Separate feeding of calcium for poultry

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This series of studies investigated the presence and extent of an 'appetite' for an extra-dietary source of Ca in laying hens and established the optimum Ca and P concentrations and ratios of dietary Ca for optimum egg production and nutrient digestibility.

The formation of hen bones and eggshells rely heavily on the ratio of calcium (Ca) and phosphorus (P), however, it is unclear what the optimum Ca:P ratio should be to maximise hen health, egg quality and production.

Ca is present in many ingredients in feed, although sometimes a separate source of Ca, such as limestone, is needed to supplement hen diets because the hen might not be able to adequately utilise the Ca in the feed ingredients.

This project discovered that maximising dietary Ca (4.0-4.5%) results in greater egg and eggshell mass. Furthermore, higher shell thickness and Haugh units were stimulated if dietary Ca was matched by maximum dietary P (0.6-0.7%) at a ratio of 6:1. Dietary Ca below 3% resulted in negative impacts on these factors and supplementation of the diet with a separate source of Ca did not prevent egg quality deterioration at low Ca levels.

Despite this, providing limestone to supplement Ca did not improve nutrient digestibility and, subsequently, did not influence feed efficiency. Providing a separate source of Ca to hens on a low (1%) Ca diet was not sufficient to maintain egg production. Hens on a low Ca diet consumed greater amounts of limestone, however, this was not uniform among the hens, which suggests that to some extent it may be a learned behaviour. Hens that were offered a diet with 3% or 4% Ca, plus limestone, had comparable productivity and egg quality.