



This note summarises the initial findings from the research project entitled ‘Aetiology, pathogenesis and immunology of porcine PMWS: genetic-environmental interactions’. Before PCV2 vaccines became available, almost all pig farms in England were affected by PMWS to some extent. However, for some reasons, as yet unknown, some farms were more affected than others. Understanding why this should be the case was one of the aims of this project carried out by the Royal Veterinary College.

### Recruitment of pig farms

Between April 2008 and April 2009 147 English pig farms were visited by members of the research team (Figure 1). Farms were recruited through the BPEX PCV2 vaccination programme and veterinarians. Blood samples were collected before PCV2 vaccines were administered. Data was collected through farmer interviews and on-farm assessment (Figure 2).

### PCV2 was present on all farms

Results from the blood sampling confirmed that the virus or antibodies to the PCV2 virus, were present on all farms visited (see below). A farm was considered positive if at least one sample was positive for each of the PCV2 tests performed.

Test	Positive farms	%
PCV2 Elisa (Synbiotics Serelisa®)	145	98.6
PCV2 qPCR	130	88.4

### Farmer perception of PMWS severity

Assessing the proportion of pigs affected with PMWS on farms was challenging, as there was only a limited amount of time that could be spent on each farm. The views of the farmer were, therefore, included to supplement the data recorded by the researchers.

To ensure that what farmers recorded as PMWS actually was PMWS, questions were included to assess their knowledge of the disease. Misclassification trees were used to identify farms which had to be excluded from analysis.

According to farmers’ perception, between 2001 and 2008 the severity of the disease changed. The number of highly affected farms decreased gradually, but the total number farms, affected increased (Figure 3). This indicates that the situation of the disease had changed since the epidemic stage (2001-2003).

Analysis of farmers’ assessment of clinical signs seen in 2008 showed that there were differences between farms. Where clinical signs were reported in weaners, they were also seen in the growers. However, there was not necessarily a link to signs seen in finishers. From this analysis, farmer perception of the clinical severity of the disease was summarised as two variables:

- **Morbidity Factor 1 (MF1):** the proportion of weaners and growers affected
- **Morbidity Factor 2 (MF2):** the proportion of finishers affected



Figure 1 Distribution of farms visited between April 2008 and April 2009

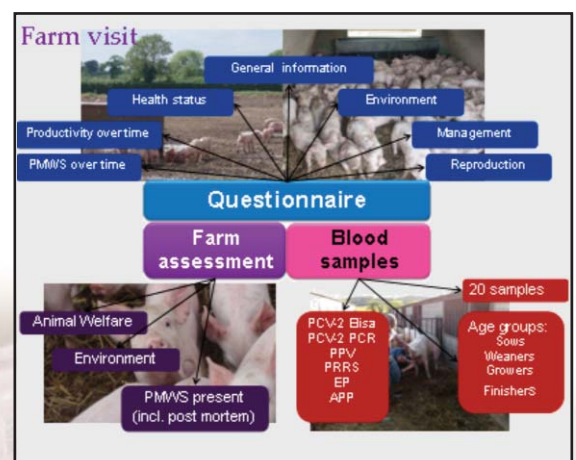


Figure 2 Type of data collected on-farm

### Estimating PMWS severity at farm level

The proportion of pigs affected with PMWS is not enough to estimate the severity on a farm, as the disease can affect various performance parameters.

The analysis of several performance measures and the presence or absence of different pathogens on the farm, along with morbidity factors, led to the finding of three variables which are strongly linked to each other. These variables were:

- Post-weaning mortality
- Percentage of PCV2 infected pigs on the farm
- Proportion of weaners/growers affected.

Because only PCV2, but no other pathogen, was found to be associated with the proportion of weaners/growers affected and post-weaning mortality, this relationship seems to measure PMWS severity.

In summary, by combining these three variables it was possible to obtain a score from 0 to 10 for PMWS severity on farm. This score can be classified into categories as follows:

PMWS severity score	Classification
<4	Slightly affected by PMWS
4 – 6.5	Moderately affected by PMWS
>6.5	Highly affected by PMWS

A PMWS severity calculator can be found on the BPEX website: <http://www.bpex.org.uk/articles/300874>

This estimate of PMWS severity can be used to:

- Assess how severely a farm is currently affected by PMWS
- Inform decisions for controlling PMWS
- Monitor effectiveness of the control measures applied over time.

The Royal Veterinary College will be using these estimates of severity to:

- Identify risk factors associated with PMWS and its impact
- Assess efficacy of different PCV2 vaccines
- Develop a tool to determine the most efficient and profitable PMWS control options (farm-specific).

### Take home messages

- Wasting disease in finishers appears to be different in character from wasting disease in weaner/growers
- Although severity is declining, PMWS remains a significant issue for weaner and grower pigs in England
- A tool has been developed so that severity of PMWS can be compared between farms and over time that will help in the development of control options

### Further information

Results of this study are published in: Alarcon, P., et al., Assessment and quantification of post-weaning multi-systemic wasting syndrome severity at farm level. Preventive Veterinary Medicine (2011) 98, 19-28.

Information can also be found on the BPEX website:

<http://www.bpex.org.uk/KTRandD/ResearchAndDevelopment/PMWSinPigs.aspx>

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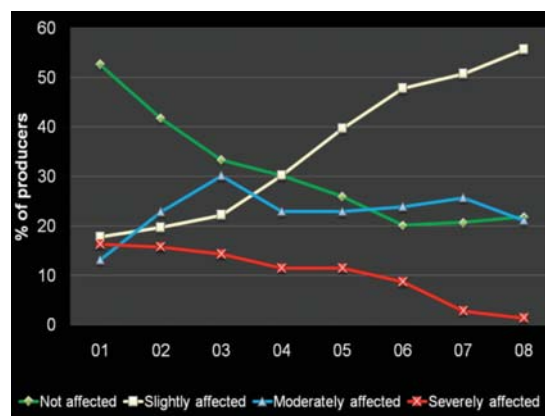


Figure 3 Overall morbidity history reported by English farmers during 2001-2008