

Effects of vaccinating fattening gilts against endogenous GnRH (gonadotropin-releasing-hormone) on productivity in two commercial farms in Brazil

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Introduction

- Most female pigs for market (gilts) reach puberty in the fattening phase as gonadotropins increasingly stimulate the ovary maturation:
 - Ovaries produce steroids, resulting in inconsistent / reduced feed intake, and sub-optimal delayed growth
 - Estrus causes behavioral issues (fighting, mounting, lameness, skin carcass damage).



Impact of puberty in intact fattening gilts



Vaccination management



Proper vaccination technique



Batch of vaccinated fattening gilts

- Gilts immunized against GnRF have temporarily suppressed their ovarian function, are calmer, eat consistently (more predictable feed intake), resulting in higher live weights at the time to market that are comparable to the counterpart fattening male pigs.
- This report summarizes the secondary productivity benefits of GnRH vaccination of fattening gilts in Southern Brazil.

Materials and Methods

- Two commercial finishing farms A and B, with 840 and 1,170 fattening 9-10-week-old gilts, respectively.
- Gilts weighed individually on arrival (farm A: 24.68kg ± 2.67; farm B: 27.46kg ± 2.83) and randomly allocated to a treatment group: 1) half vaccinated (V), with Improvac®/ Vivax®, Zoetis 96- & 28-days pre-harvest, or 2) half Control (C) not-treated.
- Pen was the experimental unit: 35 pigs/pen (farm A), and 45 pigs/pen (farm B), resulting in 12 and 13 replicas per treatment, respectively. Pigs were fed *ad-libitum* for the duration of the study.

| Farm (n. pigs) | Treatment | 1 st dose | 2 nd dose | Gilts per pen | Replicas | Duration study |
|------------------|------------|----------------------|----------------------|---------------|----------|----------------|
| Farm A (n=840) | Vaccinated | - 96 days | - 28 days | 35 | 12 | 101 days |
| | Control | na | na | 35 | 12 | |
| Farm B (n=1,170) | Vaccinated | - 96 days | - 28 days | 45 | 13 | 103 days |
| | Control | na | na | 45 | 13 | |

- Initial (IW) and final weights (FW), and daily feed intake (DFI), were measured by pen for the duration of the study (farm A: 101 days, farm B: 103 days).
- Primary endpoint was daily weight gain (DWG), secondary endpoint feed conversion rate (FCR).
- Data were analyzed separately (ANOVA) for each farm using the General Linear Model, considering treatment effects and means evaluated by the Student's t test.

Results

- For farm A, **FW** (+4.43kg) and **DWG** (+43g/day) were *significantly better* for vaccinated gilts ($p=0.003$ and $p=0.001$, respectively). DFI and FCR were not statistically different between treatments.
- For farm B, **FW** (+3.05kg), **DFI** (+88g), and **DWG** (+29g) were *significantly better* for vaccinated gilts ($p=0.01$, $p=0.05$ and $p=0.03$, respectively). FCR was similar between treatments.
- The high variation coefficients found for DFI and FCR may explain why DFI in farm A was numerically but not-statistically better for vaccinates, while ADG was superior.

Table 2: Results

| Farm (nb. pigs) | Treatment | IW (kg) | FW (kg) | DFI (kg) | FCR | DWG (kg) |
|------------------|------------|--------------|---------------------|--------------------|-------|--------------------|
| Farm A (n=840) | Vaccinated | 24.68 ± 2.67 | 131.26 ^a | 2.090 | 2.000 | 1.044 ^a |
| | Control | 24.68 ± 2.67 | 126.83 ^b | 2.005 | 2.002 | 1.001 ^b |
| Farm B (n=1,170) | Vaccinated | 27.46 ± 2.83 | 138.17 ^a | 2.300 ^a | 2.200 | 1.074 ^a |
| | Control | 27.46 ± 2.83 | 135.12 ^b | 2.388 ^b | 2.222 | 1.045 ^b |

^aDifferent superscripts indicate significantly different

Conclusions

- This study confirms that vaccination against GnRH has a secondary indirect positive effect on productivity of fattening gilts: higher weight gain and final weight.
- Intact fattening gilts eat less while remain very efficient; vaccinated gilts increase significantly their feed intake as the ovarian function and production of steroids is suppressed, improving daily weight gain and final weight compared to intact gilts of the same age.
- Immunization against GnRH may be a useful management tool to improve the wellbeing of fattening gilts for market, preventing the negative effects of the onset of puberty during fattening, resulting in better productivity as additional benefits.