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## Effects of on-farm hatching on *Eimeria* infection dynamics

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An increasing trend in Europe is placing 18 days incubated eggs on trays in broiler houses for on-farm hatching. Chicks are not transported and have immediate access to food and water, which promotes early intestinal tract and immune system development<sup>1</sup>. These chicks may be exposed to environmental *Eimeria* oocysts earlier than hatchery chicks. Therefore we compared *Eimeria* infection dynamics for in hatchery (R) and on-farm hatched (F) Ross 308 broilers in 2 field studies.

In study 1 a poultry house was divided in a part with F and R hatching for 2 rounds. Study 2 consisted of 10 flocks on 4 farms. For each F flock an R flock on the same farm, originating from the same parent flock, was compared.

Oocysts per g (OPG) was determined weekly from wk 2-6 of age with qPCR (GD Deventer, the Netherlands) on pooled colonic and cecal feces, collected 3 times per wk. For comparisons, OPG was determined with a McMaster counting technique<sup>2</sup> twice per wk from wk 2 onwards (study 1) and in wk 4 and 5 (study 2). Lesion scores for *E. acervulina*, *E. maxima* and *E. tenella*<sup>3</sup> in 5 randomly selected birds from F and R flocks at post-mortem were assessed weekly in wk 3-6 (study 1) and once in wk 4 (study 2). Use of coccidiostats, antibiotics and production performance was recorded.

*E. acervulina*, *E. tenella* (study 1 & 2) and *E. maxima* (study 2) were detected, without differences in species distribution between F and R flocks. In both studies lesion scores were generally mild and not significantly different between F and R flocks. Oocyst excretion patterns throughout the production period were similar for F and R flocks in study 1, but in study 2 F flocks on average showed a later excretion peak (R peaked between day 22-28 and F between days 22-28 or 28-34). OPG for qPCR and McMaster technique gave similar results. Production performance could not be compared between F and R flocks, due to differences in disease occurrence and antibiotic treatments.

Only small differences in the course of *Eimeria* infections were detected, but the number of flocks was too small to draw accurate conclusions about effects of hatching system on coccidiosis. Small differences, e.g. time of peak excretion, may affect body weight at slaughter or affect opportunities for secondary infections. Therefore, if more on-farm hatching and comparable reference flocks become available, further research is warranted.

<sup>1</sup> Van De Ven, L.J.F., Van Wagenberg, A.V., Debonne, M., Decuyper, E., Kemp, B., Van Den Brand, H. Hatching system and time effects on broiler physiology and posthatch growth (2011). *Poult. Sc.* 90 (6), 1267-1275; <sup>2</sup> Long, P.L., Rowell, J.G., 1958. Counting oocysts of chicken coccidia. *Lab. Pract.* 7, 515-518, 534;

<sup>3</sup> Johnson J., Reid W.M. Anticoccidial drugs: lesion scoring techniques in battery and floor-pen experiments with chickens (1970). *Exp. Parasitol.* 28(1):30-36.