

Canadian PRRS Eradication: A dream or a future reality?

Julie Ménard

F. Ménard inc., 251 route 235, Ange-Gardien, Québec J0E 1E0

Email: jmenard@fmenard.com

■ Introduction

Cost of Porcine Reproductive and Respiratory Syndrome (PRRS) is estimated to be about \$100 millions Cdn per year. This represents \$10 to \$20 Cdn per pig produced in a PRRS positive system. Besides its impact on sow reproduction, pig mortality and treatment costs, PRRS has a direct impact on expression of diseases such as PCVAD (Porcine Circo Virus Associated Disease). This is why it is imperative to control this disease.

As a swine practitioner coming from a pig dense area in Quebec, my main goal over the past 20 years has been PRRS prevention and control. Being a naturally optimistic person, I dreamed more than 10 years ago to work on a PRRS regional control in collaboration with veterinarians from our region.

When the North American PRRS Eradication Task Force (NAPETF) contacted me in 2006, I immediately accepted to represent the Quebec region because I believed that team work was the only way to succeed in long term PRRS control.

■ North American PRRS Eradication Task Force (NAPETF)

In 2005, the American Association of Swine Veterinarians (AASV) took a position that placed the AASV in the leadership role in a long term PRRS eradication project. Twenty-four members from Mexico, Canada and USA have been appointed to the Task Force. The Canadian team is composed of Dr Brad Chappel from Manitoba, Dr George Charbonneau from Ontario and Dr. Julie Ménard from Quebec.

The main goals of the NAPETF are to define the needs concerning PRRS research as well as the educational and farm surveillance programs that must be put in place in order to control PRRS. A survey for practitioners and producers will be sent soon which will bring answers concerning the current PRRS situation, and knowledge as well as the confidence in such a project.

The other action items coordinated by the NAPETF are the elaboration of a standard set of PRRS definitions and guidelines on good biosecurity practices, including transport vehicle management.

PRRS eradication is the long term goal, but the first step is PRRS stabilization of the herds.

■ Basic Points for PRRS Stabilization

In order to stabilize a sow herd against PRRS, subpopulations of PRRS naive animals must be eliminated and entry of PRRS viruses must be prevented. The main items to respect in order to meet these goals are:

- Semen must come from a PRRS negative boar stud
- Replacement gilts must come from a PRRS negative multiplication source
- Gilts must be acclimatized to PRRS virus before being introduced into a PRRS positive sow herd
- Strict biosecurity measures must be respected

Boar studs must be and have to remain PRRS negative

Boar stud health status has a very big impact on the entire production flow. In order to be secure, we suggest:

- An isolated site (>5 km away from other pig farms)
- Frequent monitoring for early detection of PRRS infection
- Strong biosecurity measures

Replacement gilts must be PRRS negative

For the same reasons as the boar studs, health of the replacement gilts has a major impact on the entire production flow. PRRSV negative gilts prevent PRRS transmission to the downstream sow herds and permit an accurate acclimatization to the homologous PRRSV strain of the sow herd.

Requirements for replacement gilts are the same as for boar studs: isolated site, PRRSV status monitoring pre dispatch for multipliers, and before

acclimatization for a PRRS positive sow herd. Strong biosecurity measures are also essentials.

Gilts must be acclimatized to the sow herd's homologous PRRSV strain

Before introducing PRRS negative gilts into a PRRS positive sow herd, it is highly recommended to expose them to the PRRSV strain of the sow herd.

In our experience, we exposed gilts at 50 days of age and 20 kg to the sow herd PRRSV strain in an isolated offsite gilt acclimatization barn. We then respect a “cool down” of more than 9 months using parity one segregation system, in order to prevent any PRRS shedding post introduction into the sow herd. Sections are managed all-in – all-out in the exposure and isolation areas to shorten the disease cycle. This technique has been very helpful in sow herd stabilization and has been used in certain PRRS eradication projects.

Strict biosecurity measures must be respected at all time

In order to keep the herd stable, prevention of new PRRSV strain introduction through good biosecurity practices is essential. This item will be covered later in this presentation.

■ The Different PRRS Eradication Techniques

In general, when the sow herd has been stabilized to PRRS virus, then eradication can be an option. The different techniques of eradication are:

- Depopulation / Repopulation
- Herd closure and roll over
- Gilt acclimatization and roll over
- Test and removal

Depopulation / Repopulation

The principle is to empty the whole barn, wash, disinfect and introduce PRRS negative animals.

It is a very efficacious method. However, good washing and disinfection procedures are very important to prevent reinfection from the environment. This is an ideal method for farrow-to-finish herds, isolated site herds and when multiple PRRSV strains are involved.

Herd Closure and Roll over

The principle is to stop the introduction of replacement gilts for at least 5 months and in the meantime, do an offsite gilt breeding project with PRRSV negative animals. It is recommended before beginning this type of eradication, that the sow herd be PRRS stable. This can be verified by the production of PRRS negative piglets from that sow herd during the past few months.

This is a perfect technique for high genetic value breeding stock. This technique is better applied in a 3-site system. I have personally no experience with this technique.

Gilt Acclimatization and Roll over

In order to stabilize the sow herd, gilts are acclimatized to the homologous PRRSV strain of the sow herd, as described previously in this paper. Gilt exposure is usually done for the first 7 to 9 months post PRRS outbreak in order to stabilize the sow herd. Following that period, gilt exposure is stopped and PRRS negative gilts are then introduced into the sow herd. Serological testing of the PRRSV negative gilts entering the sow herd is indicated to assess the success of the eradication process.

This technique is good in multiple sites, commercial sow herds and works better when only one PRRSV strain is involved. I have personally had great success with this technique; with no break in the pig production and revenue stayed stable.

Test and Removal

The principle is to test all the sows serologically by PCR and to eliminate all PRRS positive animals. Testing must be repeated at regular intervals in order to eliminate all new positive animals. Gilt introduction is suspended during the testing period.

This technique can be used for high genetic value breeding stock but is very expensive because of testing costs and animal culling. The sow herd must be PRRS stable before the beginning of the eradication. This technique is used less now than in the past.

■ Steps to Sustainable PRRS Eradication Program

After the sow herd has been stabilized to PRRSV and an eradication program has been completed, it is imperative that the health status be maintained. The maintenance of a PRRSV negative herd status depends on the biosecurity practices and the cooperative work.

Biosecurity Measures

Biosecurity is pre-eminent to prevent reintroduction of the PRRS virus. The regular rules, suggested and supported by the excellent research of Dr Scott Dee, are:

- Change boots, coveralls and wash your hands when entering a herd.
- Materials to be introduced into the herd, must be free of feces and dust. It must be ideally double bagged and disinfected at entry.
- Control insect introduction through efficacious screens and insecticides. PRRSV can travel 2.4 km through insects.
- Transport vehicles must be well washed, disinfected and dried (>8 h) between transport of PRRS positive and PRRS negative animals. Some disinfectants are more efficacious than others against PRRSV, such as the gluteraldehyde and quaternary ammonium combination tested by Dr Dee. A new system of high velocity warm air called TADD system (Thermal Assisted Drying and Decontamination) has been developed to enhance quick drying and has proven to be efficacious against PRRSV. A good preventive measure is to allocate some specific trucks to PRRS negative pig flows.
- Air filters are a new avenue in prevention of airborne transmission. This tool is now being used to protect boar studs all over the world. Different types of filtration techniques exist. The most popular are Hepa filters and Dop 95% at 0.3 microns. Hepa filter is the most efficacious type but is much more expensive than Dop 95%. Filtration is an interesting technique, especially in a pig dense area to prevent introduction of PRRSV. A year round filtration is advised to prevent PRRSV introduction. Also, ventilation must be adjusted because some air restrictions are a consequence of the filtration. Some new filters are under development in Canada and may be a good option for sow multiplier herds and commercial sow herds in a pig dense area.

Cooperation

Long term PRRS control will rely on cooperative work between all the people from the industry; producers, veterinarians, transporters, researchers, etc. Each of us is sharing a role in PRRS control. First of all, herds must be stabilized through a good PRRS stabilization program. Biosecurity practices must be respected at all times and eventually PRRS eradication will take care of itself in a long term.

But to achieve these goals, sharing of information between veterinarians and producers is essential. PRRS status of the herds, PRRS virus sequence homology data and epidemiological studies are steps conducive to a better PRRS control. Some regions with low pig density will be the first ones to proceed to PRRS eradication.

Some groups in Canada are actively working on cooperative projects in order to better control health status of Canadian herds. The goals of these groups are to make Canadian herds financially profitable on a long term through good health principles. OSHAB (Ontario Pork Industry Council Swine Health Advisory Board) is one of these groups.

■ Conclusion

In conclusion, different PRRSV eradication techniques are available. However, before proceeding to eradication, herds must be PRRSV stable. Thorough follow up of the biosecurity measures will help to maintain the PRRSV negative status of the individual herds. Cooperative work is essential for long term PRRS negative status of a whole region.

Each of you can become a leader in your area. Become part of the team.

■ Suggested Readings

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