacterial growth and so on.

To answer this question on water, the first thing I ask is, do you drink the water yourself? Have you raised your own babies on the water? My wife raised three babies (I was never home) on my high pH water of 7.6 pH. I think they all turned out okay but I will leave it to the reader to determine that as they all work with me, so you are welcome to call them. Lake Huron water even had a 7.66 pH on last check. Now that water definitely nourishes a lot of babies in homes, hospitals, etc throughout southwestern Ontario. So why is everybody knocking on doors selling fancy blends of acid to lower the pH of the water we give to our baby piglets? Animal scientists tell me that pigs are very similar biologically to people, so why do piglets and not human babies need acid in water to lower pH? Without getting technical we will leave that to the chemists and PhDs, let's first talk about the feed.

Let's think about how we feed human babies. We give them colostrum, mother's milk or a milk replacer modelled off mother's milk, then introduce them to a few vegetables, and then some meat and potatoes and finally into all the bad stuff, like beer nuts and beer. Now usually the babies do not scour unless they are allergic to something or we give them too much of a good thing. I had one grandchild allergic to milk protein for the first 6 months of her life then she got over it. I have another allergic to lots of stuff, including peanuts, and she hasn't gotten over it yet. So there are always exceptions to the rule.

So if we feed the piglets similar to people, the scour challenge should be minimal unless they get a disease like E. Coli, that should then be properly treated. If we try to wean the pigs onto vegetables or meat and potatoes instead of milk and high quality proteins and/or processed grain then we potentially can make more nutritional scours (see enzyme chart below).

cont.>>

Inside this Issue:

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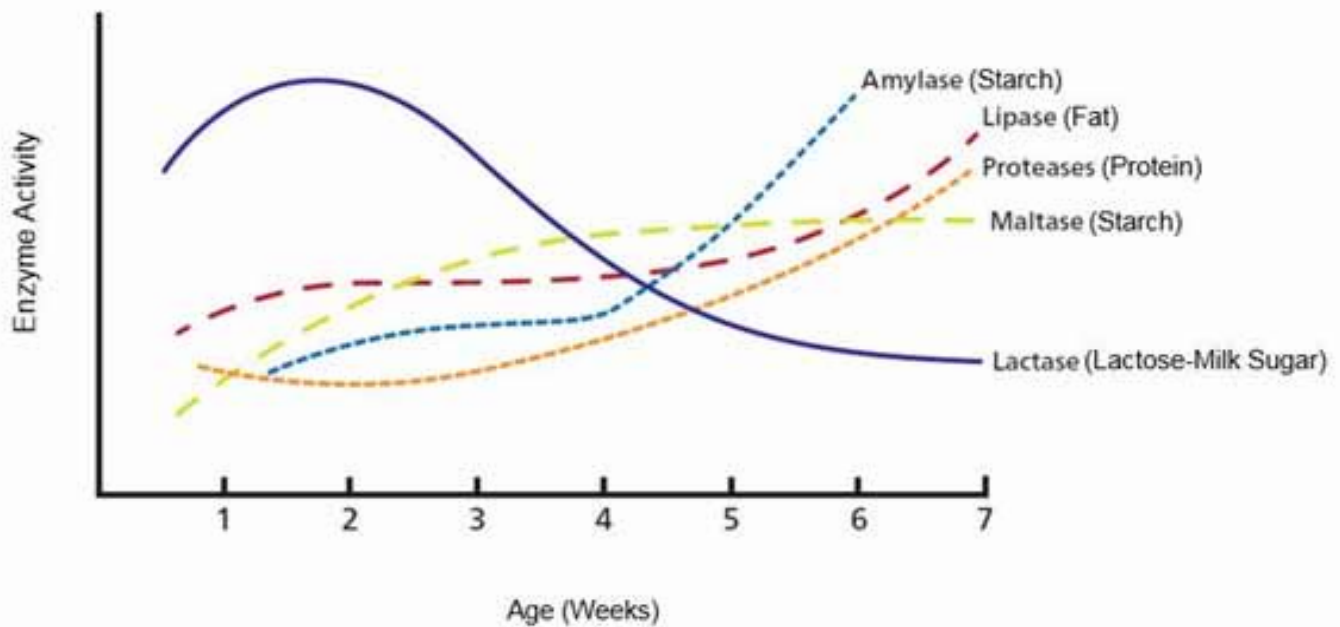
*Reducing odours helps maintain a positive environment for the livestock and the people working with the livestock.*

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### Digestive Enzyme Activity in Swine



Adapted from: [PlusVet Animal Health](#) (2015)

The enzyme chart shows the age in weeks when the digestive enzyme activity in swine typically changes, if fed accordingly. If the piglets are given potato starch as a bedding in the farrowing crate or nursery and eat it, or are weaned onto a simple nursery diet, amylase enzymes (to digest starch) will shoot up fast to respond. If you then feed the piglet milk at 3 weeks old, the lactase enzyme will be reduced due to the high starch and the piglet may scour from the milk and vice versa. Then we lower the water or feed pH because of the scour, and that reduce the intakes of the piglet and the scour is less because the piglet eats less. But the gain is a bit better than with the scour because the acid is a good energy source. The circle goes on and on. Why not just feed the piglet the way mother nature wanted, the same as human babies, by following the enzyme chart?

In over 30 nursery pig trials in my high pH water research barn, I only saw scours a couple of times on individual pigs and some for sure came with the pigs as coccidiosis. They dried up quickly after weaning.

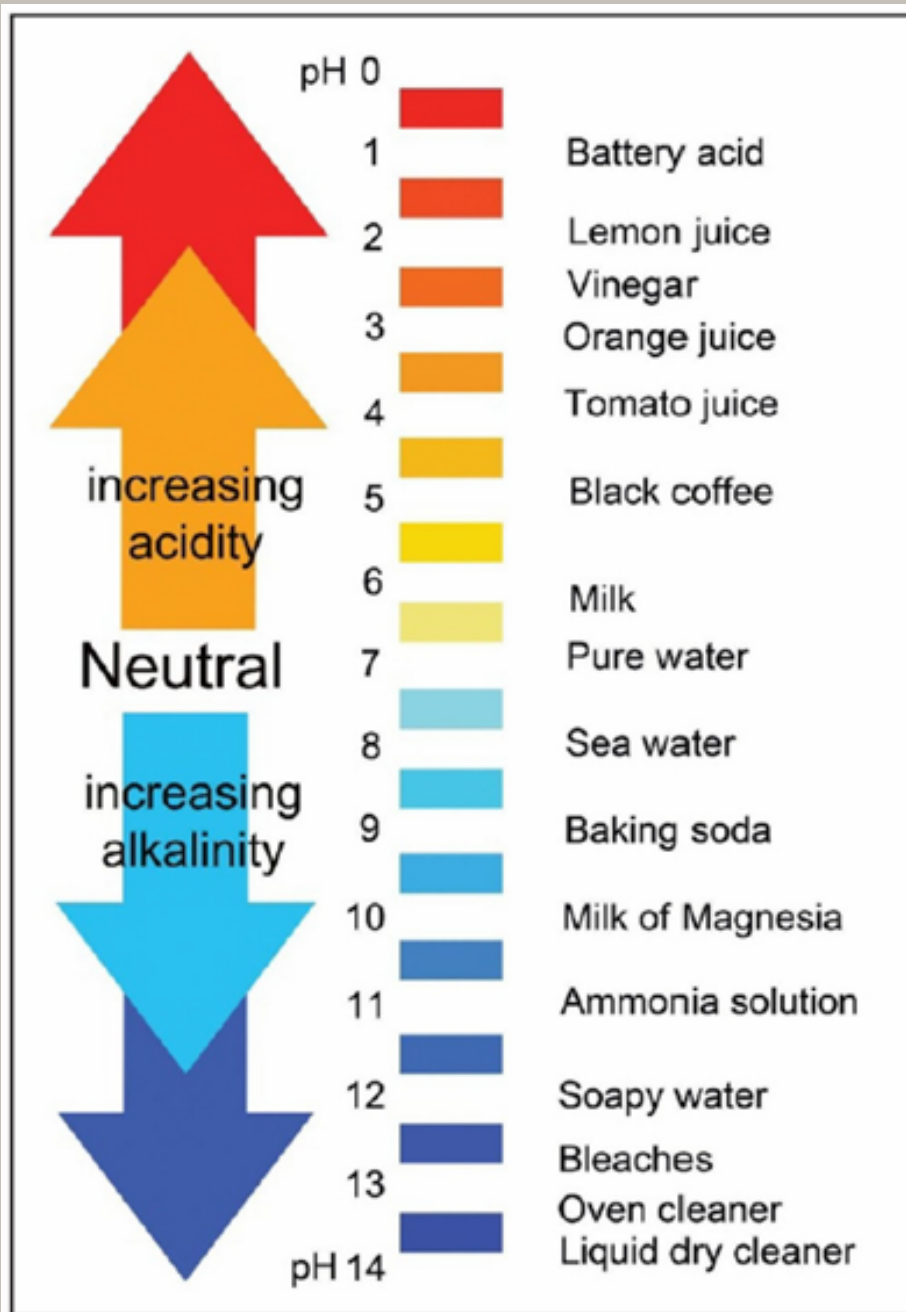
Some key observations over the years are as follows:

- Acid in water can disinfect water lines by cleaning them out of organic matter. Hydrogen peroxide can also do this. Chlorine does not clean organic material as well as acid or hydrogen peroxide. This can improve disease challenge if coming from the water line. If lines are cleaned periodically this could be effective and if water quality is poor the chlorination (like cities do) could be considered.

cont.>>

- Lowering the pH of water can reduce the water and feed intake. If piglets eat less, they scour less. Years ago, before the feed industry created highly digestible nursery feeds, we used to limit feed piglets up to five times per day to reduce scours. That was even in double deck nurseries that were very clean.
- If feed is contaminated and lowering the pH to discourage bacterial growth is desired, adding acid blends at 10 kg per tonne, or alternative levels with approved claims by the CFIA, can be used. This was tried over the years with high moisture shelled corn with pH of 4 – 4.5 but we could never get the intake and growth we get with dry diets today.

Below is a standard chart, which can easily be found online, that gives you an idea of pH of different ingredients, for general interest.



In summary, there is always a place for pH lowering strategies in your tool box. Sometimes keeping it simple by spending a little more on keeping nurseries clean, using better quality feeds as creep feed and at weaning, and paying good attention to temperature control and ventilation, can keep your piglets driving down the straight line to success instead of spinning in circles. Happy New Year!



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