

Feed seen as wild card in PEDV

By SARAH MUIRHEAD

PORCINE epidemic diarrhea virus (PEDV) presents a new paradigm for the veterinary community and feed industry in that, for the first time, feed is an identified risk factor for transmission of a virus, industry leaders from the private and public sectors were told at a recent meeting of the minds, of sorts, in Des Moines, Iowa.

Dr. Scott Dee, director of research at Pipestone Veterinary Services and head of Pipestone Applied Research, explained that, unlike with porcine reproductive and respiratory syndrome (PRRS) and other viruses where feed is not a risk factor, feed handling does need to be factored into all biosecurity efforts when it comes to some of the emerging viruses with which the industry is presently dealing.

Since the hog industry has never really had to worry about feed being the carrier of a virus onto a farm, Dee said that is where the weakest link in the system exists right now in regard to PEDV.

At the meeting, hosted by feed ingredient supplier Kemin Industries, Dee noted that work at Pipestone has shown that PEDV can be transferred to pigs through complete feed.

He shared the research data and experimental setup but said, basically, by removing all other potential infectious sources and feeding the live virus with feed as the delivery vehicle, his experimental groups broke out in the usual three days after exposure to PEDV.

Dr. Steve Kitt of Pillen Family Farms in Columbus, Neb., suggested that hog producers have three options to reduce PEDV in feed.

He said irradiation would kill the virus, but it is expensive. Pelleting would work as well but is not practical on Pillen's 11 farms, plus he questioned whether it would even be possible to achieve 100% virus removal given the precision in time and temperature required.

The last option he noted is to treat feed with formaldehyde. Kitt said worker and environmental safety, cost and pig performance are areas in which he would like to know more when using formaldehyde for PEDV control.

Kemin's Sal CURB is a formaldehyde-based product that has long been used to minimize the risk of salmonella in livestock and poultry feed for up to 21 days and is part of an overall, comprehensive biosecurity program. Formaldehyde is a recognized feed disinfectant but is not ap-

proved for use against PEDV.

Dr. Mark Bienhoff of Kemin said the purpose of the meeting was to explore where the company should allocate research dollars in this area going forward.

Kemin also convened the meeting to gain insight into what questions the hog industry would like answered regarding enhancing biosecurity as it relates to PEDV and other potential future virus threats.

Kemin president Dr. Chris Nelson said PEDV is "a worldwide issue before us as an industry. We need more opportunities like this to combine public and private initiatives with the combined goal of finding solutions."

Nelson noted that, in a number of cases, collaboration and cooperation have been missing within animal agriculture, and that has resulted in a doubling up of where research dollars and efforts are directed.

Indeed, the meeting, which also included representatives from the National Pork Board (NPB) and the National Pork Producers Council, provided an opportunity for both sectors to find out what PEDV-related work is currently underway. NPB, for instance, is conducting a number of feed-related studies, with results expected in the short term.

For feed and PEDV, the big question is what constitutes an infectious dose. In other words, how much PEDV needs to be in the feed in order for the pigs to contract the virus?

Dee and others noted that it may not be easy to arrive at that answer since, like other viruses, PEDV is constantly changing and adapting.

"At this point, what we know is that feed is a risk. It is hard to rank in terms of a priority, but I do know we got hit pretty hard in January 2014, and all indications are that the virus came in through the feed," said Dee, who traced back a load of feed given to three farms, all of which then had a PEDV outbreak at the same time.

Representing the Institute for Feed Education & Research, a not-for-profit research foundation, at the meeting, Dr. Chad Riskey of Berg+Schmidt America said the feed industry recognizes that feed may be a vehicle for delivery of PEDV and is working closely with NPB on eight different research projects in order to get a better understanding of any potential risks and how those might best be mitigated.

Dr. David Pyburn of NPB confirmed that research on the feed side has become more of a priority.

Interestingly, Pyburn also pointed out that indications are now that the two strains of PEDV as well as the swine delta coronavirus with which the hog industry is presently dealing more than likely came into the U.S. at about the same time.

All are of Asian origin. Unfortunately, he said, although the U.S. Department of Agriculture has initiated a pathways analysis to determine any potential link in entry points for the three viruses, it has been slowed by a lack of information on the viruses and their potential sources in the U.S. USDA is organizing an international meeting for later this year to try to further gather the needed information.

The feed manufacturing process itself is well controlled and monitored, but work at Pipestone Applied Research indicates that some additional biosecurity steps need to be considered in order to provide further assurances to the hog industry.

"The feed industry needs to give us some additional assurances, particularly in regard to raw material sourcing," Dee said.

One example is the loading and unloading of grain and feed. PEDV could very well be on a dirt clod brought in on the bottom or tires of an incoming truck that then falls off or gets swept into the load-in pit. It was said that even corn coming from a farm where hog manure was previously spread is a potential contamination point.

"Feed coming onto the farm is basically unprotected. It probably isn't the source of the contamination, but it does present a risk," Dee said.

He further noted that it is wrong to pay attention only to certain feed ingredients. Removing animal protein from the Pipestone system has not seemed to have any effect on reducing PEDV outbreaks, he said.

"We removed animal proteins, and we still got PEDV," Dee added. "Our outbreak was from a contaminated feed. We don't think it was from a specific ingredient."

Swine farm biosecurity requires a comprehensive approach in which close attention is paid to genetics, farm personnel, incoming supplies, transportation, air and ventilation and now feed, Dee emphasized.

"With PEDV, feed is the wild card. PRRS dies in feed within one hour, but that is certainly not the case with PEDV," Dee said.

Dr. Alex Ramirez of Iowa State University encouraged the group to use PEDV as a learning tool for other potential viruses. ■