International Pig Topics

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ESPHM 12th EUROPEAN SYMPOSIUM OF PORCINE HEALTH MANAGEMENT

Number: 173

Vaccinology IX

The value of diagnostics

(with ASF and Covid-19 as examples)

Pighealth Bytes 172, on the same topic, was written before the current Covid-19 pandemic developed into a worldwide human and economic disaster. Human-disease control experts have, in the meantime, learned a lot about the difficulties in controlling this virus. Now they agree that it is essential to get more information on where the virus is, or was, and how 'social distancing' or isolation works. It is seldom that experts agree but they do agree on the value of diagnostics. If you do not know what the virus is doing, do not know where it is or where it goes to, you have no idea how to organise a virus (control) programme. It is all a black box! Diagnostics help is essential.

Covid-19 control is, for these aspects, not different from what the swine veterinarians are doing for African Swine Fever and have done for controlling and eradicating Aujeszky's Disease virus (ADV or PRV). Diagnostics are roughly split into two main groups. Early detection of the virus by PCR techniques, and later detection of antibodies by ELISA techniques.

The PCR technique is an extremely sensitive method. PCR tests will detect the virus or parts of the virus when it is present. Different viruses have a different period of being present. The time interval to detect the virus is limited. When isolation of positive cases is practiced, the individual sample result is important. Due to its sensitivity, the utmost care is required when sample taking and processing in order to avoid cross contamination. Cross contamination will lead to a result that is classified as a false positive – not a false positive because the test is no good but because the sample does not reflect the correct situation.

PCR tests are normally done in well designed and well operated laboratory facilities where hygiene standards prevent cross contamination. Recently, reports describing on-farm pen-side PCR tests have been published. This opens an enormous new field of diagnostics options. On farm and other practical experiences, when these tools are used by less trained staff under less hygienic conditions, will determine their value.

ELISA tests are completely different and serve a different purpose. For epidemiological surveys, they are excellent. The antibodies they detect are present for a longer period after infection. The tests are specific and the problem of cross contamination is unlikely to occur. The result of the individual samples is less important than in the case of the PCR test. For historical information, as generated by ELISAs, 95% accuracy is more than enough and most ELISAs are better than 95%. It is no surprise that there is an agreement in Covid-19 control, on the value of diagnostics. In the veterinary world there are many examples!