

## **Effects of housing, perches, genetics and twenty-five-hydroxycholecalciferol on keel bone deformities in laying hens**

### **Summary**

Several studies have shown a high prevalence of keel bone deformities in commercial laying hens. The aim of this project was to assess the impact of perch material, a vitamin D feed additive (25-hydroxyvitamin D<sub>3</sub>, Hy•D), and genetics on keel bone pathology. The study consisted of two experiments. In the first experiment we used Lohman Selected Leghorn hens and in the second experiment we used Lohman Brown (LB) hens and Lohman Brown parent stock (LBPS) hens. Following factors were investigated: Perch material (plastic or metal), feed (with and without Hy•D) and genetics (LB or LBPS). Daily feed consumption, egg production, mortality, and feather condition were evaluated. Every 6 weeks, the keel bones of 10 randomly singled out animals per pen were palpated and scored. In either experiment, no keel bone deformities were found during the rearing period. When the laying started, deformities gradually appeared and reached a prevalence of 35% in the first and 43.8% in the second experiment at the end of the laying period. Hy•D feed additive did not have any significant effect on the prevalence of keel bone deformities. LBPS hens had significantly fewer deformities than LB hens and rubber-coated metal perches were associated with a higher prevalence of deformities compared to plastic perches. The parent stock laid more, but smaller eggs than LB. The significant effect of breed affiliation strongly indicates a genetic component, which may provide a basis for targeted selection.

**Key words:** laying hen, keel bone, 25-Hydroxycholecalciferol, welfare