

# PLEURISY

## — WHO FEELS THE PAIN?



Pleurisy in pigs is a topical issue, largely due to the possibility of financial penalties being imposed by processors. **John Richardson** and **Paul Pemberton** of Garth Partnership explore the issues and costs

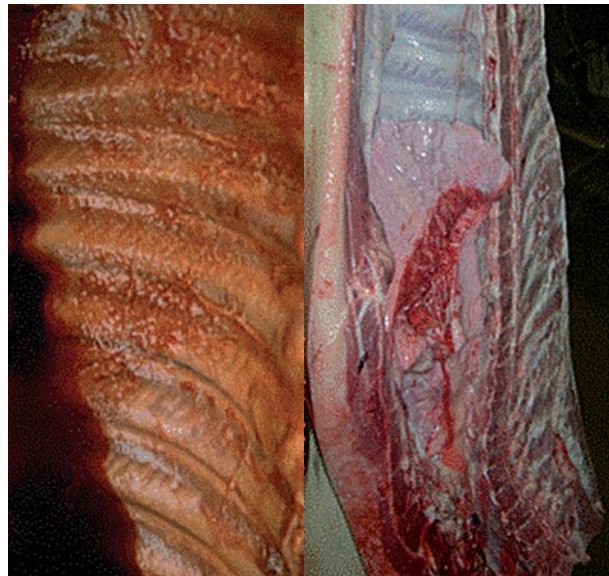
**F**or the pig, pleurisy must be a painful condition – as the normally freely moving lungs become attached to the inside of the rib cage; hence, it also becomes a welfare issue. The processor of the pig carcase also suffers a reduction of line-speed in the factory due to the increased time taken to trim and rectify the carcase. Pig producers get hit by ‘unseen’ losses involving reduced growth rate, increased medication costs and carcase trim losses.

Processors have given warnings about taking firmer action with producers who repeatedly send significant numbers of pleuritic pigs for slaughter by imposing financial penalties to cover trim losses. So pleurisy has the potential to become even more painful; preventive or corrective action needs to be taken now by producers.

### WHAT IS PLEURISY?

Pleurisy is a condition – not a disease in itself, caused as a result of various pathogens and environmental challenges. Pleurisy, or more precisely pleuritis, is inflammation of the normally smooth, lubricated pleural membrane which covers the lungs and also lines the chest cavity enabling free movement of the lungs during breathing. It is distinct from pneumonia which refers to disease of the lung tissue itself, but is a form of respiratory disease.

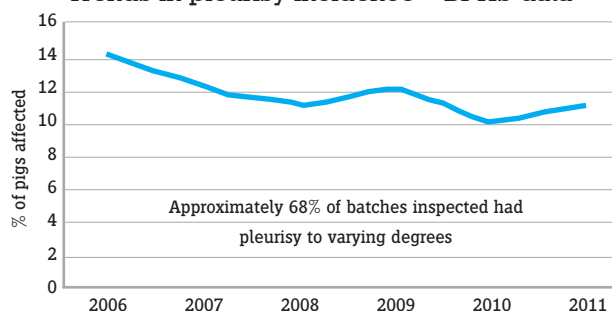
Pleurisy can be classified into two types, fibrous and fibrinous. In the acute stages of fibrous pleurisy the membrane becomes rough and sticky. With time the inflammatory tissues produced in this acute stage become organised into dry strands of tissue between the chest wall and the lungs. These can be very tough, and are a bit like strands of strong thread attaching the lungs to the body wall and stopping them moving freely. The acute stage of fibrinous pleurisy sees the accumulation of fluid and inflammatory cells in the space between the lungs and the chest wall. This compresses the lungs and,



**Pleurisy causes a rough surface to the chest wall**      **Excessive pleurisy causing lung to adhere to the chest**

### The prevalence of pleurisy

#### Trends in pleurisy incidence – BPHS data



over time, leads to a thickening and roughening of the pleural membrane with inflammatory tissue.

The graph shows the levels of pleurisy in the UK, in terms of the number of individual pigs affected, over the last five years, according to data derived from the BPEX Pig Health Scheme. Overall the levels have been remarkably consistent with a slight underlying downward trend. Currently around 11% of UK pigs are affected (as shown by the graph), but the incidence on individual farms is up to 50%.

**“Pig producers get hit by ‘unseen’ losses involving reduced growth rate”**

### WHAT CAUSES PLEURISY?

The cause of pleurisy is truly multifactorial in the broadest sense; this not only potentially involves an array of viruses, mycoplasmas, bacteria, and even parasitic worms, but also a host of environmental factors which exacerbate the problems caused by the pathogens.

The 2009 Cambridge study mentioned previously identified a number of risk factors that influence levels of pleurisy on farm:

- Environmental factors – temperature, ventilation, draughts, dust, ammonia
- Management factors – stocking densities, farm hygiene (eg cleaning and disinfection), vaccination policies, continuous production (versus all in all out), multi-site production, mixed age-groups
- Disease organisms – *see diagram opposite*. Although certain diseases have been classically described as causing pleurisy, such as Glasser’s Disease or APP, we now know that a whole host of other organisms can be linked to the condition, most of them also acknowledged as factors in porcine respiratory disease complex (PRDC).

A mix of some of the above pathogens together with indifferent management and sub-optimal climatic control of buildings contrive to cause varying degrees of severity of pleurisy, compromising the pigs’ health and welfare and producer profitability.

### CONSEQUENCES OF PLEURISY

The effects on production are easier to quantify than welfare effects (although not simple) and fall into two categories:

- **Production losses.** Diseased pigs do not perform as well as healthy pigs. This is nicely demonstrated by a recent small-scale study assessing levels of pleurisy at the abattoir in relation to growth rates. A linear relationship was found between levels of pleurisy and reduction in growth rate as illustrated in the graph, *above right*.
- **Medication.** Pigs affected by pleurisy do not always appear ill, but often they will have signs of respiratory disease and will require treatment. The cost of medication and the time to administer

injectable or water-based treatments must be added to the loss of production.

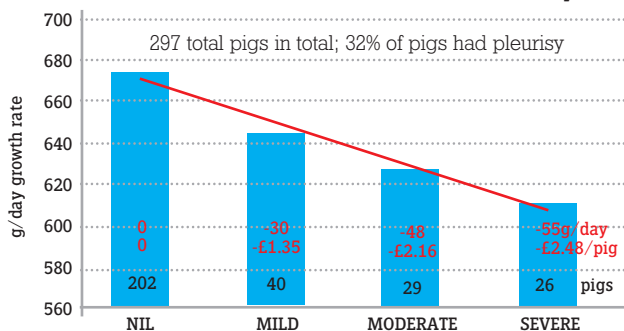
**LEVEL OF PLEURISY**

Slower growth rates mean poorer feed conversion and lower profitability. A 50g/day reduction in growth rate has been calculated to cost £2.25 in the finished pig, which would make pigs in the aforementioned study worth between £1.35 to £2.48 less, depending on the severity of pleurisy. BPEX has published figures, based on a 2009 study by a team at the University of Cambridge, stating that a 10% incidence of pleurisy in a batch of finished pigs leads to a cost of £2.47 per pig across the batch, ie a loss of nearly £25 for every 10 pigs in a herd with a relatively low level of disease. Please note that these figures are derived from calculations with a number of variables so will vary from farm to farm and with time. However, they all show that profitability is reduced.

**WHAT IS GARTH PARTNERSHIP DOING TO HELP PIG PRODUCERS REDUCE PLEURISY?**

Garth Partnership vets are assessing a number of client farms with and without pleurisy problems to gain a better understanding of the inter-relationship between causal factors of pleurisy. Stocking density, temperature control,

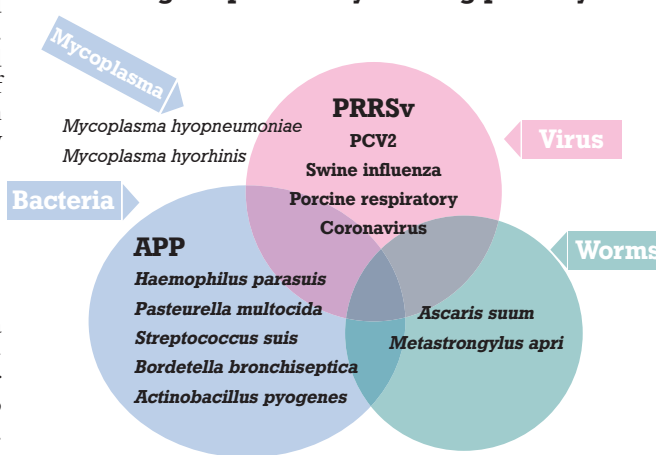
**Pleurisy score in relation to daily gain – two farms and three-batch summary**



and air quality, together with general pig-flow, management, cleaning and disinfection procedures and cross-sectional blood sampling are some of the factors being assessed. Results from serology in terms of which pathogens and when they infect the pig, together with post-mortem results, will be used to determine both the cause and the risk factors associated for each farm.

Once the diagnosis is made in respect of pathogens involved, together with the identification of any management or environment deficiencies then a strategy can be proposed for vaccination, medication and management changes. The effect of such strategies will then be reviewed in relation to the incidence of pleurisy and ongoing pig performance; it is not going to be easy and it has to be tackled in a proactive way if we are to minimise the incidence of pleurisy.

**Pathogens potentially causing pleurisy**



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