

# Project *brief*

Thünen Institute of Organic Farming

2020/15a

## Fattening of entire male pigs as an alternative to piglet castration

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- Feeding 10 % native potato starch at the end of fattening decreases skatole in Piétrain males
- The choice of roughage (grass-clover silage vs. straw) has no influence on boar taint
- Early vaccination regime against boar taint (Improvac<sup>®</sup>) cannot completely avoid boar taint
- Good level of animal welfare can be achieved in organic fattening of entire male pigs

### Background and aim

When fattening entire male pigs, boar taint occurs in their meat with varying frequency and intensity. Depending on their sensitivity, some consumers perceive it as a sweaty, urine-like odour while others do not perceive it at all. Its main components are androstenone and skatole. On a global scale, surgical castration is the most reliable and most widely used method of eliminating boar taint. Due to the absence of testicles in a castrated male pig, no androstenone is formed and the breakdown of skatole in the liver is promoted. However, castration - even under anaesthesia and analgesia - is increasingly criticised as unacceptable manipulation of the animal.

The aim of our project was to develop recommendations for the fattening of entire male pigs in organic farming while minimizing the occurrence of boar taint.

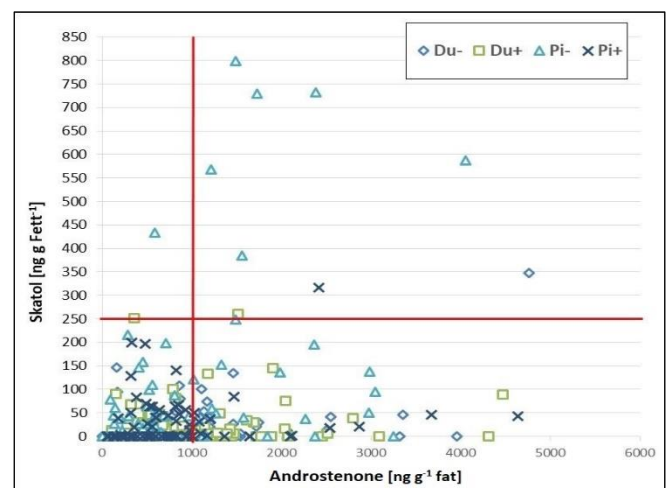
### Approach

The national project was a collaboration of Thünen Institute of Organic Farming, Justus Liebig University Giessen, Anhalt University of Applied Sciences and Georg August University Göttingen. The project was divided into three phases. In the first phase, entire male pigs of two different genetic origins and with or without the addition of a special feed component in the final fattening stage were tested on the experimental farm of Thünen Institute of Organic Farming. In the second project phase, the influence of the type of roughage was investigated by comparing grass-clover silage (KGS) with straw (STR) when fed to entire male pigs of the same genetic origin. In the third project phase, an innovative vaccination regime against boar taint was tested under the conditions of organic pig husbandry.

### Results

In the first phase of the project, we could show that feeding 10% native potato starch one month before slaughter clearly reduced skatole concentration in Piétrain entire male pigs (Pi).

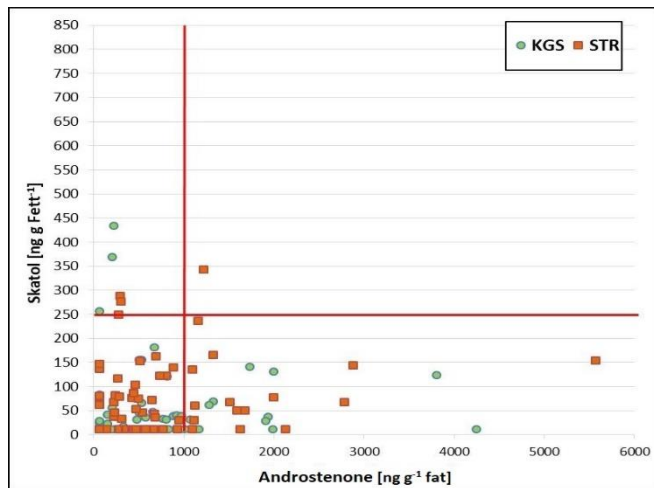
Skatole and androstenone concentration as a function of genotype and feeding (- = without potato starch; += with potato starch)



This effect could not be found for Danish Duroc (Du), whose skatole level was as low as the experimental Piétrain group, irrespective of feeding native potato starch or not. The fattening performance, carcass and meat quality of the entire male pigs reflected the differences that are expected when Piétrain and Duroc boars as used as terminal sires. The dietary treatment, i.e. addition of native potato starch in the final stage of fattening, had no significant influence on the parameters of fattening performance, carcass and meat quality.

In the second project phase, the occurrence of boar taint was not affected by two different types of roughage. In total, more than a quarter of the carcasses (26.8 %) were potentially odorous, as in that the skatole and/or androstenone concentrations were above defined limits (>250 ng skatole g<sup>-1</sup> fat; >1,000 ng androstenone g<sup>-1</sup> fat). The fattening performance, carcass and meat quality was in agreement with levels commonly found in extensive pig fattening. The type of

Skatole and androstenone concentration as a function of the type of roughage fed (KGS=grass-clover silage; STR=straw)

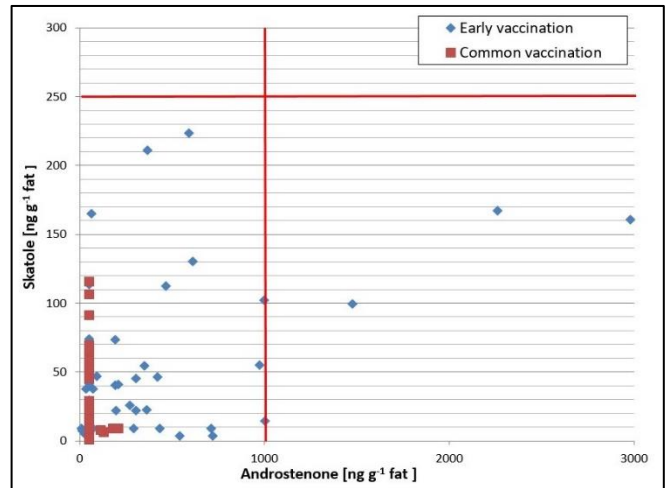


roughage only had a minor influence on performance parameters. For example, entire male pigs fed grass-clover silage showed superior weight gain because of faster growth during early fattening. Carcass quality did not differ between the treatments and meat quality (conductivity, pH-value, fatty acid pattern) differed only slightly.

In the third project phase, a commonly used vaccination regime with Improvac® was compared with an early vaccination regime. The common procedure consists of two injections done on the fattening farm, when pigs weigh between 40 and 80 kg. For comparison we tested an alternative vaccination regime consisted of two injections done at the piglet producer, when piglets were three and seven weeks old. The piglets tolerated both injections well and did not show any abnormalities. The fattening of the early vaccinated animals also went without problems. However, the occurrence of boar taint was significantly influenced by the vaccination regime. While 7 % of the carcasses of early vaccinated animals were classified as potentially odorous, there were no potentially odorous carcasses in the control group.

Regarding fattening performance, daily weight gain in the pre-fattening period of the early vaccinated animals was significantly higher than in the control group. Neither carcass quality nor meat quality was affected by the vaccination regime, with the exception of conductivity and fatty acid profile.

Skatole and androstenone concentration as a function of the vaccination regime (early; common)



Throughout the whole project, only slight injuries were observed on the entire male pigs at slaughter, which indicates that fattening of entire male pigs can be done on organic farms without impairing welfare. It should be noted, however, that management on the experimental farm was exemplary and included stable groups from rearing until slaughter, outdoor runs with regularly changed straw bedding and the daily provision of roughage.

### Recommendations and need for further research

We derive the following recommendations for further action:

- Skatole concentration in Piétrain entire male pigs can be reduced (but not completely avoided) by feeding 10 % native potato starch for one month before slaughter
- The occurrence of boar taint is not affected by the type of roughage, but feeding grass-clover silage leads to higher weight gain in early fattening
- When vaccination against boar taint with Improvac® is applied, the commonly used vaccination regime avoids the occurrence of boar taint more reliably than an early vaccination regime
- Regardless of genetic origin of the animals, feed components and vaccination, we found that keeping stable animal groups from rearing to fattening, and providing the pigs with straw bedding and roughage ensures good animal welfare

## Further informationen

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DOI:10.3220/PB1590492826000

### Partners

Justus Liebig University Giessen  
 Anhalt University of Applied Science  
 Georg August University Göttingen

### Duration

7.2012-5.2020

### Project-ID

447

### Publications

Werner et al. (2020): Performance of organic entire male pigs from two sire lines and two feeding strategies. Part 1: Growth performance, carcass quality, and injury prevalence. Accepted by Landbauforsch J Sustainable Organic Agric Syst 70, (1).

Werner et al. (2020): Organic fattening of entire male pigs from two sire lines under two feeding strategies. Part 2: Meat quality and boar taint. Accepted by Landbauforsch J Sustainable Organic Agric Syst 70, (1).

### Support

