

SWINE HEALTH

Title: Etiology of severe form of PMWS – NPB #06-094

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Scientific Abstract:

The objectives of the project “Etiology of severe form of PMWS” were 1) Investigate the etiology of an apparent emerging disease complex known as “severe form of Post-weaning Multisystemic Wasting Syndrome (PMWS),” and 2) Evaluate the feasibility of applying DNA-microarray technology for use in veterinary diagnostics. For objective 1, tissue samples collected from field cases of the severe form of PMWS were tested for viruses. As would be expected, a variety of swine viruses were detected in the sick pigs; however, one virus, porcine circovirus type 2 (PCV2), was found in all sampled pigs. Genetic analysis revealed the pigs were infected with a European-like PCV2, this was the first time the European-like virus had been found in the United States. How this virus came to the United States, and to what extent it played a role in the severe form of PMWS was not clear. To investigate further, germ-free pigs were inoculated with the European-like PCV2 and North American-like PCV2 viruses, both of these virus types were found in the same farm in one case. Under the conditions of the germ-free pig experiments, the effect on pigs was similar for both viruses with no clear indication as to the clinical significance of the European-like PCV2 appearing in the United States. Additional study is required to determine if the European-like PCV2 is distinct from the North American PCV2 and this would contribute to the emergence of the new virus in the US. For objective 2, a new technology designed to detect all known virus families was applied for diagnostic purposes for some of the field cases described above. In addition to viruses detected by traditional methods, a novel swine virus was detected. Efforts are underway to fully characterize this virus at a genetic level as well as to determine if the virus is a pathogen in swine, or just another interesting virus that has been detected in pigs.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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