

HEALTH, WELFARE AND FOOD SAFETY

BPEX PIG HEALTH SCHEME (BPHS)

About the scheme

The BPEX Pig Health Scheme (BPHS) was launched in July 2005 and provides producers who join the scheme, and their nominated veterinarians, post-mortem information on finished pigs submitted to abattoirs participating in the scheme.

Over 79% of assured pig business in England and Wales have joined the scheme since its launch. Members receive reports on health conditions relating to their finishing herds. These provide them with early warning on emerging disease problems on their units, objective measurement of herd health improvements, and feedback on the effectiveness of vaccination and other changes in management strategies.

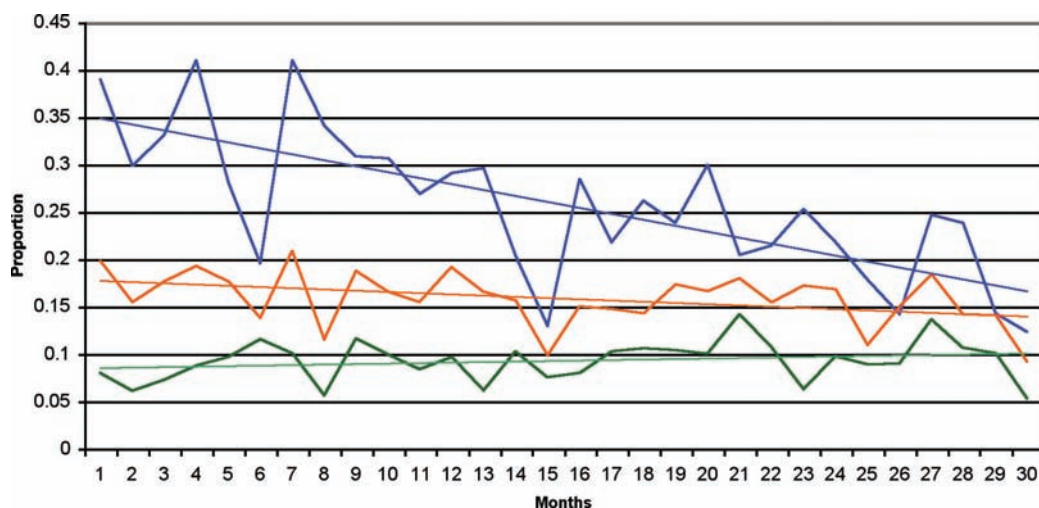
The scheme uses specialist pig veterinarians to assess the following health conditions in pig carcasses in participating abattoirs:

Enzootic pneumonia like lesions	Papular dermatitis
Pleuropneumonia-like (APP-like lesions)	Pyaemia
Other lung lesions	Milk spot liver
Pleurisy	Hepatic scarring
Pericarditis	Tail damage
Peritonitis	

Results to date

A preliminary analysis of the data from those members who have been regularly assessed since BPHS started has shown that units with a higher than average enzootic pneumonia-like lesion batch score have been making progress in reducing those scores. Overall, the trend in lesion scores and in the proportion of pigs with EP-like lung lesions is improving, but the major progress is being made by those who started with higher scores (**Figure 3**).

Figure 3 Trends in the prevalence of EP-like lesions in batches of pigs since the start of BPHS in July 2005



The **blue line** follows the trend for batches of pigs from the most-affected 25% of units, which had the highest proportion of pigs with EP-like lesions in the first 3 months of assessments in 2005.

The **green line** follows the trend for batches of pigs from the least-affected 33% of units, which had the lowest proportion of pigs with EP-like lesions in the first 3 months of assessments in 2005.

The **amber line** represents the trend for all of the units analysed, for which there were regular assessments over the first 30 months of the BPHS scheme.

Improving health management

In 2007 the major focus of the scheme shifted from a development stage to a greater emphasis on knowledge transfer; research and development. A key objective of the scheme has been to assist producers and veterinarians with the interpretation of BPHS results and the development of health improvement strategies.

A guide explaining the BPHS scoring system was sent to all members and participating veterinary surgeons in 2007. The guide explains the descriptions used by BPHS, what these mean and gives some information on why scores vary.

Action for Productivity sheets have been produced on topics linked to BPHS including regular worming, enzootic pneumonia, papular dermatitis, biosecurity and cleaning and disinfection.

The Action for Productivity sheet for enzootic pneumonia highlights the impact that chronic EP infections have on feed conversion efficiency and daily gain (**Table 8**); in acute infections greater performance reductions will be seen.

Table 8 Effects of EP on performance

	Baseline	Mild	Moderate	Severe	Very severe
Lung score	0	5	10	15	20
ADG (g)	750	731	713	694	675
FCR	2.75	2.8	2.85	2.95	3.05
Mortality (%)	2.5	2.5	3.0	3.5	6.5

Source: Hall 2006; Burch 2007

Increased days to slaughter means more feed, labour, electricity, straw and water is needed; even a low level of infection can impact on the cost of production. Vaccination can be a cost effective way to reduce the financial loss resulting from EP infection (**Table 9**).

Table 9 Cost of EP infection

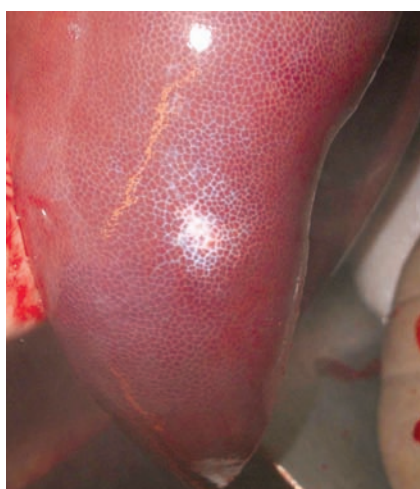
Lung score	1	5	10	15	20
Cost of EP/pig (£)	0.66	1.30	2.18	3.65	5.71
Cost of EP/pig + vaccination (£)	N/A	0.81	1.21	1.70	2.38
Net benefit with vaccination	N/A	0.49	0.97	1.95	3.33

Source: Hall 2006; Burch 2007

An example of BPHS in action

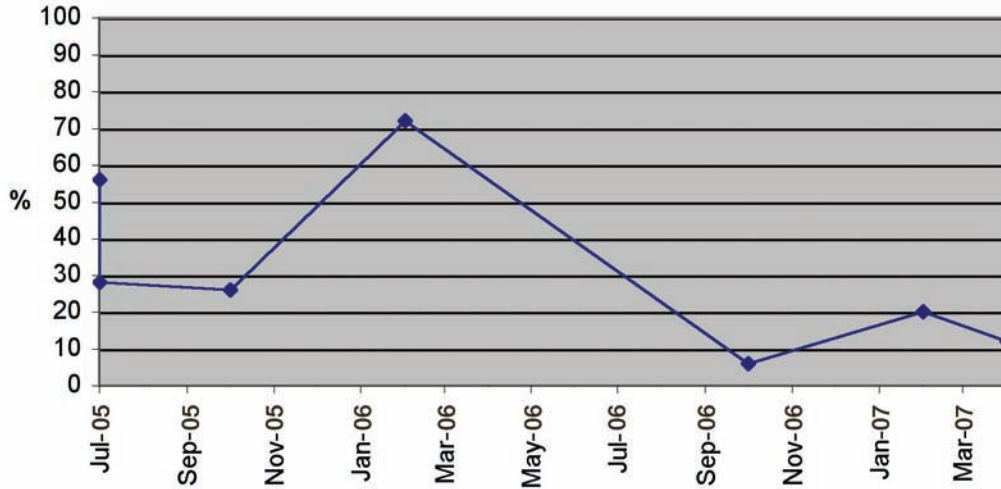
BPHS, through its reports, identifies problems and enables actions for their resolution. A 200-sow breeder/feeder unit had recently gone through a partial de-stock while building a new finishing unit. In February 2006 72% of the pigs assessed from his unit were determined by BPHS to have milk spot livers. Working with his veterinarian the manager decided to put a worming policy in place.

Two doses of in-feed de-wormer were followed by water medication. In his BPHS report for October 2006 only 6% of his pigs had milk spot livers showing a significant reduction in the score after implementing a worming strategy on the unit (**Figure 4**).



MS - "Milk-spot" - areas of lymph cell infiltration as a result of migrating ascarid larvae - they resemble splashes of milk or cream, hence the name.

Figure 4 Percentage of milk spot July 2005-March 2007. Worming policy was put in place February 2006



Problems with worms can be costly, and a worm infection rate of just 30% can cost up to £2.00/pig in lost growth rate. For the above producer, who sends 100 pigs to slaughter every week, this is a loss of up to £200 per batch.

If other production costs associated with worm infection are included, e.g poorer feed intake, carcass downgrades and extra medication for pigs, the total economic loss per finished pig can be as high as £4.50. Further reduction in income will also occur from condemnation of livers with milk spots at the abattoir.

For more information on, or to join, the scheme contact the BPHS administration centre on **01463 233184**.



NATIONAL ANIMAL DISEASE INFORMATION SYSTEM (NADIS)

Disease surveillance is important for the economic sustainability of the livestock sector through its role in helping to protect the health and welfare of farmed animals from existing and emerging diseases, and by providing an early warning system for the presence of novel animal disease and zoonotic agents of potential danger to livestock and human health.

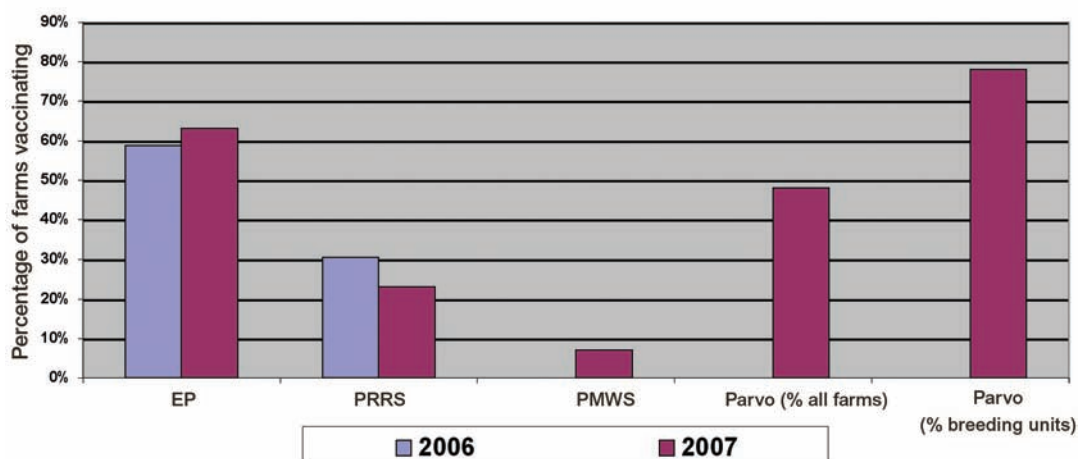
The objective of the National Animal Disease Information System (NADIS) is to effectively and systematically deliver surveillance and early detection through experienced pig veterinary clinicians monitoring and recording disease on farms and within abattoirs.

NADIS acts as:

- An early warning system for new disease
- A means of recording the prevalence (prevalence is defined as the number of cases of a disease in a population) of a wide range of existing syndromes in the UK pig population on an ongoing basis
- A monitor of the status of herds for a range of major diseases (ie is the herd infected with the causative agent).
- A way of observing both the distribution of specific diseases and their actual levels on farms over time
- A measure of associations of diseases with management systems and control programmes (such as vaccination usage).

NADIS results have shown the number of monitored farms vaccinating for PRRS had decreased by 8 percentage points from 2006 to 2007 but for Enzootic Pneumonia there was a 4 percentage point increase (**Figure 5**). The early uptake of the newly available Circovirus vaccines addressing PMWS is encouraging, and indicative of the continued seriousness of the disease, with 7% of recorded herds using the vaccine by the end of 2007 despite limited supply.

Figure 5 Vaccination on pig farms in 2006 and 2007
(Note: Parvovirus vaccination was not recorded in 2006)



Disease prevalence by region, age group and housing system

The prevalence of disease syndromes by region and in the four main age groups is presented in **Figure 6** and **Figure 7**. Prevalence of disease syndromes within weaner and grower pigs according to housing system is presented in **Figure 8**.

Figure 6 Regional prevalence of disease syndromes in weaners and growers in January 2008 (prevalence being the proportion of pigs affected at the time of NADIS veterinary visits)

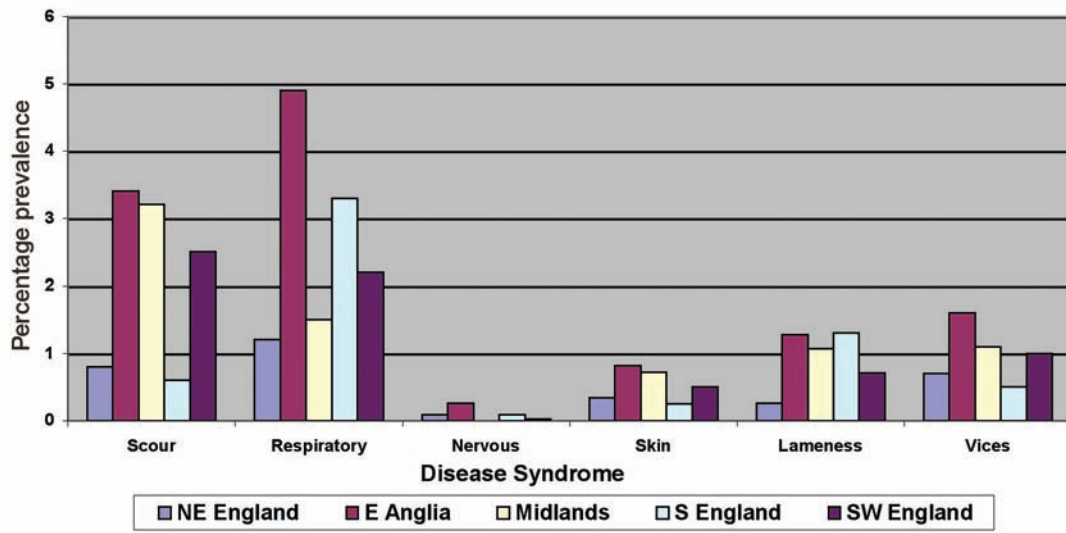


Figure 7 Prevalence of disease syndromes in different age groups, January 2008

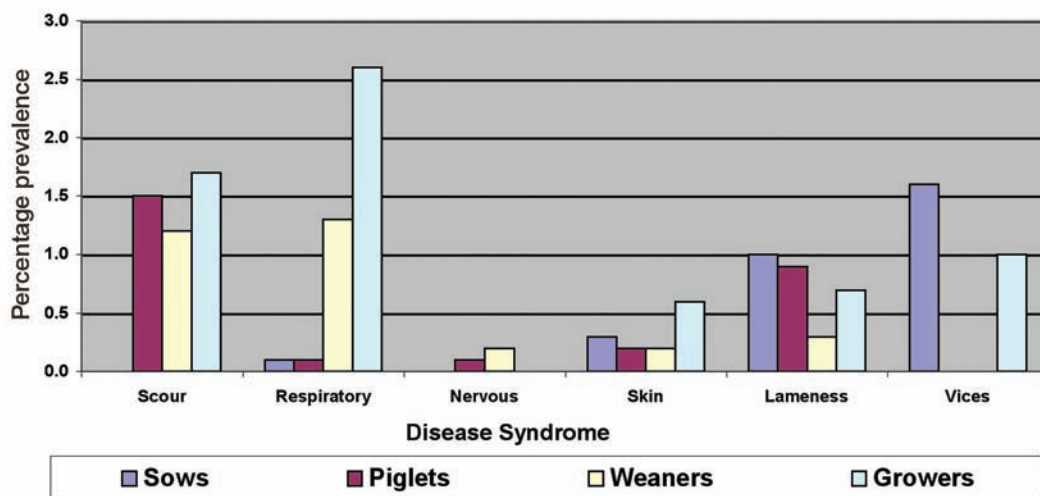
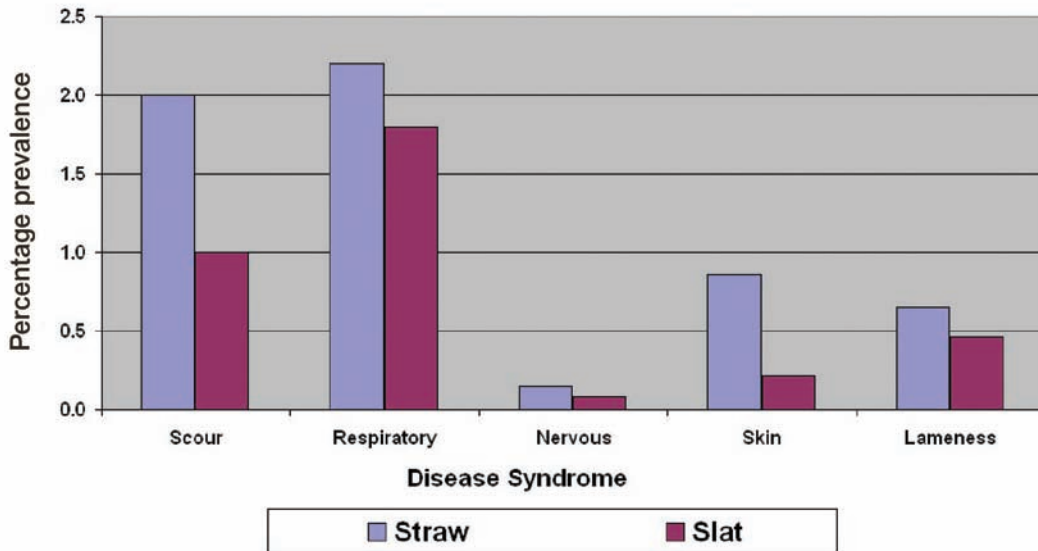


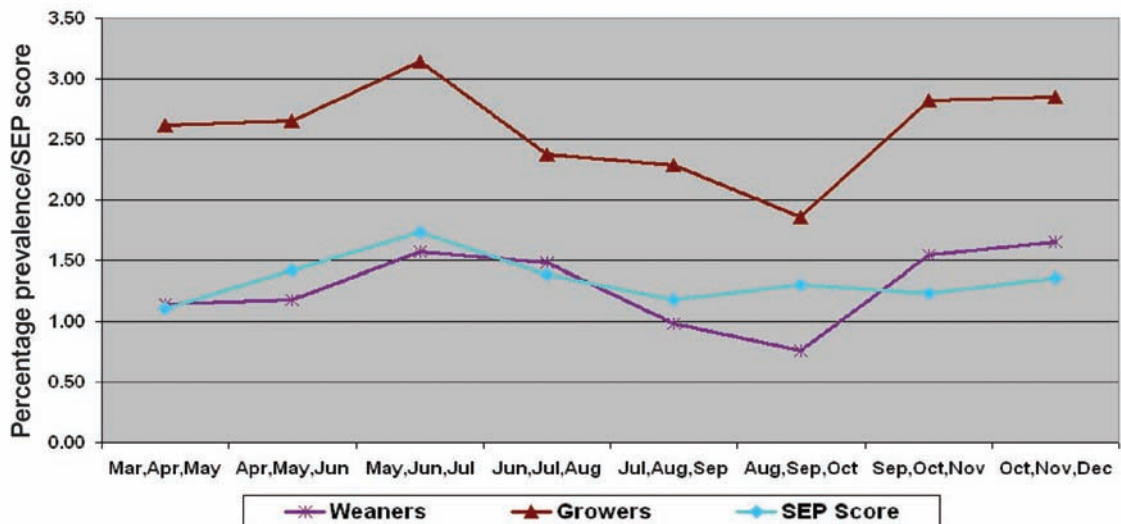
Figure 8 Prevalence of disease syndromes in weaners and growers in different housing systems, January 2008



Respiratory Disease

Respiratory disease, in all its forms, is consistently the most commonly reported syndrome in pigs and trends for 2007 are shown in **Figure 9**.

Figure 9 Percentage prevalence in weaners and growers and BPHS Enzoitic pneumonia scores in 2007



Knowledge transfer

In addition to the collection of data, which is used to identify disease trends, NADIS Health Bulletins are published electronically and sent to producer groups and key personnel in the industry. Producer groups cascade the health information down to producers. Interactive knowledge transfer is being developed so that following each health bulletin the farmer/stockperson is able to test their knowledge and understanding of disease by taking part in online interactive self-assessments. The answers are marked instantaneously and the score given.

Summary

NADIS pig monitoring programme continues to meet its principal objective as a disease surveillance system for the collection, analysis and interpretation of health and production data relating to the pig populations of England and Wales. The system is undergoing constant review and refinement and continues to act as a world leader in surveillance of pig disease.

FARM HEALTH PLANNING

BPEX is undertaking a one year Defra research project to see if pig health, welfare and performance can be improved by more active farm health planning through self help producer groups. Farm health planning benefits pig producers by allowing them to reduce disease and improve pig performance. Producers work closely with veterinarians and other advisers on setting targets for animals' health and welfare and taking steps to measure, manage, implement changes and monitor productivity improvements.

The project, which is supported as part of the Defra Farm Health Planning initiative, has pump-primed the establishment of 21 self-help producer groups across England. The groups are facilitated by veterinarians and driven by producer needs. They provide a forum for discussion, the sharing and development of new ideas, finding solutions for problems and meeting targets identified under individual farm health plans.

The groups are diverse and cover a range of production systems including farrow to finish, indoor and outdoor breeding, growing and finishing units. The meetings have been interactive and have included producers giving virtual tours of production systems, working as a group to combat infertility, and identifying the strengths and weaknesses of their finishing buildings in terms of respiratory disease.

To aid the farm health planning process, producers are being encouraged to use the many tools that are available to them. This includes clinical veterinary assessment, BPHS, ZAP Salmonella and NADIS reports. Producers are also able to witness the benefit of undertaking diagnostic testing. Post mortem analysis and blood testing have been carried out to detect a range of health problems, such as ileitis, PMWS, sudden death, APP, and bacterial infections that impact upon fertility. The tests allow producer and veterinarian to put in place an appropriate plan to address health issues.

The groups will continue beyond the duration of the project and it is hoped that more producers and veterinarians will see the benefit of working together in local groups and that this approach to farm health planning becomes more widespread across England.



ZOONOSSES ACTION PLAN (ZAP) SALMONELLA MONITORING PROGRAMME



Sample analysis

The Zoonoses Action Plan (ZAP) Salmonella Monitoring Programme aims to control and reduce the risk of Salmonella in pig meat to the consumer by targeting action at every stage of the meat production chain.

The BPEX Zoonoses Action Plan (ZAP) Salmonella Programme was launched in June 2002. The requirements of the ZAP Salmonella Programme are implemented through Farm Assurance and BQAP abattoir standards.

In the year to June 2007 results have been reported from 1 384 999 meat-juice samples. 25.7% of these tested positive using the specified meat-juice ELISA method (23.2%, 22.2% and 23.2% in the previous 3 years). An increase in prevalence of meat-juice ELISA positives in England (2.7%), Northern Ireland (3.2%) and Scotland (3.5%) was reflected in increases in within-herd prevalence. The increase in prevalence of antibodies to *Salmonella* in 2006-07 is disappointing. Only Scotland has a lower prevalence in 2006-07 than in 2003-04 and at 10.4% remains the region with the lowest prevalence.

It is anticipated that the ZAP categories introduced in June 2006 will be maintained until April 2008, when a new Zoonoses National Control Plan will be introduced.

Throughout 2007 holdings have been allocated to one of three categories (ZAP 1-3) at the end of each month based on the antibody status of pigs they have supplied during the previous quarter:

- ZAP Level 1: Less than 50% of samples tested are positive
- ZAP Level 2: Equal or more than 50% but less than 75% of samples tested positive
- ZAP Level 3: 75% or more than of meat-juice samples tested for *Salmonella* are positive

Holdings in ZAP Levels 2 and 3 must develop and implement a *Salmonella* action plan within 6 months or risk losing assurance status. To be successful, a ZAP Action Plan should be specific to a unit and approved by the farm veterinary surgeon at the assurance scheme quarterly visit.

Extensions to assurance of 16 months for ZAP Level 2 and 10 months for Zap Level 3 are granted when producers provide evidence that an approved action plan is being implemented.

On-farm microbiological testing continues to be offered free of charge by the Veterinary Laboratory Agency (funded by Defra). In June 2007 microbiological testing became a recommendation rather than a requirement and farm visits have now been restricted to units that have not been previously visited by the VLA.

Reducing the level of *Salmonella* remains a key target and BPEX continues to provide advice and to support research that will help producers make progress. In August 2007 the sampling framework was revised to focus resources on ZAP2 and ZAP3 units; only one sample per month is required from herds with annual prevalence below 25%, but units with an annual prevalence above 25% need five samples per month for a ZAP status to be assigned.

Developments since the feasibility study 2006-07

BPEX has considered the findings of the 2006-07 review and is working with Government and the industry to develop a more effective programme for the control of *Salmonella*, improving communication and the awareness of producers to actions they can undertake to reduce *Salmonella*.

Development of ZAP2 database and website

A new database was developed to improve the efficiency of sampling and reporting for the ZAP Salmonella Programme. A website was developed to give producers, abattoirs and veterinarians password-protected access to results of the ZAP Salmonella Programme. Following pilot work the facility was made available in July 2007.

The new database can potentially provide the basis for a national database of both assured and non-assured holdings and targets site-specific information rather than assurance membership. Additional functionality is planned including the targeting of practical advice and an on-line action plan facility.

On-farm evaluation of the effectiveness of interventions

The review of international research, commissioned by BPEX from The University of Guelph in 2006 identified a number of interventions for the effective control of *Salmonella* on-farm. Beneficial effects in controlling *Salmonella* in pigs have been demonstrated for vaccination, feeding coarse meal feeds or fermented liquid feeding, replacing wheat in the diet with barley, acidification of feed or water, and potentially by strategic movement of pigs to off-site (or to separate) weaning or finishing units along with good hygiene. For interventions such as antibiotics, sodium chlorate and competitive exclusion, the results were less consistent. This review also revealed the lack of studies on some of the factors that have been identified in observational studies as potential risk factors for *Salmonella* infections in swine: limiting visitors to the farm, changing clothes and boots for visitors, the use of footbaths where necessary, pest (eg rodents, wild birds and other wildlife species) control, purchasing replacement animals from fewer suppliers, and stocking density. Consequently further investigations are needed not only in these areas, but also in those that showed promising results in controlling *Salmonella spp.* in pigs (for example, prebiotics, probiotics, and bacteriophage).

The authors of the review warned that there is uncertainty regarding the impact of any type of intervention strategy on an individual commercial farm and that results are likely to be variable from farm to farm. BPEX has put in place a programme of trials to evaluate at farm level the effectiveness of interventions in reducing the prevalence of *Salmonella* on pig farms in England and Wales.

The farm-based trials will be used to demonstrate the practical implementation of the interventions, where basic standards of biosecurity, hygiene, record keeping and pest control are already in place.

Veterinary practices have been involved in the design, implementation and supervision of the intervention trials and also the recruitment of the farm units.

The recruited farms have a prevalence of at least 50% positive samples by the mix-Salmonella meat-juice ELISA and will be identified for additional sampling through the ZAP database.

Farms will receive up to £1000 and veterinarians up to £500 for associated expenses for each demonstration trial satisfactorily completed. Farms that satisfactorily complete a trial will be returned to ZAP Level 1 on completion, regardless of the current *Salmonella* prevalence at that stage.

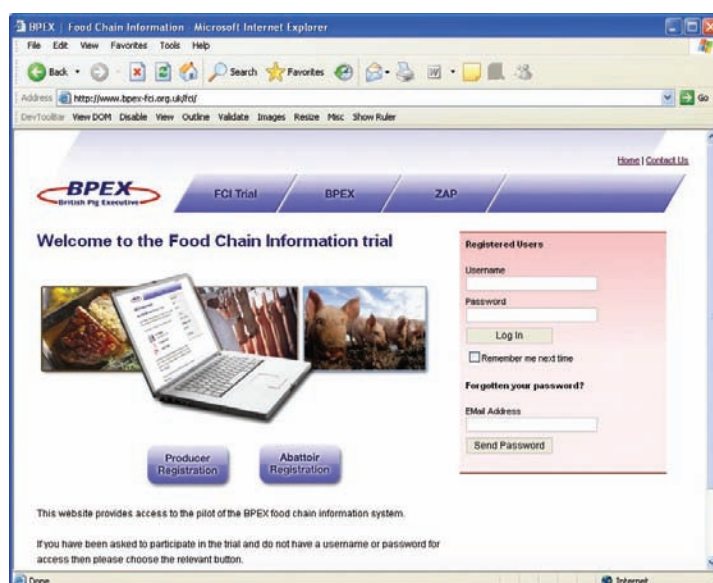
The effects of the interventions on *Salmonella* levels, ease of use, costs and performance will be monitored with a view to communicating results to all producers and veterinarians. A key aim is to communicate the outcomes to veterinary practices and feed advisors as well as producers.

BPEX ONLINE FOOD CHAIN INFORMATION SERVICE

From 1 January 2008, under new EU farm-to-fork hygiene legislation, pig producers are classified as food producers and with it a whole new tranche of paperwork, called Food Chain Information (FCI), needs to be filled in every time a batch of pigs is sent to an abattoir. BPEX has developed an Online FCI Service for producers to avoid this additional paperwork, which can be completed with a few simple clicks of a mouse.

BPEX developed the system in collaboration with the Food Standards Agency (FSA) and the Meat Hygiene Service (MHS). Initially the system was trialled with selected farms and abattoirs. The trial was then extended to a wider range of producers and abattoirs.

The online system aims to reduce the amount of information producers have to input by linking up to existing databases including assurance schemes, abattoir, medicine and ZAP databases so that the producer just has to point and click with a mouse rather than entering lots of information.



A further benefit to producers who use the BPEX online system is that they also receive an automatic carcass inspection report (CCIR) from the MHS (see example picture). From 1 January 2008 the MHS stopped producing paper reports for each consignment of pigs, so unless producers use the BPEX system they will have to visit the MHS website to download this information.

Meat Hygiene Service Feedback Report					
Please print and retain a copy for your records. Any problems with this service please contact BPEX via the FCI website at www.bpex-fci.org.uk .					
Abattoir LINFORD GROVE	Producer SANGERS AVENUE LINFORD WOOD E32N 69WA	Stamp Mark 2465	Size 105	Date 04/04/2008	Reference LWVATTS
BD.4 MHS Lairage Feedback					
Body Section	No. of pigs	Specific Area/condition			
There were no Lairage issues to report					
BD.5 MHS Post-Mortem Offal and Pluck Feedback					
Body Section	No. of pigs	Specific Area/condition			
Lungs problems	1	PNEUMONIA WITH ABSCESS			
Heart problems	15	PERICARDIITIS OLD			
Liver problems	0	No Conditions			
Pluck problems	0	No Conditions			
Guts including Pancreas And Spleen	0	No Conditions			
BD.6 MHS Post-Mortem Carcass Feedback					
Body Section	No. of pigs	Specific Area/condition			
Hind - the Hind Quarter (H1)	0	No Conditions			
Hind - 2 Hind Quarter (H2)	0	No Conditions			
Hind - the Leg (LG)	0	No Conditions			
Hind - 2 Legs (2L)	0	No Conditions			
Hind - 1 Part Leg (1P)	0	No Conditions			
Hind - 2 Part Leg (2P)	0	No Conditions			
Hind - the Rear Hock (RH)	0	No Conditions			
Hind - 2 Rear Hocks (2R)	0	No Conditions			
Front - the Shoulder (SF)	0	No Conditions			
Front - the Hock (FR)	0	No Conditions			
Front - 2 Hocks (2K)	0	No Conditions			
Front - the Hand (HA)	0	No Conditions			
Middle - the Loin (LN)	0	No Conditions			

An example of an automatic carcass inspection report

In the first four weeks of FCI being a requirement of the British pig industry, 40% of pigs sent to abattoirs were registered on the BPEX online system.

BPEX aims to combine the information collected by FCI with that required by the Animal Movement Licence (AML2) document during 2008.

To register to use the system and to download the FCI guidelines go to www.bpex.fci.org.uk or contact the FCI team on **01908 844331**.

