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The pro's and con's of entire boars for meat production

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Few countries in the world use entire boars for pig meat production. Those that do include the UK, Ireland, Australia and to some extent Denmark (mainly for export to the UK). Traditionally the UK did castrate pigs but this practice was increasingly challenged by the farming community in the 1970's and in the early 1980's the majority of pigs were left entire. It has to be said at that time pigs produced for fresh meat was 65-75kg live weight and for bacon typically around 90kg. Sire lines were virtually all white (coloured sires have more skatole).

The use of entire boars for meat production is once again topical because

- There are increasing welfare concerns over castration, particularly without anaesthetic. In 2007 some supermarkets stated that they would only buy meat from farms where male piglets had been anaesthetised prior to castration.
- Increasing weights and the use of "coloured" sires increase the risk of boar taint in those countries producing entire boars.
- Alternative strategies have arisen such as immunocastration, sexed semen, feeding to reduce skatole, and genetic markers for skatole.

Boars are biologically far more efficient than castrates due to the anabolic effects of the male hormones. At typical UK slaughter weights feed conversion is 10-15% and back fat 21-25% lower on a boar compared to a castrate. Live weight gain is similar, but lean gain is 12-15% higher with the boar. The killing out percentage of boars is lower (typically 1.2-1.5%) as the testicles are removed. As the feed intake of boars is 9-16% less than that of castrates, and the lean growth rate much higher, feeds with increased amino acid concentrations must be fed in order to see the performance advantages. To some extent the use of testicles in the UK is analogous to that of Paylean in the US! As the mature bodyweight of a boar is markedly higher than that of a castrate, the difference in performance between boars and castrates increases with weight.

The cost of production of lean meat is clearly far lower in entire males than in castrates. The main problem in producing boars is that the meat from some entire males will

exhibit "boar taint". This is due to two compounds – the sex hormone androstenone and the tryptophan metabolite skatole. In the UK and Denmark we believe that skatole is the bigger problem although this is not universally accepted. Skatole arises from the fermentation of tryptophan in the hindgut by a limited number of proteolytic bacteria. The production of skatole is similar in differing sexes but the male sex hormones interfere with the metabolism of skatole allowing it to accumulate in the tissues. It should be noted that often only 5-10% of boars in a population exceed the notional meat thresholds for androstenone and skatole – not all boars are bad! Further there are marked differences between and within human populations in our ability to detect boar taint. Consumers in the UK seem to be relatively insensitive to boar taint compared for example to Germany. Consumer complaints in the UK on "boar taint" are of course negligible as consumers don't know what boar taint is! Complaints on "off flavours and odours" though are also extremely low; most complaints are on juiciness (with on average 0.9% fat in the meat, and a tendency to overcook pork, we can hardly be surprised). Even then complaints are very low. Complaining is not a national characteristic of the British; we tend to "vote with our feet". Is this what in reality is happening? The UK is the lowest consumer of pig meat in the EU. It is certainly more complex than that but personally I think we underestimate the negative effect of boar taint on UK pig meat consumption.

So boar taint is a problem in a percentage of pigs and for a percentage of consumers. So what can we do should we decide to produce entire boars for either welfare or economic reasons?

- Immunocastration is undoubtedly effective and gives many of the advantages of boar production with a very much reduced risk of boar taint. Practicality, cost, safety, and consumer acceptability are issues to consider.
- Feeding strategies can reduce skatole production. To date the most successful has been the feeding of inulin, normally extracted from chicory. This carbohydrate cannot be digested by the pigs' digestive enzymes and passes through to the hindgut altering the

The pro's and con's of entire boars for meat production

gut microflora with, for example, a marked increase in bifidobacteria. Bacterial proteolysis is reduced and hence the fermentation of tryptophan to skatole. Whilst this may be a successful strategy to control skatole it will not of course influence androstenone.

- Genetic selection to reduce skatole now seems possible
- It has been suggested that sexed semen will be a commercial reality in the next 2 years

Whilst most UK pig producers express some concern about boar taint, the multiple retailers, who sell the majority of UK pig meat, do not note a problem of any significance in their registered complaints (despite boars of circa 90kg deadweight and coloured sires). Thus whilst the UK would adopt strategies to help reduce boar taint they would have to be relatively cheap, as the perceived problem will not stand much of a premium (at least for the majority of consumers).

