

## Spotty Liver Disease and Risk Factors

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Over the last 18 months, an observational epidemiology study was conducted in free-range laying flocks across different states of Australia, in an initial attempt to identify risk factors for the occurrence of Spotty Liver Disease (SLD). Due to the impact of COVID-19 on domestic travels, only 24 laying flocks were sampled in the end, which unfortunately was greatly reduced from the initial sample size of 32 flocks.

Approximately 230 variables were analysed in a case-control analysis, covering data collected in both rearing and laying, including bird history, farm and shed design, bird health, nutrition, biosecurity measures etc. A 'case' was defined as any farm with clinical SLD with characteristic postmortem signs with an increase in mortalities or a drop in production. A 'control' was defined as any farm that did not have clinical SLD.

	No scratch area	Scratch area
Case	5	13
Control	6	0

**A putative sufficient cause of SLD was identified, which requires the presence of *C. hepaticus* and scratch areas in the laying shed (n=24, P=0.003).** This is significant finding which also makes biological sense. Effectively, in laying sheds that had no scratch areas, i.e. fully slatted sheds, birds were less likely to be in contact with faecal matters contaminated with *C. hepaticus*. It is speculated that the faecal matters in the range are less concentrated in *C. hepaticus* and that *C. hepaticus* infectivity might change once exposed to unfavourable conditions i.e. oxygen.

In order to further investigate the risk factors for SLD in fully slatted sheds, we narrowed down our data which further limited our sample size (n=11). However, we found the following potential risk/protective factors:

- 1) Smaller flock size is more at risk of SLD (P=0.002)?
- 2) Less useable floor space (P=0.08) – confounded with flock size?
- 3) Cool white lights in lay are protective (P=0.143)?
- 4) Slat design that has bigger holes are protective (P=0.18)?
- 5) One particular breed is more at risk (P=0.061) – small sample size?

This initial phase of the study was designed to capture as much information possible, which resulted in very extensive questionnaires, however it provided us with some valuable information for the design of next phase which to be carried out in the coming months.

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