On-Farm Biosecurity
Auditing Best Management Practices

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In 2017, on-farm best management practices were audited on a total of 24 farms throughout Canada as part of a national project titled From Innovation to Adoption: On-farm Demonstration of Swine Research. This article is part of an eight-part series reporting on these audits.

It is easy to take biosecurity for granted, that is until something goes wrong in the production unit. The resurfacing of PEDv throughout the spring (2017) in Manitoba reinforces the importance of daily procedures and facility layout that keep Canadian herds healthy.

Overall results of the audits indicate that producers across Canada place a great deal of importance on biosecurity within their operations. It is important to note that a majority of the audits took place prior to the PEDv outbreak in Manitoba (2017), indicating that biosecurity has always been a key element in successful pork production.

Key indicators include:
- All but one of the participating farms have only one source of animals entering their facilities.
- More than 80% of audited farms have adopted biosecurity procedures, including taking a shower and providing a change clothes and boots before entering a barn. Typically, if producers did not meet this requirement, it was due to limitations associated with the age of the facility and associated renovations.
- All participating farms ensured that staff were properly trained regarding biosecurity protocols, with a vast majority of the farms (92%) reviewing them annually.

Potential areas of improvement:
- Most farms know the importance of a visitor registry. Results from the audit, however, indicate that just over half of the farm registries were up to date at the time of the audit. While this is a simple step in the audit process, it can be one that is easily overlooked and can be exceedingly important at times of a disease challenge.
- Protocols for entering or exiting the building are posted and respected in approximately two-thirds of participating farms. In digging deeper into this question, farm managers agree that biosecurity procedures are respected by staff and visitors. However, in one-third of the farms audited, proper signage related to biosecurity was lacking on and within the production site.

Table 1 provides details on 10 different categories related to the biosecurity portion of the audit. In order to provide the greatest feedback to participants, recommendations were part of the Audit Report Card that farms have received for participating in the project. The biosecurity portion of the audit process utilized an "On-Farm Biosecurity Evaluation Tool" developed by the Centre de developpement du porc du Quebec (CDPQ) and was completed by the farm manager. If you would like a copy of this tool, see the Further Reading section below.

Conclusion
Information presented within this article is based on the results of auditing 24 farms across Canada varying in location, size and type of operation. Overall, pork producers are doing a good job of staying on top of those management issues that could potentially be "profit-robbers." It is important to remember to review policies and procedures in order to ensure that some seemingly small things do not get lost in the day-to-day activities within the production facility.

For Further Reading

On-farm biosecurity evaluation tool
(Francais) http://vsp.quebec/docs/

BiosecuriteFermeAuditQ-FR.pdf
(English) Document available upon request, contact M Christian Klopenstein, Ph. D., DVM
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Table 1. Biosecurity Assessment

Assessment Item	Meets	Partially	Does not meet	N/A
How many sources do pigs entering the herd come from. It is recommended that pigs come from one source only.	96 %	4 %	0 %	0 %
Loading dock on each building is up to code. It is recommended that a loading dock be heated, covered and with restricted access.	42 %	38 %	17 %	4 %
Access to the building is limited to designated personnel & authorized visitors. It is recommended that visitors must always log in, doors should always be locked and proper signage should be in place (ex.: Keep Out – Biosecurity).	79 %	8 %	13 %	0 %
A visitor registry is available and up to date (name, date, time of arrival and departure, last contact with pigs). It is recommended that a visitor registry be kept and updated.	54 %	0 %	46 %	0 %
Biosecurity procedures in place (shower, clothing, hand wash station). It is recommended to shower, change clothes and boots before entering a barn.	83 %	17 %	0 %	0 %
Protocols for entering or exiting the building are posted and respected. It is recommended that protocols be posted upon entry of a barn.	67 %	21 %	13 %	0 %
Staff properly trained regarding biosecurity protocols. It is recommended that staff be properly trained regarding biosecurity.	100 %	0 %	0 %	0 %
Biosecurity protocols are reviewed annually with staff. It is recommended that biosecurity protocols be reviewed annually.	92 %	0 %	8 %	0 %
All animal carcasses are placed in an area that is not accessible to scavengers. It is recommended to place animal carcasses in an area that is not accessible to scavengers.	92 %	0 %	8 %	0 %
The site layout allows for the recovery of animal carcasses (dead livestock) outside of the restricted access zone through a different access road than the one being used by the staff. It is recommended to use a different road for the recovery of animal carcasses than the one used by staff.	38 %	21 %	0 %	42 %

Legend **Meets recommendation** **Partially meets recommendation** **Does not meet recommendation** **Not applicable**

(Finding New Technologies... cont'd from page 1) the person entering the property and a record of who entered and exited the farm. Testing of the technology started in 2016, primarily in poultry in Ontario. Issues include 'drifting' of fence and applications not running on all phones (devices), but these are solvable. The platform has the advantage of being able to link with other subscribers and create a 'network' for communicating changing health status in a geographic area through daily health monitoring inputs from the production supervisor. With the veterinarian linked in, there could be early warning of changing health status in participating farms. Long-term applications include potential for linking traffic between farm-sites in case of a foreign animal disease outbreak. This first technology brings up the issues of privacy and ownership of data and therefore may have its greatest benefit within a company of related barns. At an estimated $300 per year subscription this a low-cost addition to the biosecurity program.

The transport truck is the link between barns and markets and is also the most significant vector of disease after the live pig itself. The next technology is from the food and hospital industries, the ATP meter allows an instantaneous test of 'cleanliness' of trailers. A research project determined the likely areas that are not well-cleaned and the ATP meter swabs can be brushed on the metal and inserted into the reader for an instantaneous readout – clean, "please back up to the barn", or dirty "please go back and rewash before approaching my barn". At $2,000 per handheld unit (reusable for years) and $15-20 per trailer in disposable swabs this is unlikely to be used for finisher hog shipments but would make sense for the nucleus barn.

DrySist is a trademarked cleaning/baking process from Castene Trailer manufacturing in Spain. The process uses a site dedicated to completing the disinfection of washed trailers. When arriving at the site 'washed' the undercarriage is sprayed (automatically) with disinfectant. Backing into the baking station, a sliding wall moves up each side of the trailer enclosing it and forms a pinchpoint behind the cab. This concentrates the heat that is supplied by a heat generator moved into place and directed into the rear of the trailer compartment. The trailer can be previously outfitted with heat sensors that connect wirelessly to a central computer. Hot air is blasted in the back until all sensors reach 72oC. The advantage is that it would use about 40% less gas than the current method of heating a whole building. Also, it does not heat the tires and running gear, instead heats the trailer from the inside out. The beta site is operational in Spain now.

Lastly for trailers - tracking trailers as part of total traceability is now possible while also capturing environmental data from various compartments in the trailer in real time. The Raspberry PI microcomputer (from UK) is the size of a credit card and can have numerous sensors attached to it (humidity, temperature, cameras, etc). This information can go directly to the operator's tablet in the cab ensuring driver oversite of the welfare of the animals in transit. A GPS chip adapter allows the trailer to be tracked. A commercial application (Trailer Genie) is under development. I noted that this basic microcomputer is currently on Amazon for $55 Cdn each.

The next 'outside the barn' application is Hydrothermal Liquification (HTL) of biowaste. This University of Illinois project has identified