

Factsheet midterm findings Global Challenges Programme Call 1



Adapting pork production to local conditions in Brazil

Summary

To increase availability of low costs and locally produced pork as a high quality protein food, the LocalPork project aims to improve the efficiency of pig growth in Brazil by focusing on pig feed and pig genetics. Pigs can eat almost anything but are fed high quality feed such as corn and soy. This project aims to improve the efficiency of pigs grown in Brazil under local circumstances that are fed alternative ingredients. Genetic analysis showed that selecting purebred pigs is not 100% effective for improving performance of typical growing pigs that are crossbred. A methodology called BOA was developed to enhance the genetic improvement for feed efficiency in crossbred pigs. The method allows breeding programs for purebreds to use data recorded on crossbred pigs. BOA was shown to be effective according to simulations as well as analyses of real data. To reduce economic cost and environmental impact of pork production, diets with alternative ingredients were shown to have potential benefits. Different ingredients were included in this analysis, including kernel cake, a by-product of producing oil from macaúba. The availability and acceptance of by-products such as macaúba was discovered to be an issue with farmers and professionals in Brazil. Experiments have begun to show the effects of the developed methods and the effect of feeding alternative ingredients in practice.

Interim Research Findings

The results so far have shown multiple findings. Firstly, the use of crossbred information will improve genetic progress made for feed efficiency in pig production. Secondly, the selection of pigs based on a northwest European diet with co-products does not jeopardize genetic progress in crossbred pigs that are fed a Brazilian corn-soybean based diet. Lastly, use of co-products in the diets of pigs can improve the economic and environmental sustainability of pig production.

In summary, additional improvements in efficiency of pork production in Brazil that can be made through breeding are similar as in other countries, while opportunities to improve efficiency by feeding different diets are greater than, for instance, in the Netherlands. Those involved in pig breeding and production in Brazil are aware of the technological improvements that can be made in pig breeding, while there seems to be a reluctance to consider feeding by-products to pigs. By-products are considered inferior and are expected to lead to reduced pig growth. Also availability of by-products is a concern. In this sense, an important lesson is the necessity to closely link stakeholders to the project, and to keep them regularly updated on both process and results. To achieve the anticipated impact from all parts of the project, it is very important that the insights and knowledge it generates are validated under Brazilian circumstances to obtain acceptance of the innovations.

Messages to

A) Actors from private sector:

- Breeding for local crossbred performance can benefit from directly targeting crossbred performance. The BOA model may be useful here.
- The use of co-products in the diets of pigs creates market opportunities for producers and processors (e.g. macaúba processors).

B) Civil society and practitioners organizations:

- Inclusion of locally sourced alternative ingredients in pig feed can have positive economic and environmental effects. Organizations working to improve environmental sustainability of pork production might promote the use of by-products.
- Local farmer involvement is needed to show the value of alternative ingredients in practice.

C) Policy makers:

- Policymakers should encourage the use of by-products to reduce the competition between the feed and food sectors for arable land.
- Validation of research findings under Brazilian circumstances is very important for acceptance of innovations by the industry.

Knowledge products

- [Research article](#) Assigning breed origin to alleles in crossbred animals. August 2016
- [Research article](#) Empirical determination of breed-of-origin of alleles in three-breed cross pigs. July 2016
- [Abstract for 5th International Conference on Quantitative Genetics \(ICQG\), USA](#) Genetic correlation between gain and carcass traits in purebred and crossbred pigs. June 2016

Knowledge networks

[Breed4Food](#) is a consortium established by Wageningen University and Research, and four international animal breeding companies with the ambition to be the world leading center for research and innovation on livestock genetics.

Co-creation

This project investigates opportunities to improve efficiency of pork production by combining animal genetics, animal nutrition, and business economics. During the development of the project, the collaboration between Animal Sciences and Business Economics was very important to value the contribution of breeding and nutrition to improving the economics of local pork production in Brazil.

One important objective of the project was to investigate the benefit of using co-products as pig feed. The project team observed however the reluctance of the pork industry in Brazil to consider this option. Since co-products are commonly used in Western Europe, the Netherlands-Brazil connection is important to raise interest for their use in Brazilian pork production. Visits to Brazilian pig farms by Netherlands-based researchers are required for understanding farm systems and to collect technical and economic data.

Future research and activities

Models developed in the project to trace the genetics of crossbred animals to their purebred ancestors were tested in large datasets that were collected by breeding company partners. For the next step, the required datasets are again created by the industry partners. Having this data allowed the projects' academic partners to compare breeding under a northwest European diet to breeding under a Brazilian corn-soybean based diet. These results inform breeders how to select pigs that produce optimally in Brazil.

Future activities include a study on the growth efficiency of pigs in Brazil that are offspring of pigs that are selected in the Netherlands, and a study of growing pigs in Brazil that have macaúba by-product included in their diet. The project team also wants to investigate the reasons behind the reluctance to feed by-products and are looking for ways in which to address this question.

Consortium Partners

- [Wageningen University and Research \(NL\)](#)
- [Universidade Federal de Viçosa \(Brazil\)](#)
- [Topigs Norsvin \(NL\)](#)
- [Topigs do Brasil \(Brazil\)](#)

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Project websites

[LocalPork website](#) - [F&BKP Research Project page](#)