
Developing an overall risk score for LOCAL DISEASE TRANSMISSION

That's the aim of a Guelph epidemiologist, who sees it as a way to identify the most likely areas for disease surveillance and elimination

BY GEOFF DALE

Research by a noted University of Guelph swine epidemiologist could assist the industry in identifying what kind of animals need to be sampled for specific pathogens and how to deal more effectively with surveillance at the herd level. Zvonimir Poljak, an assistant professor in the university's Department of Population Medicine, is currently working on stages of risk-based surveillance, both on farm and regionally, in order to develop recommendations and policies for the industry.

"We are visiting finisher farms, trying to identify pigs that could be euthanized, if present at all," he says. "We are doing diagnostic tests and recording clinical signs in an effort to link these clinical signs with the probability of identifying certain pathogens in either blood or tissues.

Once we know the clinical signs to look for, he says, it will be possible to pinpoint animals at risk more easily.

"I am also looking into the comparison of different tests because, in order to develop surveillance systems, we need to have a good estimate of the sensitivity and specificity of all kinds of diagnostic procedures," Poljak says.

One of the major concerns is how to tackle Porcine Reproductive and Respiratory Syndrome (PRRS)

virus, which causes reproductive failure in breeding stock and respiratory tract illness in young pigs.

Using molecular techniques, Poljak is conducting ongoing studies to see if he can arrive at the same classification using different parts of the PRRS virus.

Last year, Poljak presented a paper on clusters of biosecurity in Ontario sow herds and their geographical distribution, adding a regional dimension to his research in an attempt to identify the most likely areas for disease surveillance and elimination.

The objectives were to determine the most ap-

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propriate number of biosecurity groups in provincial swine herds; estimate an expected prevalence of these groups across regions; and combine herd density with the expected level of biosecurity in an area for an overall risk score for local disease transmission.

"Future work will involve the density of breeding and growing animals and confirming biosecurity results by another data set containing all production classes," he says.

"We've just started looking at the modelling of PRRS virus elimination at the regional level," he adds. "We are doing this in collaboration with statisticians to develop or mimic the true source population in a region of Ontario to study on our computers what the most effective elimination strategy of PRRS status is in a region. With baseline demographic information available, we can take further observational disease data to run different simulated control strategies and compare their efficacy.

"When there is a low number of animals and a relatively short observation period, the time frame is much shorter. Regional studies, however, often involve more people and can take several years to complete." ■

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