



2C-102: Strategies to quantitatively measure and reduce the load of *Lawsonia* in commercial herds

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Aims and Objectives:

1. Develop faecal sampling protocols for the reproducible quantification of *Lawsonia* load in commercial herds.
2. Determine the variability in *Lawsonia* load in the absence of significant management changes.
3. Correlate production measures with excretion of *Lawsonia* numbers to identify the critical threshold of *Lawsonia* that leads to production losses over a wide range of management systems.
4. Evaluate ileitis control strategies such as vaccination, improved hygiene and medication in a field trial.

Key Findings

1. Monitoring *Lawsonia* numbers by qPCR in pooled faecal samples is a reliable method to identify when herds are suffering from both clinical and sub-clinical ileitis.
2. The *Lawsonia* qPCR can be used to monitor the effect of management changes on ileitis control because in the absence of significant management changes, *Lawsonia* numbers do not vary over time and over consecutive batches of pigs.
3. *Lawsonia* numbers in faeces correlate negatively with ADG and feed intake, ie. higher *Lawsonia* numbers are detected in pigs with more severe production losses.
4. The critical threshold of *Lawsonia* that causes production losses in pigs on commercial farms was determined. ADG was reduced from 847 to 707g/day when excretion of *Lawsonia* increased from 10^7 to 10^8 *L.intracellularis*. However, production losses do occur in sub-clinically affected pigs when they shed more than 10^6 *Lawsonia*.
5. Vaccination against ileitis and disinfection of pens proved to be more effective at controlling ileitis and led to improved ADG and feed intake compared with olaquinox medication.

Application to Industry

1. New antemortem test to quantify the severity of ileitis in real time and determine if scouring or poor growth are caused by significant numbers of *Lawsonia* bacteria.
2. Pooled faecal samples collected from herds can be used to monitor *Lawsonia* load and ileitis control in the absence of significant management changes.
3. Pooled faecal samples and serology can be used to monitor the impact of management changes on ileitis control, immunity and especially the removal of antibiotics.
4. A new tool to evaluate alternative ileitis control strategies on farm, including dietary modifications (essential oils, organic acids, prebiotics and probiotics), hygiene and other treatments concurrent with vaccination.