NUTRIQUEST®
Delivering Real Solutions™

NEWS
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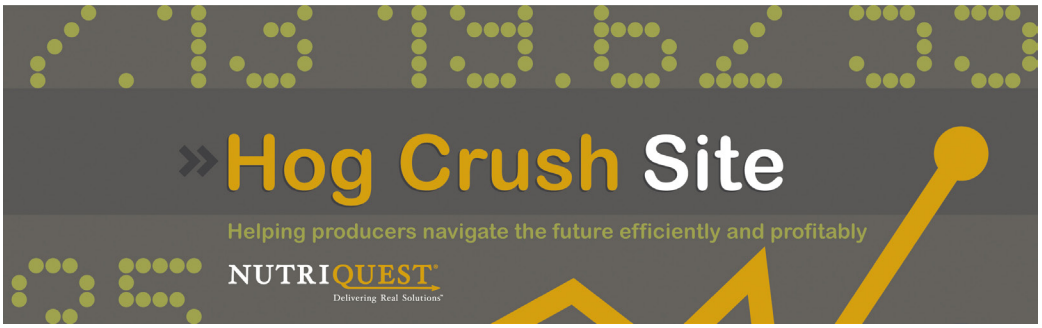
SWINE

INTRODUCING THE NUTRIQUEST AUTOMATED HOG CRUSH *by Steve Weiss*



I AM PLEASED TO ANNOUNCE THE NUTRIQUEST AUTOMATED HOG CRUSH AT HTTP://CRUSH.NUTRIQUEST.BIZ/?ORIGIN=NQ .

The idea of a Hog Crush is not a new one. There are several risk management consultants that have deployed this approach in the swine sector and other areas of agriculture for some time. The moniker "Crush" is derived from a profitability calculation which has been used for decades in soybean processing, where soybeans are crushed into soybean meal and soybean oil. Soybean processors calculate a daily "crush" which – based on the current market price for soybeans, soybean meal and soybean oil, and a plant's operating costs – would calculate the estimated profitability for the plant. Using futures prices for the major outputs and inputs provide an ability to project estimated profitability over several future months, which represents a useful planning and risk management tool.

The NUTRIQUEST Hog Crush incorporates lean hogs, corn and soybean meal futures, coupled with the various cost assumptions for a producer (quantities of corn and corn equivalents and soybean meal, other feed costs, the various elements of fixed costs, hog market weight and basis) to compute a 12-month-forward estimated per-head profit, by month.

HOG CRUSH CONTINUED ON PAGE 2

VITAMIND D - THE LATEST "NEWSTRIENT" *by Chad Hagen, Ph. D.*

Vitamin D is the latest nutrient in the news. The interest in vitamin D nutrition has never been higher. Why the sudden interest in a nutrient that for years has received little attention? There are three things that come to mind when examining the sudden interest in vitamin D:

1. In the summer of 2010 a large feed manufacturer released products to the market that did not contain sufficient levels of vitamin D. This oversight resulted in thousands of pigs suffering from vitamin D deficiency. Since summer 2010 there has been at least one other incident in which vitamin D was inadvertently left out of swine diets.

2. A recent increase in the incidence of metabolic bone disease. Figure 1 (on page 2) shows the number of reported cases of metabolic bone disease diagnosed at the Iowa State University Veterinary Diagnostic Laboratory.

3. A reported link between vitamin D and Peri-Weaning Failure to Thrive Syndrome (PFTS). Some veterinarians have identified low serum vitamin D levels in herds exhibiting signs of PFTS and have also demonstrated that dosing young pigs in herds with a high rate of PFTS can reduce the severity of the syndrome.

VITAMIN D SYNTHESIS AND FUNCTION

Vitamin D is a fat soluble secosteroid. There are two main forms of vitamin D, the animal form cholecalciferol (D3) and the plant form ergocalciferol (D2). Bioavailability is better from the animal form and most plant sources are low in vitamin D. Commercially available cholecalciferol is manufactured from lanolin extracted from sheep's wool. Vitamin D is also known as the "sunshine vitamin" as cholecalciferol is produced from 7-dehydrocholesterol in the skin when the skin is subjected to ultraviolet light.

VITAMIN D CONTINUED ON PAGE 2

UPCOMING EVENTS IN 2012

STOP AND SEE THE NUTRIQUEST TEAM AT ONE OF THESE UPCOMING EVENTS IN 2012!

PURCHASING AND INGREDIENT SUPPLIERS CONFERENCE

(March 12-16, Orlando, FL)

MIDWEST POULTRY FEDERATION CONVENTION

(March 14-15, Saint Paul, MN)

ADSA/ASAS MIDWEST ANNUAL MEETING

(March 19-21, Des Moines, IA)

HOW IS OIL EXTRACTION IMPACTING DDGS VALUE IN SWINE?

NUTRIQUEST SPONSORED SEMINAR

(March 21, 12:00 p.m. – 4:00 p.m. Des Moines Marriott Downtown, Des Moines, IA)

MULTI-STATE POULTRY FEEDING AND NUTRITION CONFERENCE AND DSM NUTRITION PRODUCTS, INC.'S TECHNICAL SYMPOSIUM

(May 22-24, 2012 – Indianapolis Marriott East, Indianapolis, IN)

(Contact: Tom Robertson, Purdue University, (765) 494-7220 or (800) 359-2968 ext. 92R)

WORLD PORK EXPO

(June 6-8, Des Moines, IA)

JOINT ANIMAL SCIENCE MEETINGS

(July 15-19, Phoenix, AZ)

ALLEN D. LEMAN SWINE CONFERENCE

(September 15-18, St. Paul, MN)

WORLD DAIRY EXPO

(October 2-6, Madison, WI)

CORNELL NUTRITION CONFERENCE

(October 16-18, Ithaca, NY)

HOG CRUSH CONTINUED FROM PAGE 1

WHY IS IT IMPORTANT TO INCORPORATE A HOG CRUSH INTO THE MANAGEMENT OF A SWINE OPERATION? THERE ARE SEVERAL REASONS:

1. PLANNING – Understanding estimated 12-month-forward profitability allows a producer to better make operating decisions, understanding availability of cash and working capital moving forward and how that impacts cost control and spending decisions. Reviewing differences in profitability by month might cause a producer to change its nutrition and/or housing strategy to pull forward or push back marketings in order to improve per-head profit.

2. MARKET ASSESSMENT – Coupling our knowledge of recent-past and current profits with these forecasted profits helps better predict what market forces may be at play within the industry. For example, if profits have been solid and continue to be attractive, it is likely that we will see an expansion of the breeding herd, which will negatively impact hog prices in future periods. Conversely, if the industry has been losing money and is facing red ink (or modest profits on average, which will mean red ink for some) in the future, liquidation might ensue, which will positively impact hog prices down the road. With this knowledge, a producer can make decisions with regard to his own operation in terms of investment, status quo or retraction.

3. RISK MANAGEMENT – Most importantly, reviewing the Hog Crush regularly can be the best road map for risk management. To me, understanding and quantifying all elements of market price risk (hogs, corn and soybean meal) and their collective impact on profits is the most appropriate way to manage market price risk. Trying to "out-guess" the individual markets for lean hogs, corn or soybean meal – with the myriad of uncontrollable variables that exist which impact prices in our global markets, all of which are exacerbated in this information age – is akin to putting your money on number 7 of a roulette wheel. So using the Hog Crush tool for risk management is its highest and best use - to determine when to pull the trigger on hedging activities (whether via futures positions, options or contract sales or purchases) to lock in an acceptable margin (simultaneously covering lean hogs, corn and soybean meal).

There are some risk management consultants who take the crush a step further and quantify the percentile each period's projected profit represents based on a multiple year history. This is a very useful context, which also puts quickly into perspective that a $10 per head profit in December, for example, is likely more attractive than a $25 per head profit in June.

4. BENCHMARKING – The NUTRIQUEST Hog Crush consists of two components. First, our standard NUTRQIUEST Hog Crush which I would characterize as basic assumptions for a low-cost north Iowa, southern Minnesota producer. Secondly, a user can input his/her own Hog Crush assumptions to arrive at a customized crush intended to estimate a producer's estimated profitability. A producer can compare his/her own estimated profitability to the standard NUTRIQUEST Hog Crush and its components. If we are successful in several producers using this tool, we may later provide a further benchmarking opportunity in comparing each producer's estimated Hog Crush with others using the tool (on an anonymous basis).

We invite you to access the NUTRIQUEST Hog Crush by navigating to the URL http://crush.nutriquest.biz/?origin=nq and requesting login information. Detailed instructions are provided to help you better use the tool. We offer this tool at no cost as a service to the industry, and hope that it proves to be useful to you.

VITAMIN D CONTINUED FROM PAGE 1

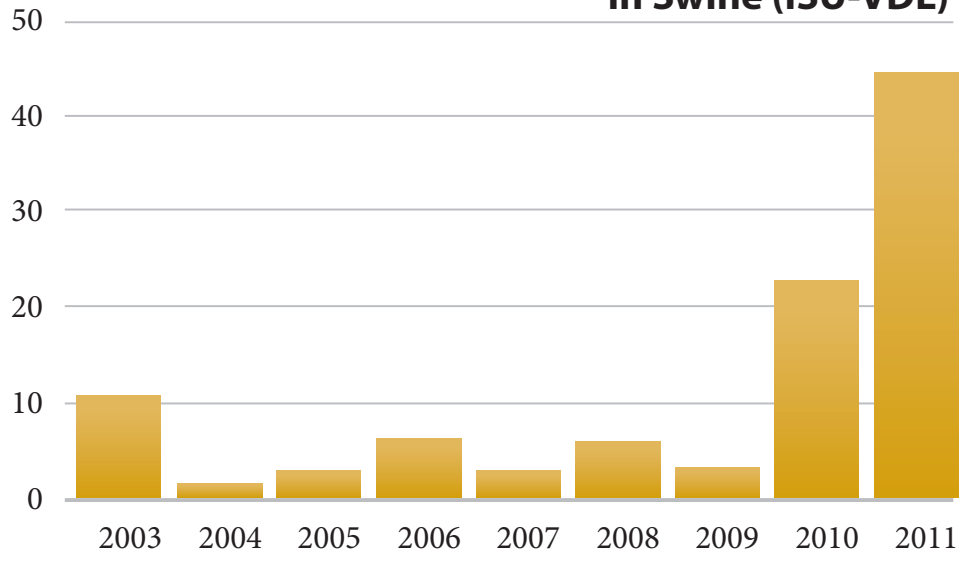
Cholecalciferol travels in the blood from the intestines and the skin to the liver where it is hydroxylated to 25-hydroxy D3, the main circulating form of vitamin D. In the kidney 25-hydroxy D3 is hydroxylated again to 1,25-dihydroxy D3, which is the biologically active form of vitamin D. Levels of 1,25-dihydroxy D3 are precisely controlled by parathyroid hormone (PTH) which regulates 1α-hydroxylase level in the kidney.

The main functions of vitamin D are blood calcium homeostasis, control of intestinal absorption of calcium, phosphorus and magnesium, bone formation, skin formation and immune function.

Vitamin D is critical for calcium homeostasis, which is subsequently critical for bone mineralization. Under conditions of dietary Ca restriction, a low serum Ca concentration induces release of PTH from the parathyroid gland. Increased PTH acts on the kidneys to stimulate kidney 25-hydroxy D3 -1α hydroxylase activity (1α-hydroxylase) which increases synthesis of the active form of vitamin D (1,25-dihydroxy D3). Elevated PTH and 1,25-dihydroxy D3 target bone to induce a net re-absorption of Ca and P from bone into circulation. Elevated 1,25-dihydroxy D3 also targets the small intestine to stimulate active absorption of Ca and P via up-regulation of proteins involved in Ca transport. The kidneys are ultimately required to restore serum Ca concentrations and maintain a Ca to P ratio. The elevated 1,25-dihydroxy D3 stimulates Ca re-absorption. The kidney response results in a decreased excretion of

VITAMIN D CONTINUED ON PAGE 3

Figure 1. **Number of Cases of Bone Disease in Swine (ISU-VDL)**



VITAMIN D CONTINUED FROM PAGE 2

Ca and an increased urinary excretion of P. Elevated 1,25-dihydroxy D3 also serves as a feed-back regulator to decrease 1α-hydroxylase activity. The net response to a low level of serum Ca is a restoration of serum Ca with no effect on serum P.

Conversely, when serum calcium is high, negative feedback from 1,25-dihydroxy D3 causes reduced PTH secretion and a resulting decrease in kidney synthesis of 1,25-dihydroxy D3. The thyroid gland then increases secretion of calcitonin, which inhibits bone re-absorption and increases excretion of calcium.

Vitamin D is excreted primarily as calcitroic acid through the bile system. Since the bile is excreted into the small intestine, excreted vitamin D can be reabsorbed and recycled.

In sows, vitamin D level increases in late gestation. It is believed that this increase functions to provide increased vitamin D to the developing fetuses through placental blood flow as well as providing sufficient vitamin D for colostrum production. After farrowing serum vitamin D levels drop back to normal levels.

Piglets are born with very low serum vitamin D. Levels at birth are typically only 20% those of a mature animal. Low serum vitamin D at birth, along with low levels in sows milk create a situation in which pigs can very easily become deficient if feed intake is low post-weaning, or if intestinal absorption is compromised due to villus damage associated with diarrhea or poor quality nutrition.

METABOLIC BONE DISEASE

The primary symptom of vitamin D deficiency is metabolic bone disease. Metabolic bone disease is a syndrome related to disturbances in appropriate bone formation and remodeling. There are three primary ways in which metabolic bones disease is manifested:

1. Rickets, which is a result of defective bone mineralization in young, growing pigs. Rickets can only occur prior to closing of the growth plates in the bone of young animals and often appears as crooked legs and/or beaded ribs (rachitic rosary).

2. Osteomalacia, which is a result of defective bone mineralization in later growing or adult pigs. It is similar to rickets but only occurs after the growth plates have closed. Rubbery bones at necropsy and broken legs in finishing pigs are often signs of osteomalacia.

3. Osteoporosis, which is loss of bone mineral and bone mass in adult animals. In swine, osteoporosis is typically only observed in sows that have lactated heavily with poor feed intake or have received diets with inadequate levels of calcium and phosphorus.

Vitamin D is not the only critical nutrient related to metabolic bone disease. Proper calcium and phosphorus nutrition are also critical in normal bone formation and remodeling. In fact, in growing/finishing pigs, poor calcium and phosphorus nutrition are more likely culprits in metabolic bone disease than is vitamin D.

Most swine finishing diets now contain high levels of DDGS. In these diets with high levels of DDGS, most of the phosphorus in the diet is coming from DDGS and it is common for these diets to have no supplemental phosphorus. This works fine, as long as the phosphorus and available phosphorus levels of the DDGS are known. The NUTRIQUEST ILLUMINATE database, containing nutrient profiles of over 145 sources of DDGS, shows that total phosphorus ranges from 0.43 – 0.93%, with an average of 0.76%, and available phosphorus ranges from 0.32 – 0.70% with an average of 0.58%. This is a huge range in phosphorus levels, and if the nutritionist is using book values for available phosphorus and using a source of DDGS that is low in available phosphorus, it is likely that phosphorus deficiency can occur, potentially resulting in metabolic bone disease.

Improper use of phytase is another potential cause of metabolic bone disease in finishing pigs. Phytase is confusing to use as each phytase manufacturer has different terminology, release levels and product concentrations. Also, nutritionists commonly formulate by giving phytase a phosphorus value in their formulation system. This is dangerous as phytase does not contribute a significant amount of phosphorus to the diet, it simply releases phytic acid bound phosphorus from feedstuffs. There is relatively little phytic acid bound phosphorus in many sources of DDGS, so in high DDGS diets the phosphorus value of phytase is commonly overestimated. Phytase can also degrade with storage, particularly if it is included in a premix.

VITAMIN D DISCUSSION CONTINUES IN NEXT ISSUE

In the next issue of NUTRIQUEST NEWS we will continue our discussion on vitamin D including the relationship between vitamin D and Peri-Weaning Failure to Thrive Syndrome as well as a potential link between vitamin D and kyphosis (humpback).

HOW IS OIL EXTRACTION IMPACTING DDGS VALUE IN SWINE?

WEDNESDAY, MARCH 21, 2012

IMMEDIATELY FOLLOWING THE 2012 ADSA-ASAS MIDWEST ANNUAL MEETING

Des Moines Marriott Downtown
700 Grand Avenue, Des Moines, IA 50309

The 2012 NUTRIQUEST sponsored meeting 'How is Oil Extraction Impacting DDGS Value in Swine?' will focus on many issues currently impacting the swine industry, including the current buzz on oil extraction in the DDGS market. The meeting will feature presentations by top professionals, Dr. Gerald Shurson, Professor of Animal Science, University of Minnesota and Dr. Brian Kerr, Lead Scientist, USDA-ARS-NLAE. A round table discussion led by individuals from across the swine and ethanol industries will conclude the meeting.

Individuals from across industries are invited to join the meeting in March for what promises to be a thought provoking event.

MEETING AGENDA

12:00 p.m.	Lunch service begins
12:20-1:00 p.m.	Enjoy lunch while learning the results of NUTRIQUEST'S ILLUMINATE Services survey reporting locations and number of plants extracting oil from DDGS - Dr. Rob Musser
1:00-2:30 p.m.	Review of swine data on oil extracted DDGS - Dr. Brian Kerr & Dr. Gerald Shurson
2:30-2:50 p.m.	Review of antibiotic residue work - Dr. Gerald Shurson
2:50-3:10 p.m.	Review of toxin DDGS survey - Dr. Ken Purser
3:10-4:30 p.m.	Round table discussion and summary of findings - industry panel

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