



UNIVERSITY OF MINNESOTA

Regional control of swine disease – new tools for the future?

*Peter Davies, Leman Chair of Swine Health and Productivity
University of Minnesota*

The cliché that the only constant is change has more than a grain of truth. Apart from rapid changes in the structure of the industry that we have come to expect, we have come to appreciate the reality of biological change that we see as emergence of new disease agents. The porcine species has certainly seen its share of new diseases over recent decades - PRRS, PMWS, Nipah virus in Malaysia, and new variants of influenza being the most noteworthy. At the same time, we live in a world of mind-boggling technological change. This article poses one question – how can the pig industry harness new developments in areas such as communications technology, information management, etc. and apply them to the challenge of managing swine health?

Most of the more problematic swine diseases affecting the Minnesota swine industry can spread readily among farms in an area, unrelated to the movement of animals. There is growing consensus among the veterinary community that coordinated regional efforts will be necessary to effectively combat diseases like PRRS, rather than isolated efforts on individual farms which are often frustrated by the reappearance of a disease. Although the veterinary profession has centuries of experience in mounting control programs, and has had numerous successes (brucellosis, TB, hog cholera, pseudorabies, etc), these efforts have almost invariably been implemented under government regulatory authority. If the industry aspires to tackling some of today's thornier disease problems (particularly PRRS) outside the regulatory umbrella, we need to systematically identify the major obstacles and seek the solutions. To that end, several research projects (funded by the Minnesota Pork Board, National Pork Board, and other sources) at the Swine Disease Eradication Center, University of Minnesota, are addressing various pieces of the regional control puzzle. Scott Dee has been working actively to understand mechanisms of transmission of PRRS, and on evaluating new options for improving farm biosecurity, most notably related to transport biosecurity, insect borne transmission, and most recently options for air filtration. Bob Morrison has led a pilot project on regional control in Rice County, and is aiming to expand

this project to another county. This project has focused on use of geographical information systems (software for mapping and analysis of geographic information) to share information about farm PRRS status, including use of a web-site displaying county maps and related information. Regular meetings with local producers are recognized as a vital factor in improving local communication and fostering motivation of producers to attempt PRRS elimination.

We continue to look at new avenues to build on this research foundation and enhance the capability of the industry and its veterinarians to wage and win the health battles. I suggest that the feasibility of controlling the complex diseases we face now and into the future will increasingly depend on uptake of improved technology. Pseudorabies provides a familiar example of how technological advances (gene-deleted vaccines and differential serological tests) can alter the feasibility and cost-effectiveness of implementing a regional control program. However, it is not in biology but in fields such as information management and communications technology that progress is truly breathtaking and therefore an area we should look for new opportunities. At the University of Minnesota we are commencing some novel projects seeking to integrate such technological advances that we hope will strengthen our hand in dealing with diseases requiring regional strategies.

All disease control programs rely on good epidemiologic intelligence. The field of mapping and 'geographical information systems' is one field where technology has exploded. Anybody who needs convincing that 'mapping' tools are getting sophisticated should look at the Google Earth product that is freely available to anybody with broadband internet access (visit <http://earth.google.com> to download the software). Technology that is currently available can enable veterinarians to electronically record disease events in the field and upload the information into a database via the web. This 'real time' data capture is accompanied by the ability to view interactive maps that can display details of farm attributes overlain on high quality photographic images. Much of the data necessary to support this type of application is already publicly available in Minnesota. Accurate local and regional disease information should be helpful in supporting many individual herd health decisions (e.g. pig flow, vaccination decisions, depopulation, site evaluation), but clearly is indispensable to any efforts at coordinated regional control. In collaboration with leading swine veterinarians in Minnesota, the Minnesota Board of Animal Health, and David Wray of the North Carolina Department of Agriculture and Consumer Services, we are establishing a pilot project to explore the potential of this type of system.

Obviously there are considerable technological challenges in establishing such a system, and in learning how to most effectively exploit it. However the biggest question is not whether

new technologies can assist us in the challenge of disease control in the swine industry. It is whether we are ready to embrace them. In the long term a greatest challenge will be to foster producer participation, which will ultimately determine the usefulness of any initiative to support regional disease control. The Rice County project has shown that producers at a local scale can get over the barrier of sharing information about herd disease status for the collective purpose of disease control. Although knowledge is power (and collective knowledge is collective power), producers will understandably have concerns about confidentiality, access to data, potential litigation, etc that come with the turf of modern information technology. For the industry to capture benefits that technology can deliver, we need processes to reassure producers on these issues, as well as education about the potential benefits to be achieved. As we move forward with these initiatives, we look forward to your involvement in overcoming the challenges.