REDUCING AMMONIA RELEASE IN A FLOOR HOUSING SYSTEM FOR LAYING HENS BY DAILY REMOVAL OF MANURE BELOW A PERFORATED FLOOR

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ABSTRACT The hygienic threshold limit value for ammonia (10 ppm) is often exceeded in floor housing systems for laying hens with long time storage of manure in bins below perforated floors. The major reason for high ammonia concentrations is the large amount of stored and exposed manure. The possibility to reduce ammonia release by reducing the amount of stored manure in bins has therefore been investigated in a climate chamber equipped with a manure removal system with two parallel motor driven conveyors placed below an elevated perforated floor. The conditions when manure is stored in bins below perforated floors were simulated by storing manure on the conveyors for several days at constant ventilation rates and temperatures. The investigations clearly showed that storage of manure in the bin caused a rapid increase in ammonia concentrations. After about 7 days of manure storage in the bin the ammonia concentration exceeded the hygienic threshold limit value. It can be concluded that long time storage of manure in storage bins below perforated floors should not be recommended. It was possible to maintain the ammonia concentration below the hygienic threshold limit value when manure was removed daily with conveyors. Floor housing systems for laying hens with perforated floors should therefore be equipped with manure removal systems that enable daily removal of manure from the bins.

Keywords: Ammonia, Hen, Manure, Perforated floor.