

# Respiratory disease monitoring to improve pig efficiency

Slaughterhouse checks are a mine of information when it comes to animal health. **TEAGASC** researchers, in collaboration with UCD, CIT and the Department of Agriculture, Food and the Marine, are using this information to improve the health status of Irish pigs.

Respiratory disease is one of the most important issues affecting pig production worldwide, including in Ireland. Infections by the bacteria *Actinobacillus pleuropneumoniae* and *Mycoplasma hyopneumoniae* are a major concern for Irish farmers. These organisms are associated with lung lesions such as pleuritis and pneumonia, causing major losses both at farm level (decreased growth rate), and at factory level (increased time for carcass processing). Besides the economic losses, the unpredictability of disease creates uncertainty regarding production outputs, and greatly affects the welfare of the animals.

To control respiratory disease, pig farmers typically monitor herd disease status using serology (testing blood samples), where positive results indicate that the animals were previously exposed to a specific pathogen of interest, either by natural infection or by vaccination. Alternatively, on-farm necropsies and slaughterhouse inspections of pluck lesions (by examining lungs, heart, and liver) allow an investigation of the effects of disease and provide a rationale to conduct further herd diagnostics.

Using these methods, Teagasc researchers investigated for the first time the prevalence of infection by four key respiratory pathogens: porcine reproductive and respiratory syndrome virus (PRRSv); swine influenza virus (SIV); *Mycoplasma hyopneumoniae* (Mhyo); and, *Actinobacillus pleuropneumoniae* (APP) primary lesions at slaughterhouse (pleuritis, pneumonia, lung abscesses, and pericarditis), and their effects on production performance and medicine use.

## How many pigs did we look at?

A total of 9,254 pigs and 1,792 blood samples from one-third of the pig farms in the country were examined and collected, respectively. All farms were enrolled in the Teagasc eProfitMonitor, from which production performance indicators were retrieved.

## What was the prevalence of disease and lesions at slaughter?

The prevalence of SIV, PRRSv, Mhyo and APP in Ireland is reported in **Figure 1**, and is similar to or lower than the prevalence in other European countries.

An average of 162 plucks (i.e., heart, liver and lung tissues) per farm were assessed and the national average prevalence for lesions observed is reported in **Figure 2**. Most of the lungs with pleuritis (>80%) had moderate to severe lesions, while the severity of pneumonia was mild, with an average of 6.2% ( $\pm 3.88\%$ ) of lung surface affected.

## How do these results relate to on-farm performance?

With the data collected at slaughter (serology and pluck lesions), and taking into account the vaccination protocols on each farm, the associations between disease status and key performance indicators for pig production were studied (**Table 1**).

### Prevalence of respiratory pathogens in Irish pig farms

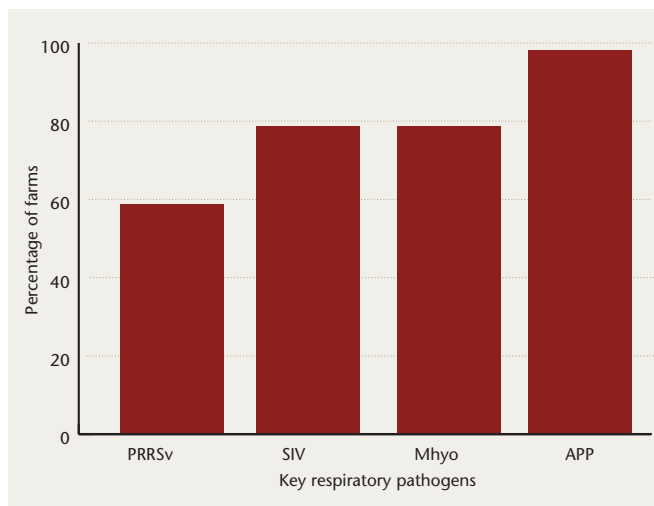


FIGURE 1: Prevalence of four key respiratory disease pathogens in Irish pig farms. PRRSv: porcine reproductive and respiratory syndrome virus; SIV: swine influenza virus; Mhyo: Mycoplasma hyopneumoniae; APP: Actinobacillus pleuropneumoniae.

### Prevalence of lung and heart lesions

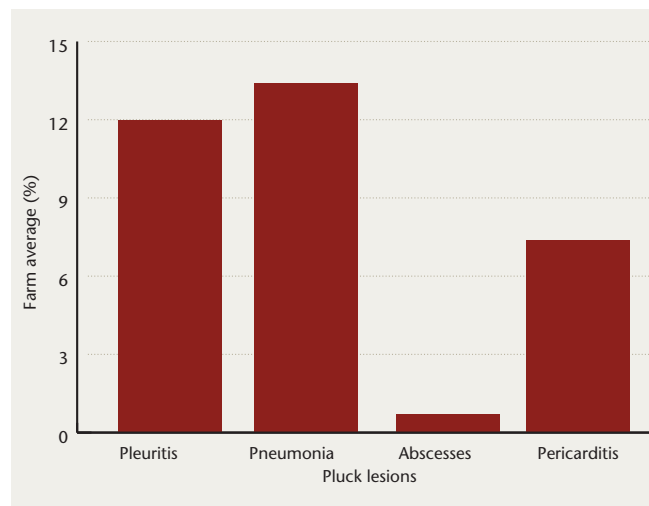


FIGURE 2: Average prevalence of pleurisy, pneumonia, lung abscesses and pericarditis at slaughter in finisher pigs of 56 farrow-to-finish pig farms.

**Table 1: Effect of respiratory disease on farm performance of 56 farrow-to-finish pig farms.**

Production performance indicators	How much of it was explained by respiratory disease?
Weaner mortality	26%
Finisher mortality	20%
No. pigs sold per sow per year	8.2%
Average daily feed intake	47%
Average daily gain	40%
Feed conversion ratio	14%
Age at sale	41%

Respiratory disease greatly impacted on average daily feed intake, average daily gain and age at sale (or age at slaughter; see **Table 1**). This indicates that pigs on farms that had respiratory disease issues ate less, grew more slowly, and took more time to reach slaughter weight. The effect of respiratory disease on feed conversion ratio was relatively small. This result suggests that disease clearly affects the growth rate and feed intake of pigs. It does not necessarily make production less efficient in terms of feed use, but effects on pig welfare might be expected.

#### Conclusions

- Respiratory disease and vaccination information were able to explain a large proportion of key production performance indicators such as average daily feed intake, average daily gain and age at slaughter.
- Monitoring and control of respiratory disease are essential for improved farm efficiency.

- Farmers, vets, and advisors need to co-ordinate their efforts to address respiratory disease issues.

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