

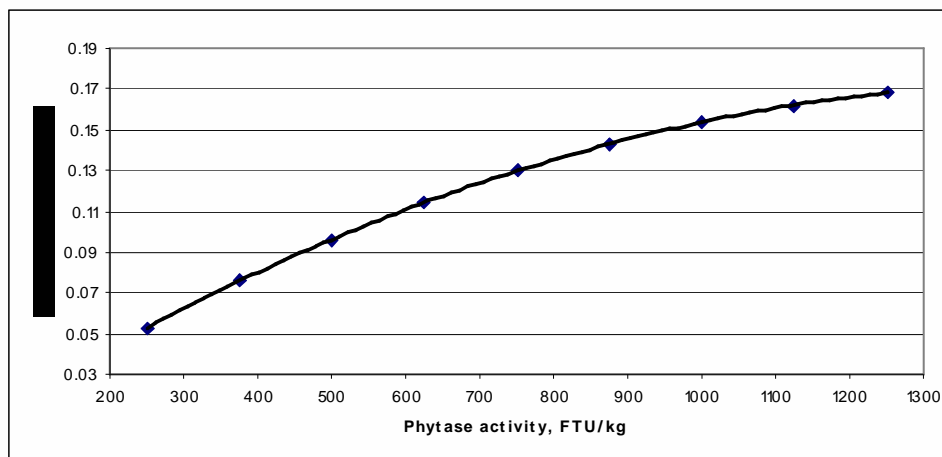


Phytase Use During High Phosphorus Prices

High prices and tight supplies of phosphorus have increased the discussion regarding the benefits of adding phytase to the diet. Part of that discussion has also revolved around how much phytase should be used in the diets. As phytase levels above 1000 FTU/kg are fed, does the savings show a linear increase with the phytase level? Does the use of Dried Distillers Grains with Solubles (DDGS) affect the level of phytase that is needed in the diet? Hubbard Feeds has been working to determine what level of phytase should be fed given current economics conditions and available ingredients.

As a reminder, phytase is an enzyme that liberates inorganic phosphate from the phytate molecule in grains and soybean meal, allowing it to be used by the animal. It also results in the release of bound calcium and other nutrients. Pigs and other monogastrics do not have this enzyme, so it must be supplied in the diet. It has been suggested that current phytases are not able to liberate all phosphate from the phytate molecule. It has been estimated that only two-thirds of bound phosphate can be liberated from the phytate molecule with the currently available phytases.

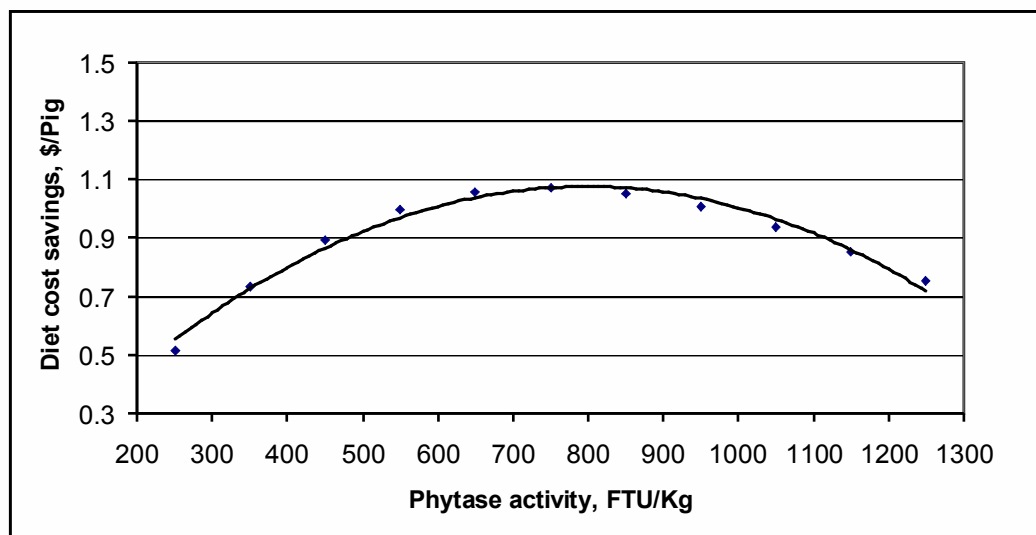
Figure 1. Available Phosphorus Released by Phytase in a Corn-Soy Diet



In the above graph, you can see that the relationship between phytase activity and available phosphorus release is not linear. Initially as you increase the phytase level, you get a sharp increase in released available phosphorus. However, when you feed higher levels of phytase, further increasing the level does not yield the same increase in release as you see at the lower activity levels.

The savings in \$/pig during the grow-finish period (50-280 lbs) as a result of using different levels of phytase are shown in the following graph for a corn-soy-DDGS diet. For this exercise, phosphate was priced at \$900/ton and DDGS were included at 250 lb/ton.

Figure 2. Diet Cost Savings with DDGS and Phytase



When DDGS are utilized, the savings in \$/pig is maximized with an average phytase level between 750-850 FTU/kg. This is due to the higher level of available phosphorus in DDGS and the lower levels of phosphorus being supplied by the Hubbard premix. The shape of the curve would be similar for a corn-soy diet without DDGS, but the optimal level of phytase may be higher, possibly 1000 FTU/kg.

When trying to determine which level of phytase provides the most savings, Hubbard Feeds takes into account two factors. First, there is a point of diminishing returns for the increased release of available phosphorus by phytase. Second, the ingredients being fed in the diet make a difference on the amount of phytase needed. DDGS diets, which are higher in available phosphorus, do not require as high rates of phytase as simple corn-soy diets.

With this information Hubbard Feeds has targeted an average activity of 800 FTU/kg for our grow-finish programs containing DDGS. This allows us to start with an activity of 1000 FTU/kg in the early grower period and end at 750 FTU/kg in the late finisher thereby saving approximately \$1.08/pig under current average economic conditions.

For more information contact your local Hubbard Feeds representative.



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