Practical Application of DNA Parentage Test for Scrotal Hernia Problems

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INTRODUCTION

Developmental abnormalities such as inguinal and scrotal hernia and cryptorchidism are observed at low frequency in commercial pig production units. Under particular environmental conditions high frequency of such defects are detected. This work presents the usage of novel DNA technology by the Spanish Pig Breeders Association (ANPS) in finding solutions to scrotal hernia cases.
In Nucleus units developmental abnormalities are not normally observed. Once those genes reach commercial farms environment, in some particular situations there are farms experiencing significant problems with high frequency of scrotal hernias, while other farms using identical genetic are not showing this developmental abnormalities problem. Single sire mating and individual identification of the animals from birth are not ordinarily implemented at commercial farm level. So, it is not possible to trace back pedigree information under those scenarios. It is here where DNA paternity test is proven effective.
The ANPS implemented a DNA based identification program for boars inscribed into the national heard books.
This tool is also effective identifying boars with higher incidence of the problem in his progeny by facing the frequency of usage of specific boars to the scrotal hernias incidence in his progeny.

OBJECTIVE

To establish a system inside the ANPS, that allows to determine if a sample of biological tissue (semen, cartilage, blood, meat, etc.) that proceeds from a problematic animal (carrier of any congenital defect), is a progeny of any boar present in our database.

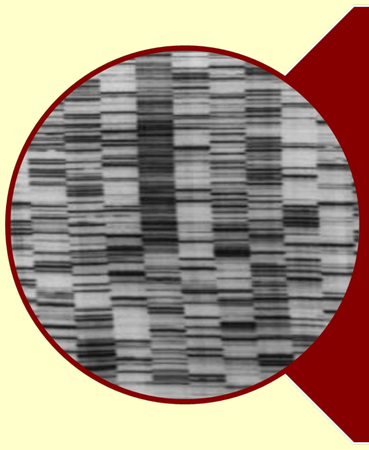
MATERIALS AND METHODS

1.Litter evaluation in two commercial units

- Presence of hernias.
- Moment when appear.
- Possibility of management errors.

2.Doses of semen data collection

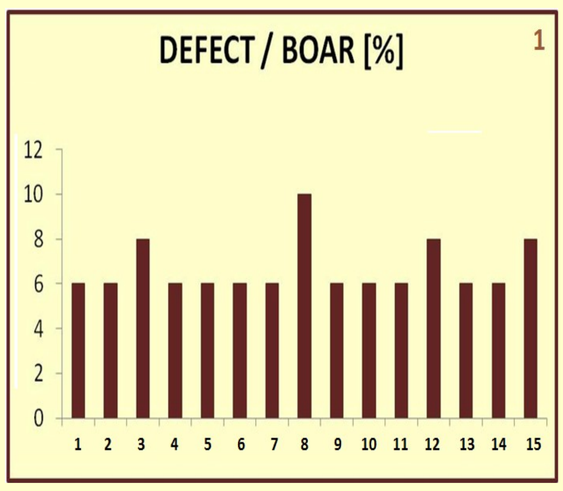
- Number of doses received on farm per boar during evaluation period.



3.Paternity test.

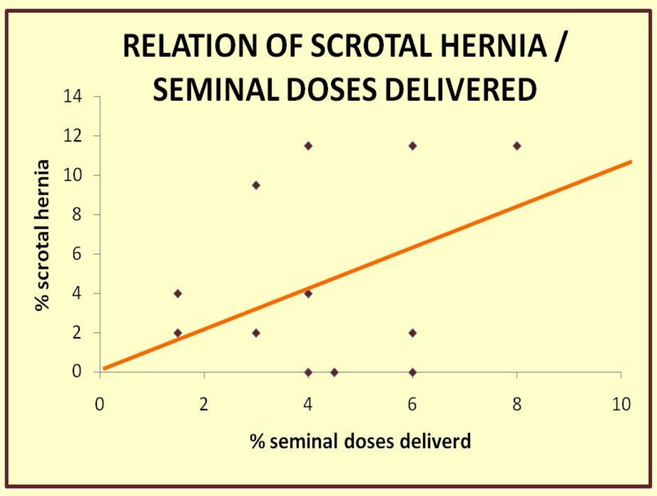
- Sampling of genetic material.
- Boar Identification.
- DNA extraction.
- Amplification of DNA by PCR.
- Paternity relation check by Cervus 2.0

RESULTS



Incidence of Scrotal Hernia in commercial unit 1 was observed at 7% of offspring-males. Graph 1 shows the presence of 4 boars with higher frequency of hernias in the offspring. The boar 8 reach the level of 10%. Those results maybe misleading if we do not considered the frequency of usage of every boars during evaluation period.

To make possible correct evaluation of genetic influence on appearance of scrotal hernia in the offspring is necessary to compare the relation of S. H. cases with number of seminal doses delivered from each boar (Site graph from commercial unit 2).



CONCLUSIONS

Paternity test it is a useful analytical tool to determine if genes from specific boar are present in the problematic populations.

This tool is also effective identifying boars with higher incidence of the problem in his progeny by facing the frequency of usage of specific boars to the scrotal hernias incidence in his offspring-males.

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