mEAT quality

Practice Abstract

Pig genetics for sustainable and quality pork production

APPLICABILITY

Theme/Keywords

Pig production, genetics, autochthonous breeds, commercial breeds, meat quality

Context

Intensive, extensive, and organic pig farming

Geographical coverage

Worldwide

Required time

The immediate replacement of the finishing boar is done through artificial insemination, although the first fattened pigs with the new genetic makeup will not be slaughtered until about 10 months later. The complete replacement of all genetics through gradual replacement of all breeding sows will take 3 to 4 years for all slaughtered pigs to be of the new genetic makeup.

Period of impact

All life cycle

Equipment

Only for artificial insemination: disposable catheters to inseminate, a refrigeration chamber to conserve semen doses, and a microscope to check their viability

Best in

Farms with artificial insemination

Problem

There are many pig breeds and crosses available on the market. Still, each production system requires its own type of animal, especially if pigs are raised outdoors, grazing on natural resources, or using by-products or waste from the human food industry.

Solution

Optimised genetics in pigs is key for the ongoing sustainability and quality of pork production, as well as to address challenges such as disease resistance and environmental impact.

Benefits

Genetic selection aims to improve pork quality and enhance feed efficiency (feed conversion ratio (FCR) and growth rate) and pigs' natural disease resistance, allowing for increased productivity with fewer inputs. This boosts economic profitability and reduces the environmental footprint of pork production.

Practical recommendations

Assess the current genetic traits of the pig herd, including health and disease resistance, feed efficiency (for the farm feed resources), growth and pork quality.

Identify the most important traits for your production goals (clear objectives). Selection criteria vary across different pig production systems.

Select breeding stock: choose breeding animals with superior genetics for the desired traits, based on genetic evaluations and performance records (if possible, within your own herd).

Utilise advanced technologies and collaborate with experts (geneticists and veterinarians) to implement your selective mating and genetic selection.

Prevent inbreeding by periodically introducing new genetic material to maintain genetic diversity and resilience. In small farms with indigenous breeds, collaborate with other farmers to exchange genetic material and use information on related animals using Best Linear Unbiased Predication (BLUP) technology.

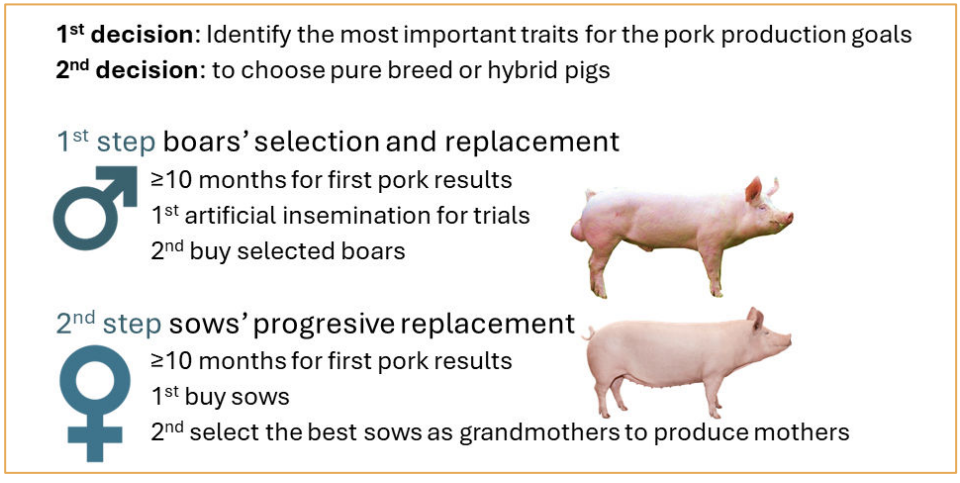
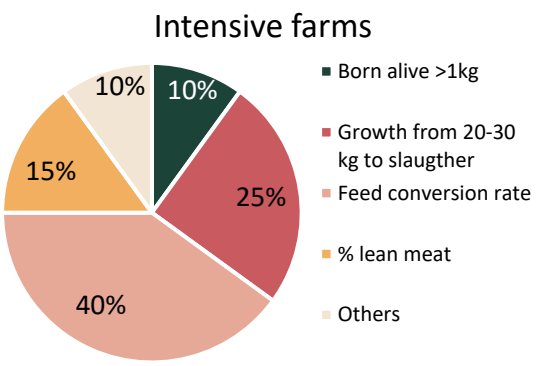


Figure 1: Steps of a genetic selection program (Source: UCO)



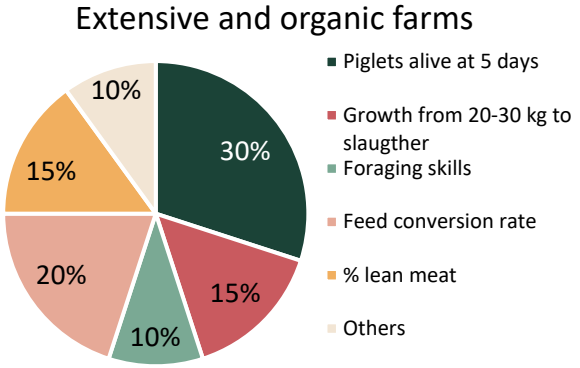


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Figure 2: Examples of different focuses of Maternal Line Indexes (M.L.I.) for intensive and extensive pig farms (Source: UCO)

On-farm application

System approach

Consider that while the size of the sow herd is important, it's not the most limiting factor. The most limiting factor is collecting reliable information from the replacement gilt's entry into production to the sensory evaluation of the meat.

Figure 3: In native breeds, it is important to select for grazing skills (pregnant Iberian sows foraging in the *dehesa* agroforestry system) (Source: V. Rodríguez-Estévez, UCO)

FURTHER INFORMATION

Videos

Video with a general overview for small farms (in English): https://www.youtube.com/watch?v=oVLwITCidx0

Weblinks

Selecting breeding stock https://www.thepigsite.com/genetics-and-reproduction/selecting-your-source-of-breeding-stock

Performance testing to select replacement pig breeding stocks https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/animal/industries/pigs/breed/genetics/test

Pork information gateway: https://porkgateway.org/resource/evaluating-genetic-sources/

Evaluation

It is essential to implement continuous progress monitoring to ensure desired traits are being improved and to evaluate economic and environmental impacts. Each farming system should have its own resource efficiency targets.

About this practice abstract and *mEATquality*

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mEATquality: The *mEATquality* project aims to provide consumers with better-quality pork and broiler meat and animals with a high level of welfare by developing scientific knowledge and practical solutions together with farmers and chain partners. The *mEATquality* project, an H2020 project, is coordinated by Wageningen Research (The Netherlands) and is a multidisciplinary team of 17 partner organisations representing 7 EU countries. The project is running from October 2021 to September 2025
Project website: www.meatquality.eu/

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