



Influence of hands-on experience on pig farmers' attitude towards alternatives for surgical castration of male piglets



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ABSTRACT

This study evaluates the influence of practical experience with alternatives for surgical castration (SC) on farmer attitudes. Nineteen farmers in Flanders were surveyed before (ex-ante) and after (ex-post) performing each of five treatments on farm: 1) SC with analgesia (SCAN); 2) SC with CO₂ anaesthesia (SCCO₂); 3) immunocastration (IM); 4) production of entire males (EM); and 5) SC without pain relief (SCN). For SCCO₂ and SCAN, farmers mainly experienced disadvantages in terms of increased labour, costs and complexity. Hands-on experience promoted EM as a valid alternative for SCN due to the actual and perceived improvement in performance and profitability as well as the reduced labour demands. Experience with IM did not fully fulfil the favourable ex-ante expectations resulting in a level of dissatisfaction and a less favourable general attitude ex-post.

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1. Introduction

In the main European pig producing countries and many other countries as well, male piglets are castrated to reduce boar taint and to control aggressive and sexual behaviour. Castration, traditionally performed without anaesthesia or analgesia, is painful (Prunier et al., 2006) and negatively affects performance (Aluwé M. et al., 2014; von Borell et al., 2009). Calls for banning this practice are thus gaining considerable societal support.

Many decades of study on alternatives for surgical castration of piglets have passed already, with alternatives being implemented in several countries. Piglet pain and distress during surgical castration can be reduced by applying general or local anaesthesia and post-operative pain can be alleviated by administering analgesia (Prunier et al., 2006; von Borell et al., 2009). In Norway, the use of local anaesthesia combined with analgesia has been mandatory since 2002. Surgical castration with general anaesthesia is applied in Switzerland since 2010. In addition, analgesia is required by the German food quality and security system since 2009. Another approach is to leave the male pigs intact, with or without the use of immunocastration. The effect of raising entire male pigs or performing immunocastration on meat quality, boar taint level, performance and animal welfare has been thoroughly investigated (Baterek et al., 2012a; Pauly et al., 2012; von Borell et al., 2009). In Ireland, the UK, Cyprus and Spain most of the male pigs are left intact

(Fredriksen et al., 2009). More recently, since 2009, production in The Netherlands has partly shifted towards the production of entire male pigs, with implementation of boar taint detection at the slaughter line, using the hot iron method (Baltussen et al., 2009). Since 2012 in France, Germany and Belgium a small percentage of the male pigs have been left entire. However, the (current) absence of an objective, fast and cost-effective method for boar taint detection at the slaughter line or a generally accepted strategy to eliminate boar taint hinders the transition towards production of entire male pigs. One alternative to prevent boar taint without surgical castration is to perform immunocastration by vaccination with a GnRH analogue (Bonneau and Enright, 1995). The vaccine was first registered in New Zealand, Australia and Brazil and is now commonly used in these countries. Although registered for use in the EU since 2009, implementation has been evolving slowly due to a generally low market acceptance. Since 2011 some Belgian farmers have started practising immunocastration based on Belgian retailers' demand.

In summary, several alternative strategies are already being applied in response to (future) regulations or market demands. With pig farmers as main stakeholders in the discussion regarding piglet castration, it is essential to have proper insight into their attitudes and willingness to use these alternatives. Alternatives should be practically and economically feasible and should not create new problems. Farmers should also be motivated to perform these alternatives correctly. In order to have reliable data on farmers' attitudes, it is important that farmers can evaluate all alternatives whilst practising on-farm. Only few studies have focused on farmer attitudes towards a single

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alternative performed on farm (Enz et al., 2013a; Fredriksen and Nafstad, 2006). To our knowledge, no study reports on farmer attitudes towards the alternatives after practical experience with each of the alternatives. Tuytens et al. (2012) anticipated that farmers were not likely to voluntarily shift towards alternatives at the time of the study (2007), which may be due to several factors such as prejudices and uncertainties in terms of costs, labour and market acceptance. Nevertheless, various studies associate immunocastrates and entire male pigs with improved performance results or lower production costs (Batorek et al., 2012a; de Roest et al., 2009). We hypothesised that hands-on experience can create a positive attitude change to some alternatives strategies by lessening existing prejudices and uncertainties. In the present study, pig farmer attitudes towards the alternatives were therefore investigated before (ex-ante) and after (ex-post) applying all five alternatives on their farm. The results of this study provide more valid and reliable data for future transition of the sector towards alternatives strategies.

2. Material and methods

2.1. Research approach and sampling

In total, 19 pig farmers performed and evaluated five treatments (different strategies to prevent boar taint) on their farms. Before (ex-ante) and after (ex-post) performing these treatments, they were surveyed regarding their attitudes or opinion using a questionnaire. The treatments were: 1) surgical castration 15 min after applying analgesia (SCAN); 2) surgical castration with CO₂-anaesthesia (SCCO2); 3) vaccination against boar taint (IM, 2 vaccinations with Improvac); 4) production of entire male pigs (EM); and 5) surgical castration without anaesthesia or analgesia (SCN) which was common practice at the time of the study.

The participants were recruited with the help of five representatives from collaborating slaughterhouses. The selection criteria for the farmers were threefold: first, farmers had to be willing to evaluate the different alternatives for surgical castration on their farm; second, there had to be at least 120 male pigs per slaughter occasion; and third, the farmers had to be able to start each of the five treatment groups within a maximum time span of approximately 9 to 15 weeks, to control the timing of the entire experiment. Participating farmers received a financial incentive of €2400. Additionally, the costs of the vaccine (Improvac®) (€423 ± 54 per farm or €3.29 per pig on average) and analgesic (Metacam®) (€98 ± 38 per farm or €0.22 per pig on average) were reimbursed at the end of the trial. The slaughterhouses agreed that farmers would be exempted from the penalty of €12.50/pig for delivering entire male pigs or immunocastrates.

Per treatment, approximately 120 male piglets were selected on each farm. For all treatments, male pigs were single sex reared and slaughtered at a comparable carcass weight of 90 kg. The order of the treatments was randomised over the farms to eliminate time or sequence effects. Within each farm, treatments started consecutively with a period of 9 to 15 weeks between each treatment, depending on the management system and the space availability at the farm. Performance results have been recently reported (Aluwé M. et al., 2014) and will not be subject of this study.

2.2. Farmer and farm characteristics

All farms were located in Flanders, Belgium and represent common pig farms in that region. Flanders is characterised as one of the areas with the highest concentrations of pigs in Europe. With an annual production of 10.5 million pigs, Flanders produces about 90% of the pigs in Belgium and about 4% of the EU annual production (FAOSTAT, 2012). Farmer and farm characteristics are presented in Table 1. Before the start of the experiment, piglets were routinely castrated without anaesthesia on all farms. Nine farmers used a restraint device when castrating

Table 1
Farmer and farm characteristics (n = 19).

	Mean	Range
Farmers' age	43	26–60
Farmers' experience	17	2–43
Number of sows/year	420	195–800
Number of fattening pigs per year	2367	1144–4600
Number of litters per sow per year	2.39	2.25–2.58
Number of live-born piglets per sow per year	28.8	23.0–35.1
Number of weaned piglets per sow per year	25.9	21.2–28.9
Age at weaning (d)	23.0	18.5–28.0
Daily gain from weaning to slaughter (g/d)	632	543–714
Slaughter age (weeks)	28.0	26.5–30.0
Slaughter weight (kg)	113	109–118

the piglets. Pre-trial castration was performed by 1 (n = 10) or 2 people (n = 9). Depending on the number of other treatments (e.g. ear tag, tail docking, iron injection, vaccinations) performed at the time of castration and the number of people involved, farmers estimated that they could castrate 7 to 20 litters per hour. All farmers indicated to be moderately (n = 12) or well (n = 7) informed about the possible alternatives for surgical castration. Nine out of 19 farmers were already practising single sex rearing.

2.3. Questionnaire and scaling

The questionnaire consisted of two parts. The first part was included to gain information on farmers and farm characteristics (Table 1). The second part of the questionnaire was developed to quantify farmer attitudes towards the current practice of surgical piglet castration without anaesthesia and each of the alternatives, and was completed ex-ante and ex-post. Identical questions in both questionnaires allowed registration of possible shifts in attitudes of the pig farmers with regard to SCN and the four alternatives. Thus ex-ante and ex-post measurements can be considered as farmer expectations and farmer experiences of the different alternatives, respectively.

First, farmers were asked to rank the five treatments from (1) 'most favourable practice' to (5) 'least favourable practice' with regard to seven specific aspects, i.e. general preference, labour conditions, animal welfare, effectiveness against boar taint, production performance, farm profitability and consumer acceptance. One farmer did not fill out the rankings ex-post, resulting in valid results of 18 farmers ex-ante and ex-post for this question. Second, attitude towards SCN was registered by means of eleven issue statements, mainly dealing with convenience, time occupation, labour, animal conditions and consumer acceptance. The alternatives were addressed in four issue statements: "It is easier to perform [type of alternative]", "The extra work is worth the effort" (*worthwhile performing*); "The animals (will) grow better as compared to SCN" (*better performance*) and "I prefer not to perform [type of alternative]". Third, farmers' ex-post experience was evaluated by scoring their level of satisfaction with each of the alternatives on 14 statements related to the farmer, the animal, the profitability and their general evaluation. Statements were scored for agreement/satisfaction on a 7-point Likert scale that ranged from (1) disagree/dissatisfied to (4) neutral to (7) agree/satisfied. Results are further classified as disagree/dissatisfied (score 1 to 2), neutral (score 3 to 5) and agree/satisfied (scores 6 to 7) when presented in Tables and Figures to show the main shifts in farmer attitudes.

2.4. Information dissemination and group discussions

All participating farmers were visited at the start of the experiment and information regarding the trial in general and the different treatments was provided. In addition, all farmers attended a general start-up meeting and a final meeting at the Institute for Agriculture and Fisheries Research (ILVO), Melle (Belgium). During the first meeting, all

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