



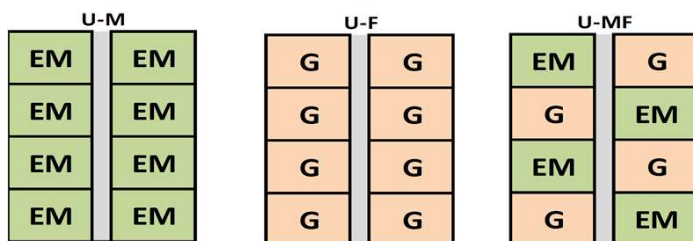
# Influence of raising entire boars and gilts during fattening in one unit on pubertal development, growth performance and welfare problems

## Introduction

Pork production with entire male pigs requires the definition of best practice conditions to make use of the higher anabolic potential of entire males (EM), and to minimize boar taint and welfare problems. The effect of a mature male on female puberty is well known, but the effect of the presence of the other sex during the fattening period is less clear. In our field study we thus evaluated the effect of raising pigs either in single sex units EM (U-M) or gilts (G [U-F]) only, or in a unit with alternating pens of G and EM (U-MF).

## Material and Methods

EM and G (JSR-hybrid x Pietrain) were raised from 31.5 kg to slaughter at 119-123 kg in 3 separate units (8 pens/unit; 33 animals/pen) (Fig. 1).



**Fig. 1:** Fattening units – single sex units (U-M with EM; U-F with G); mixed unit (U-MF with EM and G)

Growth performance (daily gain) was recorded for all animals.

Two groups of EM “focus animals” from all units slaughtered at an age of either 189 or 196 days were further sampled at the abattoir to analyze testosterone in blood plasma (T), androstenedione (AND), and skatole (SKAT) concentrations in adipose tissue in boars according to Wesoly et al. (2015).

Penile injuries were determined as described earlier (Weiler et al., 2016).

From gilts slaughtered at an age of 189 or 196 days, uteri and ovaries were collected to evaluate the pubertal development.

Data were analyzed with SPSS (AND, SKAT: after log transformation) for the effect of unit and age by an univariate analysis of variance.

## References

- Wesoly R, Jungbluth I, Stefanski V, Weiler U 2015 Pre-slaughter conditions influence skatole and androstenedione in adipose tissue of boars. Meat Science 99, 60–67  
Weiler U, Isernhagen M, Stefanski V, Ritzmann M, Kress K, Hein C, Zöls S 2016 Penile injuries in wild and domestic pigs. Animals, 6, 25

## Results

**Daily gain** in EM from U-M was significantly lower than in those from U-MF [742 ± 84 g (n=247) vs. 820 ± 74 g (n=122);  $p < 0.001$ ]. These differences in growth performance coincided with a higher **testicular** activity in U-M “focus animals” (Table 1), leading to significant differences in T in blood and in AND (but not in SKAT) in fat.

**Table 1:** Endocrine and boar taint parameters at slaughter in EM focus animals (LS-means, (n)) raised with EM (U-M) or EM/G (U-MF) (testosterone in blood plasma (T), androstenedione (AND) and skatole (SKAT) in fat)

| Parameter          | U-M           | U-MF         | RMSE  | p-value |
|--------------------|---------------|--------------|-------|---------|
| T [ng/ml]<br>(n)   | 11.9<br>(53)  | 17.1<br>(45) | 1.873 | 0.01    |
| AND [µg]<br>(n)    | 0.77<br>(100) | 1.57<br>(79) | 0.163 | 0.001   |
| SKAT [ng/g]<br>(n) | 68.6<br>(100) | 81.1<br>(79) | 12.4  | ns      |

**Penile injuries** tended to be more severe in U-MF (50% vs 41.3% with 4 and more injuries/EM, ns; [not significant]).



**Fig. 2:** Specimen with 4 and more injuries

In contrast to males, **pubertal development in females** was not affected.

## Conclusion

Raising boars together with gilts hastens the pubertal development in EM as characterized by higher testosterone at slaughter. This coincides with a better growth performance, but increases the risk of higher boar taint levels and welfare problems.