

Reduction of Vitamin B₂ supplementation in laying hens in organic systems is possible

Problem

Vitamin B₂ (Riboflavin) from GMO-free sources is needed in organic poultry feeding. Recently, a serious delivery gap for this vitamin occurred, which shows the necessity to develop new ways of GMO-free Vitamin B₂ production.

Solution

To reduce feed production costs and dependency on external sources, it would be part of a solution if recommended levels of Vitamin B₂ supplementation for several types of animals can be decreased.

Controlled experiment

In a controlled feeding experiment, we tested the reduction of Vitamin B₂ supplements down to 66% or even 33% of the recommended level for laying hens. We added either 4.5, 3.0 or 1.5 mg per kg feed to 3 groups per treatment with 15 hens each. The experiment lasted for 18 weeks.

Results and recommendations

Neither laying performance (always close to 100%) nor body weight development or any health and welfare indicator differed between the three feeding treatments. Also, egg quality parameters (weight, stability of the eggshell and colour of the yolk) were not affected by the reduction of Vitamin B₂ supplementation. However, Vitamin B₂ concentrations in egg yolks and livers of the 1.5mg/kg-treatment group declined by week 7 compared to the other two treatments. Subsequently, the values remained stable until the end of the experiment in week 18. We therefore conclude that despite the declining Vitamin B₂ concentrations in yolks and livers of hens supplemented with only 1.5 mg/kg feed, this level was sufficient with regard to animal health, welfare and performance. The results for the 3 mg/kg-treatment always equalled those of the 4.5mg/kg supplementation. Therefore, we consider the reduction of Vitamin B₂ addition to layers feed down to 3 mg/kg to be safe in organic feeding conditions.

Applicability box

Input used

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Copper | <input type="checkbox"/> Anthelmintics |
| <input type="checkbox"/> Mineral oil | <input type="checkbox"/> Antibiotics |
| <input type="checkbox"/> Fertilisers | <input checked="" type="checkbox"/> Vitamins |

Geographical coverage

Global

Application time

Any time of the year

Animal species / category

Laying hens (chicken)

Period of impact

One laying period

Application point

Production of premixes and chicken feed

Target

Feed safety; animal welfare and health

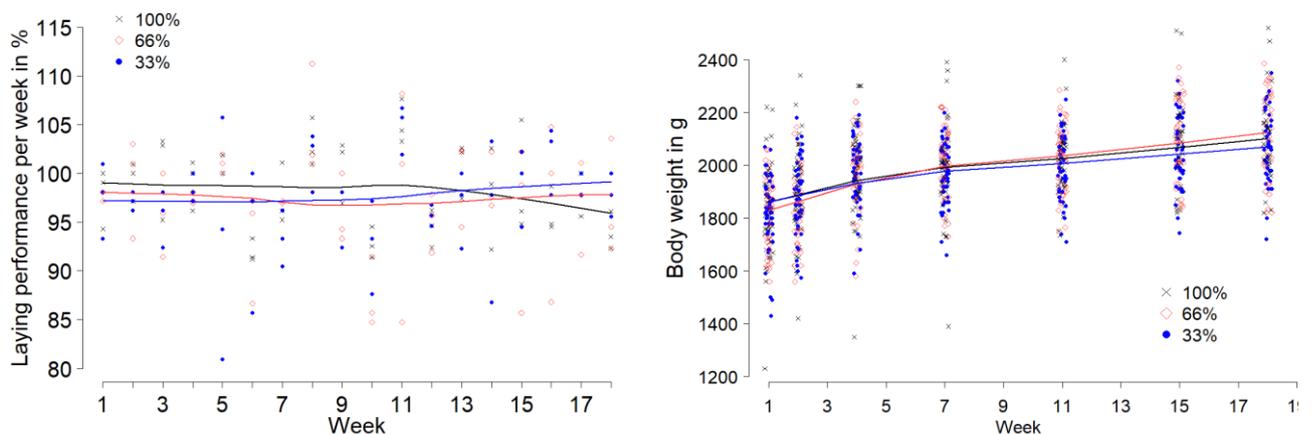


Figure 1: Development of laying performance and body weight during 18 weeks of experimental supplementation with either 4.5 mg riboflavin / kg feed ("100%"), 3.0 mg/kg ("66%"), or 1.5 mg/kg ("33%"). Graphs display individual data points and estimated average curves. 100% laying performance means 7 eggs per animal per week.

Application

System approach

- Vitamin mixtures are produced by respective companies. For safety reasons, companies may add relatively high levels of vitamins and specific organic conditions are not accounted for.

Evaluation

- Evaluation must be based on constant monitoring of health and performance in the layer's herds. Based on our data, it may well be that a reduction of Vitamin B₂ supplementation down to 3 mg/kg is possible without impacting performance and animal health.

Further information

Weblinks

- New European GMO-free Vitamin B₂ product at the market: <https://www.fibl.org/de/infothek/meldung/bio-zertifiziertes-einzelfuttermittel-mit-hohem-gehalt-an-vitamin-b2-am-markt.html>

About this practice abstract and RELACS

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RELACS: 'Replacement of Contentious Inputs in Organic Farming Systems' (RELACS) builds on results of previous research projects and takes far-advanced solutions forward. As a system approach to sustainable agriculture, organic farming aims to effectively manage ecological processes whilst lowering dependence on off-farm inputs. The RELACS partners will evaluate solutions to further reduce the use of external inputs and, if needed, develop and adopt cost-efficient and environmentally safe tools and technologies.

Project website: www.relacs-project.eu

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