

Master Thesis

What is the secret for successful protein reduction in practical broiler nutrition?

Because of the immense impact on environmental protection, animal nutrition science is requested to work on more sustainable animal production strategies. In Germany, a revised fertilizer ordinance is in force since 2017 aiming for massive reduction of nitrogen emission in animal husbandry. In this context, reduction of protein in feed while ensuring supply with essential amino acids would be an effective strategy. This is evidenced by many published studies.

However, a typical trend, which can be extracted from studies with broilers, describes a performance decline with dietary protein reduction. On the other hand, there are also studies published, in which performance of broilers could be maintained. How did those studies differ from the others?

In this project, a mathematical model to identify required settings and parameters allowing to maintain performance and increase of nitrogen utilization with dietary protein reduction shall be developed.

The data from the studies that have been collected will be analysed by methods of network-meta analysis. Network meta-analysis allows an efficient summary of information across a set of studies. This is essentially a two-way analysis of variance in which the interaction of study and treatment is modelled as random to account for heterogeneity. To implement these analyses you will be using mixed models including linear and nonlinear regression models. Using regression approaches, you will select covariates that modulate the response to reduced protein levels, thereby identifying factors that can be employed to improve the resilience to reduced protein levels in the diet.

This thesis will be written in collaboration with EVONIK
(<http://animal-nutrition.evonik.com/product/feed-additives/en/>).

If you are interested, please get in touch with Hans-Peter Piepho.

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