



Professional Nutrition & Management Services

HOG-UPDATE

VOLUME 20
Issue 3
November 2008

Evolution of disease and Modern methods of control

By Stuart Boshell

The evolution of new and more complex disease syndromes is bringing the need for even greater biosecurity and disease prevention measures. With the hog industry heavily into economic stress, areas of production such as biosecurity become less of a focus. Added to this is the recent strong general health of southwestern Ontario herds. Biosecurity tends to get more focus during periods of poor health due to disease.

Past decades have seen simple single-pathogen problems. Often it was seen that only one pathogen was involved. Bacterial secondary infections were also common but controlled once the main pathogenic prevalence was identified and treated. Now we face an array of complex new diseases and syndromes involving many pathogens and numerous secondary challenges. Often the situation is driven by viral pathogens in varying combinations and strains compounding the effect and making diagnosis and treatment difficult

A simple example is post-weaning diarrhea in weaners during a PCVD outbreak involving Salmonella, E.coli and other possible opportunistic pathogens (TGE?). Also remember that these problems are not limited to grow/finish herds. Breeding herd problems have also been due to more complex interactions between pathogens such as PRRSV, Porcine Parvovirus and more virulent strains of Leptospira. . Not only can these new pathogens cause disease, they can also interfere with the pig's immune system or other

methods of disease control like vaccine efficacy or medication uptake.

The evolution of new major diseases and how they react has had veterinarians and health professionals throwing every drug and vaccine available in different combinations with varying success. Pharmaceutical companies have been under pressure and working hard to generate new vaccine to keep up with the new and mutating strains we face today. Again with varying success.

Good biosecurity and herd management practices are at the cornerstone of protecting against new and more complex diseases threatening pig populations. In modern production populations have increased in size and number fostering greater pig dense areas. Intense production systems have been under pressure to maximize production often with not enough thought to biosecurity.

Stocking a herd with SPF livestock can be a start. Knowing the health status of semen and gilt supplier's herds and allowing for the proper acclimatization to on farm pathogens can keep disease prevalence to minimum. The problem with SPF herds is that they may be very susceptible to any introduction of a pathogen. Active immunity to these pathogens has not been established so keeping them out is key.

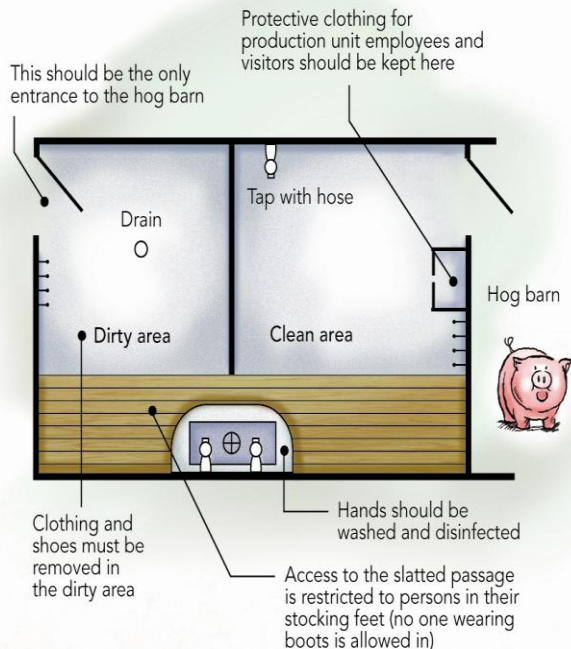
Cleaning and disinfecting can be a useful tool but if not done correctly will have low to no efficacy. Temperatures and application time must be considered. Choosing a broad spectrum disinfectant will control most virus and bacteria but you may want to find one that controls pathogens specific to an operation. Proper washing and removal of all organic matter will help ensure the disinfectants potency. Batch growing systems will benefit most from this. Continuous flow operations will find pathogenic prevalence more difficult to control.

Danish entry systems have been shown to effectively reduce to spread of disease at a very simple level. Adoption of such a system is fundamental, low cost and highly functional. Replacement stock acclimatization will also keep pathogen populations in check. Being aware optimal conditions and seasons in which susceptibility is increased can help in making decisions when developing and implementing a biosecurity program. For instance, PRRS virus prime season for spread and infection is fast approaching. In cold conditions with adequate moisture, the survival of the PRRS virus outside of the pig is optimized.

Farm traffic is high at this time of year with vehicles coming and going for harvesting, plowing, planting and manure application. The spread of disease becomes even a greater risk. By providing alternative vehicle routes or designating laneways, the effect of these vectors can be minimized.

Once prevention of infection and build up of these new pathogens has been achieved the utilization of vaccines and pathogen specific medications can be considered. Pig diseases in recent years have changed fundamentally. While pig production has been able to control the simple single pathogenic infections it is the emergence of new disease and their interactions that makes control difficult.

Danish hog barn entryway



(Diagram provided by OSHAB position statement on Danish Entry)

The Danish entry system is a simple biosecure entrance system that has been scientifically proven to reduce the risk of cross contamination from outside to inside. It accommodates a change of clothing, boots and hand washing prior to entry to the pig barn.

A Danish entry should:

- : be the only entrance to the pig barn
- : consist of a clean and dirty area (a physical barrier like a bench works well to keep the two areas separate)
- : Allow people to remove outer clothing and shoes in the dirty area.
- : Include a place to wash and disinfect hands
- : Allow no boots on slatted area or over barrier separating clean and dirty areas
- : Provide clean protective outer clothing and boots in the clean area.



Good biosecurity practices are at the cornerstone of protecting against new more complex disease threatening pig populations.

HOG UPDATE is published in the interest of helping hog producers become more profitable. We welcome your comments.

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