

Analysis of blood spots in egg layers

M. Honkatukia¹, M. Tuiskula-Haavisto¹, V. Ahola¹, R. Preisinger²,

P. Vennerström³, and J. Vilkki¹

1MTT Biotechnology and Food Research, 31600 Jokioinen, FINLAND

2Lohmann Tierzucht GmbH, Cuxhaven, GERMANY

3EVIRA, Research Department, Fish and Wildlife Health, Mustialankatu 3, FI-00790 Helsinki, FINLAND

Summary

Occurrence of blood and meat spots is an internal egg quality defect. Mass candling reveals most of the spots, but occasionally, faulty eggs still do end up at the consumer. Furthermore, brown egg shell hampers selection in brown chicken lines and it is not possible to completely eliminate the defect by selection. Estimated frequency of blood and meat spots in brown layers is about 18 %, whereas it is 0.5% in white egg layers. The origin of the spots is not known. Our histopathological analyses show that blood spots consist mainly of erythrocytes and that meat spots are accumulations of necrotic material (adenomatous epithelium, heterophiles and macrophages). Several factors are known to increase the incidence of blood spots, for example, genetic background, low level of vitamin A in feed, stress during ovulation or infections. To study the genetic background of blood spots, a mapping population was set up, consisting of 668 F2 hens descending from a cross of White Leghorns and Rhode Island Red lines. Blood and meat spot frequencies were scored for three consecutive eggs for each F2 hen. Linkage analysis of 27 chromosomes with 162 microsatellite markers revealed one significant locus affecting blood spot frequency in this population.