

Effect of enzyme supplementation in laying hens on egg weight and commercial egg classification.

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Four different experiments involving a total of 1,820 laying hens distributed in 108 replicates evaluated the efficacy of enzyme complex (Endofeed DC, EC No 25) containing 1,100 U/g of Endo-1,3(4)- β -glucanase (EC 3.2.1.6) and 1,600 U/g of Endo-1,4- β -xylanase (EC 3.2.1.8).

A completely randomized design was applied in each study using two experimental treatments: 1) basal diet (control), and 2) basal diet with 125 mg/kg of enzyme, the recommended commercial dose.

Selected data on egg weight (at 34, 46, and 54 wks of age) were combined in a meta-analysis. The original data used for the statistical analysis were the average egg weight per replicate, and enzyme supplementation and experiment were considered as main effects.

At 46 wks of age enzyme supplementation significantly increased average egg weight (68.30 vs 66.07 g; $P < 0.001$).

At 34 and 54 wks of age, no statistically significant differences were detected between treatments, but hens supplemented with enzyme laid eggs that were numerically heavier than controls (65.90 vs 64.97 g; $P = 0.19$, and 67.76 vs 66.63 g; $P = 0.20$; for 34 and 54 wks of age, respectively).

To assess the commercial significant of these improvements, a second meta-analysis was carried out using individual egg weight data at 42 wks of age, obtained from two of the experiments.

Each egg was classed according to commercial categories: S (<52.5 g), M (52.5-62.5 g), L (62.5-72.5 g), and XL (>72.5 g). Enzyme supplementation significantly increased the percentage of XL eggs (15.2 vs 5.3 %) at the expense of other commercial categories ($P < 0.01$).

In conclusion, the data from these studies suggest that **enzyme supplementation improves mean egg weight, allowing classification into larger egg classes.**

Key Words: Enzyme, Meta-analysis, Egg weight, Egg commercial categories, Laying hens.