

Factors affecting diversity of poultry house insects, with emphasis on beetles (Coleoptera)

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Twenty-three poultry houses from five areas in the southern part of Norway were sampled for insects associated with manure. The farms belong to five different poultry production categories. Species from the orders Coleoptera, Diptera, Lepidoptera and Hymenoptera were trapped using Tullgren funnels. Among the Diptera, Sphaeroceridae and Psychodidae were dominating, while *Carcinops pumilio* was the most abundant Coleoptera species. Measurements of manure depth, temperature, and moisture content were performed. The production categories showed significant differences in the abiotic measurements. Cage-layer houses had small amounts of moist manure. Broiler houses type 1 and type 2 had small amounts of dry manure, while deep-pit and breeder houses had large amounts of manure with high and medium moisture contents respectively. The manure amounts were related to length of time in production. Distribution and abundance of the various taxa were analysed using reciprocal averaging (RA). Differences in the fauna between the production categories were observed. Houses with long accumulation periods contained Coleoptera and Lepidoptera species, while houses with shorter accumulation periods, mainly contained Diptera species. The most important factor affecting the insect fauna was found to be the length of time of manure accumulation, but indications of influence from the manure moisture content and the temperature on the faunal composition in poultry houses were also detected.

Key words: Poultry manure, diversity, Coleoptera, Diptera, Hymenoptera, Lepidoptera.

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