

THIRD QUARTER 2000

CALCIUM

Feed-grade calcium products are available in a wide variety of particle sizes, from liquid suspendable products to large particle products for laying hen diets.

DICALCIUM PHOSPHATE

Both 18.5% and 21% phosphorus products are available.

SODIUM BENTONITE

Bentonite products are available in a wide variety of particle sizes suitable for any purpose.

POTASSIUM

Iowa Limestone Company has both potassium chloride (KCl) and potassium magnesium sulfate (K/Mg/S) available.

**All products are available
in both bag and bulk.**



SHELL QUALITY: LIMESTONE VS. OYSTERSHELL

The most obvious goal of any commercial egg producer is to optimize shell quality in the most economical fashion available. This certainly becomes a challenge as hens progress through their productive lives, as production tends to decline with age.

Most will agree that the most important factor influencing shell quality is calcium, although a myriad of nutritional factors are involved. Consequently, the source and particle size of the calcium source used in layer diets is closely scrutinized. The producer has to decide whether to use a fine granular limestone, hen or pullet size particles, a blend of the two, oystershell (OS) alone or oystershell as a complement to the other sources of calcium.

It has long been common practice to supplement a layer's diet with some concentrated source of calcium (mainly limestone and OS) to maintain shell quality. In the early 1900s researchers were already comparing the merits of limestone versus OS. By the middle of the last century, at least 10 researchers had compared limestone to OS, with three reporting that OS was superior, while the others showed no difference.

In the early 1970s to the late '80s, at least 20 comparison articles were published. Several results indicated that OS was superior to limestone, whereas others showed no differences. The studies that showed OS superiority compared large particle OS to fine granular limestone, which is not a true comparison. In the studies that compared large particle size limestone to similar size OS, most reported no difference in shell quality.

Even today there remains some uncertainty about the merits of this comparison. However, in our opinion, there is ample evidence that good quality limestone, having the correct particle size and

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PHOSPHORUS FUNDAMENTAL - Part 3

Supplementation

As mentioned earlier in this series, adequate amounts of Phosphorus (P) are required to support normal skeletal and cellular body functions. The need to supplement animal diets with some source of P is essential to maximize performance and minimize health issues.

Breeding stock require slightly higher levels of dietary P than animals with other intended uses, since levels of P adequate for maximum gain in body weight are borderline in providing for maximum bone development. A borderline deficiency may go unnoticed in growing and finishing animals, but animals with a daily performance measure will see the performance decline sooner.

Over supplementation of P may become an environmental and even a regulatory issue. While supplemental P is normally highly bio-available, the P in common cereal grains is largely in the phytate form, which is poorly utilized by monogastrics

and then eliminated. The phytate form is more available to ruminant animals due to the secretion of microbial phytase by the rumen microflora.

Sources

The most common source of P are dicalcium and monocalcium phosphate. Both are readily available biologically and commercially. Other sources are defluorinated phosphate and bone meal. Dicalcium and monocalcium phosphate are used in most animal feed due to ease of handling as well as offering a consistent supply of highly available P.

The two products come in two concentrations: in 18.5% and 21.0% P. Both products are in granular form and flow easily from bins or other storage facilities. Ease, consistency and obtainability set these P sources apart from the rest.

Dicalcium Phosphate Production

Dicalcium phosphate is made from two raw materials: feed

grade limestone and phosphoric acid. The limestone is crushed into a very fine powder, and the phosphoric acid is diluted to the strength that is required. Then the two products are metered into a mixing cone where they react upon contact to form either dicalcium or monocalcium phosphate. The reaction depends upon the ratio of limestone to phosphoric acid.

The reactants fall immediately onto a bed of recycled product in a blunger where they are mixed and granulated. The product is discharged from the blunger to a rotary drum dryer to remove excess moisture. It is then screened to remove the oversized and fine particles, and the screened particles become the recycled product mentioned earlier.

The dicalcium/monocalcium phosphate is then conveyed to holding bins where it is screened again. Just before load-out to the customer, the product goes through a set of finish screens to insure that a quality product is delivered.

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Removal of Vitamins and Minerals in Finishing Diets

Supplier

The value of a quality supplier that services customer needs like its own is invaluable in today's impersonal, computer driven marketplace. A supplier like Iowa Limestone Company (ILC) makes everything easier for the customer.

ILC offers numerous service advantages:

1) Our own fleet of trucks to help improve efficiency in delivering your product

2) Friendly helpful customer service representatives who, via a comprehensive record keeping system, can help alleviate any ordering miscues;

3) Knowledgeable staff with many years of industry experience

4) Ph. D. staff nutritionist to help you with any technical questions that may arise.

With all these services you can clearly see why Iowa Limestone Company leads the industry.

Research, primarily in the broiler area., would indicate that the complete removal of vitamins and trace minerals (VTM) from diets during the late finishing period is a practical method of decreasing feed costs. However, other data exists stating the effect of removing VTM's from finishing diets yields inconsistent results. These range from little to no effect on growth to negatively impacting animal performance, depending on the time frame involved.

Research and anecdotal reports indicate that it is also possible to remove the VTM's from the diets of finishing in pigs. This management practice becomes difficult to deal with due to the fashion in which pigs are marketed. Broilers go to

market all at one time, whereas, finishing pigs are likely to be marketed over a one-month period. Thus making the determination of the last week prior market, problematic.

The reduction in VTM can lead to a reduction in all mineral levels, thus compromising animal performance and welfare. Field reports have indicated an increase in the incidence of fractured bones in pigs, fed diets very low in Ca and P or diets without added Ca or P, during processing. These fractures lead to an increase in trim loss that will offset the potential savings. Pork quality may also be affected by this practice, but more research needs to be conducted to sufficiently answer this query.

Tompt Joins Management Team

Jim Tompt has accepted the responsibilities of general sales and marketing manager at Iowa Limestone Company. He replaces Gary Morris who will retire in January to

pursue a career as an educator.

Many of you know that Jim was formerly the northern region sales manager for ILC, based in

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Shell Quality *continued*

density, equals oystershell in improving shell quality. (Roland and Bryant)

Cost Comparison

Cost should be one of the determining factors in the choice to use OS or limestone in layer diets. Consider these numbers:

- 1) 1.25 cents/lb. of limestone
- 2) 6.25 cents/lb. of OS
- 3) 30 cents/dozen eggs

Now consider the cost of using OS: for each 10-lb. replacement of limestone with OS, the cost/ton of a complete layer diet will increase by 50 cents over an all limestone formulation. This is 1.67 times the cost of a dozen eggs.

Conclusions and Recommendations

Studies accurately comparing OS and limestone clearly show no advantage to replacing all or part of the limestone layer diets with OS. Consequently, the calcium source used in layer diets should be evaluated on quality and price basis, as well as the service given by the supplier.

University research indicates

that the layer industry should select a calcium source based on supplying the optimum solubility level of 11 - 14% to the layer. Researchers suggest that the optimum range of solubility is found by blending precise proportions of limestone of differing particle size.

Iowa Limestone Company supplies the layer industry with products specifically sized to meet solubility guidelines. These feed-grade calcium products are guaranteed to have a minimum elemental calcium content of 38.00% and must meet strenuous quality control guidelines, including rigid particle size specifications. Our comprehensive quality control process ensures that our valued customers receive a quality, consistent calcium product.

For additional information contact

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Tompt *continued*

Willmar, MN. He has been with the company since 1987. We are certain that the legacy of honesty and integrity forged by Gary Morris during his 22 year career with ILC will be upheld with the addition of Jim Tompt into our home office and management team.

Gary Morris will be pursuing a longtime dream of becoming a high school science teacher. With his passion for educating as well as his patience, he will no doubt become one of the finest science teachers in the Midwest. We wish him well.

Bruce Eastlund has been with the company since June working the northern region with Tompt, and he is now taking over as regional sales manager. We have great confidence that Bruce will do an outstanding job with calcium carbonate and specialty mineral customers in Minnesota, North Dakota, northern South Dakota, northern Wisconsin and Canada.

