PRACTICAL EXPERIENCE WITH VACCINATION AGAINST BOAR TAINT IN BRAZIL

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Introduction

Vaccination against boar taint is a method of castration of male pigs studied and used for over 30 years. Although the time has passed, the opportunity to try this market innovative management tool will compose a new chapter in the history of Brazilian and international pig production. A large amount of research and development was needed to make the concept of immunological castration a practical reality. The idea of using the pig's own immune system to temporarily block the function of the testes, and thus fully control the taint in meat, it's simple in theory, but demanded a high level of science to transform it into a commercial proposition. This unique method of castration can be achieved without the use of drugs, hormones, animal products or genetically modified material of any kind and, in markets where it was approved, it was granted withdrawal time before slaughter of zero days. As with all products of animal health, the immunocastration vaccine has to be approved by the appropriate regulatory agency within each market before it can be sold. This typically requires an extensive dossier of information, including the effectiveness, safety of the animal target, user safety, food safety and general manufacturing data.

Physical castration is traditionally accepted as a way to remove any risk that entire male odor will affect the consumer's preference for pork, and has served the industry well over the years. However, although the current method of castration (physical castration) functions well, this intervention to control the risk of boar taint contains a hidden loss for producers. They lose the benefits of growth performance and efficiency of intact males. Producers around the world are aligned in their choice of castration, with more than 95% of male pigs been submitted to this treatment method or physical castration. Meanwhile, the reminder of "potential lost" brings a curiosity about whether there is really no other option.

The economic problems, practical and welfare of swine males submitted to physical castration are complex and vary from market to market around the world. But despite their differences, the industry worldwide will probably notice a fundamental change in their mode of operation over the next 10 years.

Separately the motivations of zootechnical losses are the pressures for the welfare of animals observed in some markets. The pressure for the welfare of the animals is a reality in the United Kingdom and Scandinavia and is increasing in Denmark, Holland and Germany, and also is becoming more prominent in southern European countries such as Spain.

Immunocastration is a unique opportunity for improving productivity and respect animal welfare and environmental issues and has proven to be highly effective, safe, implemental and replicable in different swine

production systems around the world, following all rules and requirements of safety and quality usually required by the Governmental Authorities.

Vaccination Management

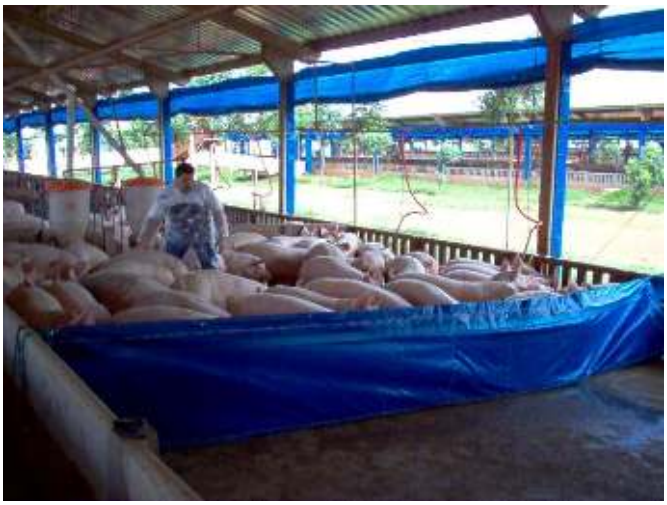
In Brazil, the immunocastration vaccine (Vivax*) has been implemented in many different swine production systems as Integrators, Industrial Cooperatives, Non-Industrial Cooperatives, Large and Small Independents and Family Managed Farms. It was also replicated in many different facilities as barns housing from 100 to 1500 males, barns housing only males and barns housing males on one side and females on the other.

It is extremely important to use this technology in a responsible manner in a co-responsibility regimen among supplier and clients and some subjects must be addressed before the implementation of Immunocastration, such as follows:

- The vaccination protocol is farm-specific and based on the slaughter age; it shall be documented and all farm personnel shall be familiar with it. Any change to the program in use must be documented and communicated to all professionals and personnel involved.
- Ensure that all personnel are properly trained and know details that may impact swine production and the immunocastration process.
- Give employees or vaccination technicians (vaccinators) directions on the pigs to be vaccinated and how to record information at the end of the process.
- Give employees directions for helping vaccinators during compliance inspections, in order to ensure that all animals have received the second dose and that any animal showing active sexual behavior, with repeated mount attempts, penis exposure and/or significantly large testicles with a reddened scrotum, will receive a third dose.
- Every week, clearly identify the pigs to be vaccinated, for example, listing the pen numbers on a board, index card or sheet placed next to each pen where the animals are to be immunized.
- All vaccination details shall be recorded on a weekly basis – for example, on an index card or sheet affixed in front of the pen. This record must accompany the animals if they are moved or transferred.
- Ensuring proper vaccination is critical to the success of the technology. Each male pig shall receive two doses with at least 4 weeks between first and second dose:
    - 1st dose – from 8 weeks of age;
    - 2nd dose - 4 to 6 weeks prior to slaughter.

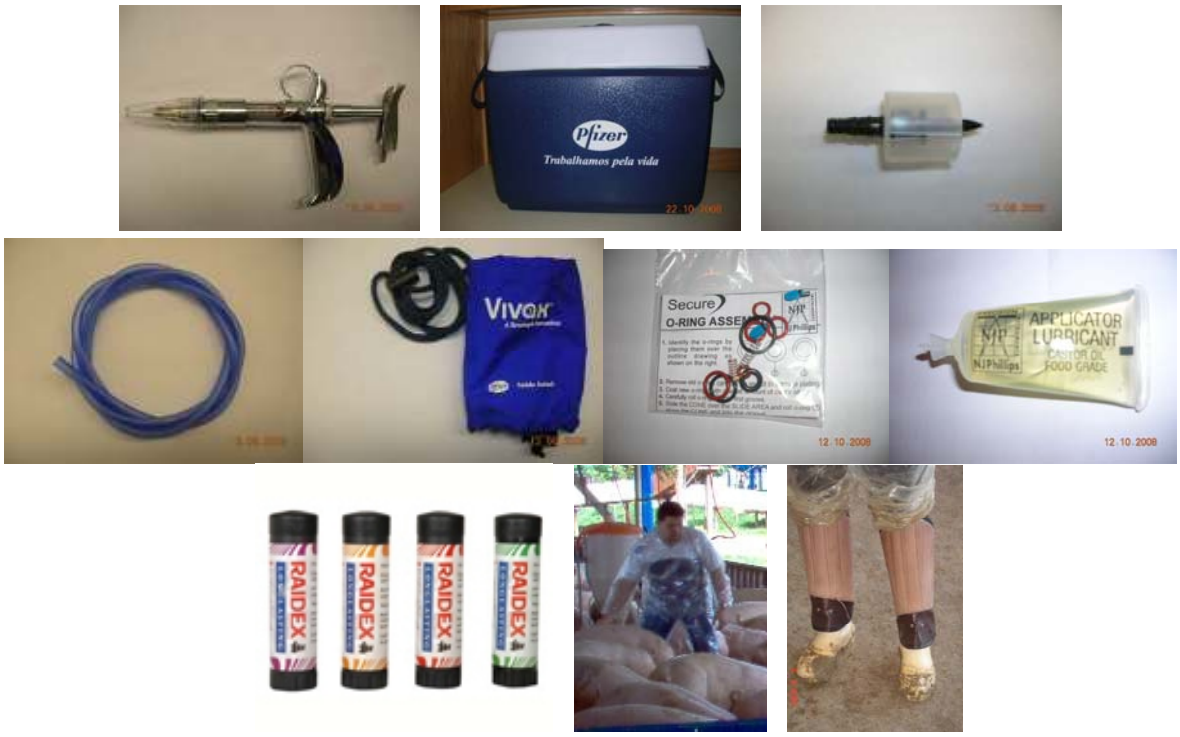
To facilitate the procedure different management boards can be used, such as wood (pictures 1 and 2) and canvas (pictures 3 and 4).


Picture 1 and 2. Management board built with wood.

Picture 3 and 4. Management board built with canvas.

The vaccination procedure demand some equipments as the safety applicator (syringe), needles, vial connector, feeding tube, vial-holder, cleaning and repair kit (rings, lubricant and others), pig markers, dischargeable clothes, leg protector and control worksheets (picture 5).



Picture 5. Vaccination equipments (from left to right) safety applicator (syringe), thermo box, needles, vial connector, feeding tube, vial-holder, cleaning and repair kit (rings, lubricant and others), pig markers, dischargeable clothes and leg protector.

Compliance inspections shall be carried out 14 days after the second dose with the purpose of detecting any animal that may have missed the first or second dose of the vaccine, thus ensuring the quality of the vaccination process.

- Signs indicating that a pig may have missed one of the two doses, or have been incorrectly vaccinated are as follows:
  - Sexual behavior with repeated mount attempts, accompanied or not by penis exposure, erection and penetration attempts (Pictures 6 and 7);
  - Large testicles with a reddened scrotum (Picture 8);
  - Repetitive aggressive interactions.

Picture 6, 7 and 8. Sexual Behavior, mounting attempts and large testicles (reddened scrotum), respectively.

Assuring Quality of Vaccination

1. Make sure that the applicator is sanitized, lubricated and working properly, by observing and evaluating its operation.

2. Make sure that needles are 15 x 15 mm, that they are not bent and that during immunization needles will be replaced between pens or according to guidance from agroindustry/cooperative/producer.

3. Before starting the vaccination process, make sure that connector, feeding tube and vial are properly connected and that there are no air bubbles inside the equipment.

4. Mark/identify each male pig vaccinated and check all pens at the end of the vaccination process to ensure that all animals are marked and consequently vaccinated.

5. Perform visual inspections, observing all pigs 14 days after they were given the 2nd dose (observe the animal, enter the pen and move the animals), and give the third dose to any pig showing active sexual behavior, with repeated mount attempts, penis exposure and/or testicles significantly large with a reddened scrotum.

6. Record all information related to pigs vaccinated, for example, on an index card or sheet affixed next to each pen in which the animals were immunized.

7. Collect all materials used during vaccination (needles, markers, plastic clothes, empty vials, etc.) and discard them properly.

8. Observe the presence or abscesses associated with the administration of the vaccine between the first and second doses, and between the second dose and the inspection, and record it on the specific form.

9. In case of anaphylactic reactions, provide treatment of the animal and record the episode on a specific form with the relevant information in order to produce a pharmacovilance report

Final Considerations

The immunocastration totally replaces physical castration due to a number of benefits to the herd and substantial improvements in productivity. It is a castration method easy to be implemented, managed and controlled. For the **Producer** it generates indirect benefits by providing better feed efficiency, increased daily weight gain, allowing the feed industry to improve the logistics of feed and reduce the cost to delivery of food, reduction of mortality, occurrence of arthritis and diarrhea and higher percentage of lean meat which translates into better payment, among others. For the **Slaughterhouse**, the biggest benefit is a leaner carcass, with higher percentage of meat yield (increase in productivity - more meat processed with the same number of employees) and with the same quality of meat from pigs physically castrated. For the **Animal** itself, eliminates a brutal procedure, the pain and stress of physical castration and prevent the occurrence of boar taint. For the **Consumer and Community** in general, other issues to consider are more sustainable production, animal welfare and the less environment pollution.

It is extremely important to use this technology in a co-responsibility regimen among supplier and clients, because the chance of increasing productivity in short period of time and with guaranteed security is odd. Moreover, we fully attend the demands dictated by the consumer about the safety and quality of pork.

The technology has a pig's whole life of benefits that leads to sustainability and rapid gains in productivity, and brings a practical, responsible and social solution to control boar taint which takes into account animal welfare and the environment.

It is crucial for any country to be focused on the world trends of the market for animal health. Immunocastration is an innovative technology that is being globalized. All points of the production chain involved directly or indirectly with the immunocastration must continue to work hard and in cooperation/co-responsibility for the maximum exploitation of this new method of controlling boar taint, because we cannot let slip through our fingers a single management tool with so many positive and fast impacts on the production of pigs.