

## PHYTASE UPDATE

Phytase was first introduced to the swine industry more than 15 years ago as a means to improve dietary phytate phosphorus (P) utilization, decreasing the need for inorganic P sources in diets. Phytase has been aggressively used by Akey since its inception and is now included in late nursery, grow-finish (GF), gilt developer and sow diets. In the past year, rock phosphate prices have more than tripled and are expected to continue to increase. Due to this development, Akey has aggressively researched the use of higher phytase levels in swine diets. The phytate P released by phytase is not constant across phytase inclusion levels. Thus, Akey has conducted research to accurately determine the P release value of 1000 FTU/kg of phytase from different sources. Recently, Akey recommended increasing phytase levels from 600 to 1000 FTU/kg of diet. Research is on-going to evaluate even higher levels of phytase so we can completely remove rock phosphate from corn-soybean meal (C-SBM) diets.

**Figure 1. Cost savings (\$/pig) due to phytase level in GF diets.**

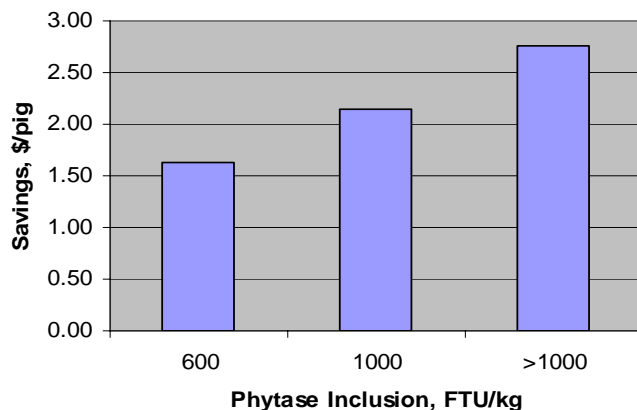


Figure 1 shows the average feed cost savings throughout a 5 phase C-SBM GF feeding program with 600, 1000 or >1000 FTU/kg phytase compared to diets without phytase (monocalcium phosphate (MCP), \$1100/ton; Corn, \$5.75/bu; Fat, \$720/ton). For the >1000 FTU/kg diets, phytase was included up to 2000 FTU/kg in any phase. However, phytase was only included in each phase to the amount required to completely remove rock phosphate from the program.

Early grower pigs have a higher available P requirement and hence a greater amount of rock phosphate in the diet compared to finisher pigs. Therefore, more phytase is needed to remove all rock phosphate from grower diets compared to finisher diets. Increasing phytase inclusion from 600 to 1000 FTU/kg diet results in savings of >\$0.50/pig. Completely removing rock phosphates from the entire program by allowing for variable phytase inclusion levels (>1000 FTU/kg) saves an additional \$0.60/pig compared to including phytase at 1000 FTU/kg.

Ingredient prices for inorganic phosphates, corn and fat have the largest impact on cost savings due to phytase level. Phytase allows for removal of inorganic P sources from the diet. Corn replaces the P source which means less fat must be added to maintain the same dietary energy density, further decreasing diet costs.

**Figure 2. Feed cost savings (\$/ton) due to phytase level at various MCP prices.**

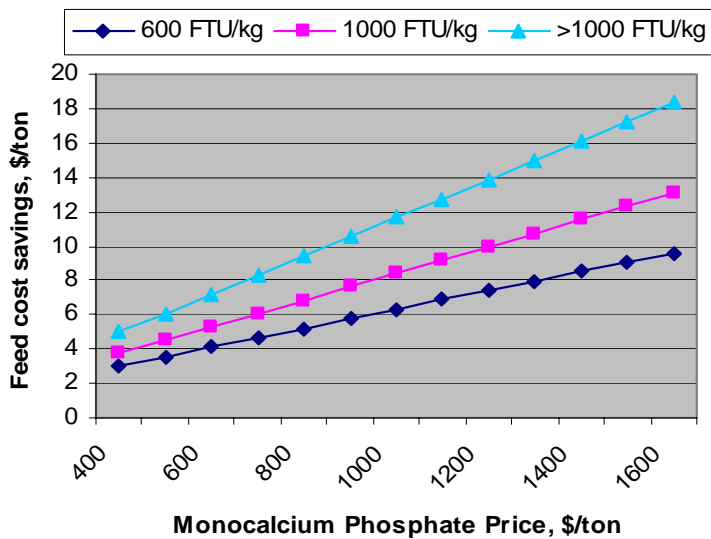


Figure 2 shows feed cost savings (\$/ton) at three phytase levels using different MCP prices (corn, \$5.75/bu; fat, \$720/ton). Including phytase at >1000 FTU/kg allows for complete removal of MCP, and this scenario becomes more attractive as MCP prices increase.

The rising cost of corn has led to greater usage of by-products in swine diets. DDGS and wheat midds, for example, are higher in available P than corn and thus require less inorganic P addition than in C-SBM diets. However, diets with by-products must still be supplemented with inorganic P to meet the P needs of (especially) early grower pigs, and so will benefit from phytase addition.

**Figure 3. Cost savings (\$/pig) due to phytase level with 15% DDGS.**

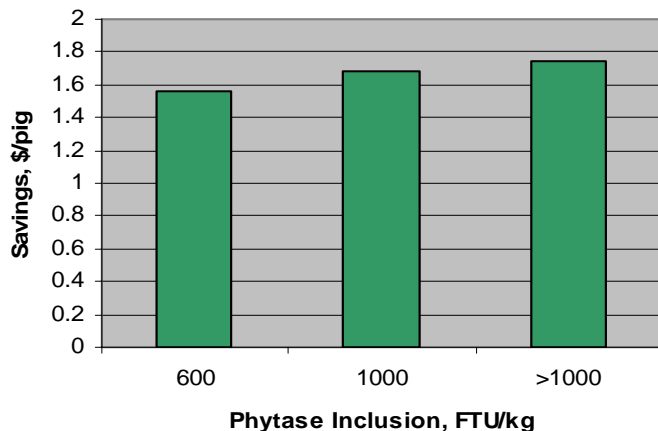


Figure 3 demonstrates the overall cost savings in a 5 phase C-SBM GF feeding program with 15% DDGS (DDGS, \$181/ton) and including phytase at 600, 1000 or >1000 FTU/kg compared to no phytase. Due to the increase in available P content in DDGS vs. corn, the majority of savings occurs at a phytase inclusion of 600 FTU/kg with a further savings of only \$0.06/pig and \$0.11/pig with either 1000 or >1000 FTU/kg phytase, respectively.

Akey has used phytase in sow diets since 1999, but with higher phosphate prices, we have increased our recommended level to 1000 FTU/kg, depending on cost and availability of other ingredients. If MCP prices reach \$1100/ton as predicated in July 2008, including phytase at 1000 FTU/kg will save more than \$10/ton in lactation and almost \$6/ton in the gilt developer diet. In addition, since many sow products contain choline chloride, and choline chloride accelerates phytase degradation, we are using a protected form of phytase in these sow products.

In summary, Akey is actively monitoring ingredient costs and developing new strategies to mitigate feed cost increases based on both research and field data. We will continue to evaluate new and current phytase products to determine accurate P release values at various phytase inclusion levels. As more information becomes available, we will continue to update both our products and programs to keep our customers at the forefront of this technology.