



Yanping Lou, Master's student Lee-Ann Huber, and Kees de Lange

PHOTO BY MARTIN SCHWALBE

# Immunization and genetic markers are key to managing **BOAR TAIN IN ENTIRE MALES**

Both have the potential to allow producers to use entire males, which have higher lean tissue growth rates than barrows, lower feed intake levels, improved feed efficiency and higher carcass lean yield

BY BERNARD TOBIN

**C**astrating male pigs to prevent boar taint is a routine procedure for Ontario pork producers. But, as animal welfare concerns grow, producers may be forced to look for alternatives to the procedure.

Currently, male pigs are castrated to prevent the production of androstenone and skatole, which can build up in the carcass and produce undesirable odours and flavours in the meat. Dr. Kees de Lange of the University of Guelph's animal and poultry science department says that, while castration does prevent boar taint, the process is getting increased scrutiny from animal activists. He also notes it has the unfortunate effect of reducing feed and growth efficiency.

Based on previous analysis by de Lange and the University of Guelph's Dr. Jim Squires, the use of entire male pigs instead of castrated animals could improve the profitability of pork production by \$5 per pig or more.

Squires and de Lange are now working on two alternatives to castration -- immunization against boar taint and identification of genetic markers that could help eliminate the problem through genetic selection. Both have the potential to allow producers to use entire males, which have higher lean tissue growth rates than barrows, lower feed intake levels, improved feed efficiency and higher carcass lean yield.

De Lange is currently evaluating the effectiveness of immunizing pigs against boar taint using Improvest, a two-dose vaccine from Pfizer now in use in more than 53 countries, including the European Union. When using Improvest, growth per-

formance of entire males is maintained up until the second dose is administered at about 75 kilograms body weight.

Producers will have to effectively manage entire male pigs up to the time that the second dose is administered and thereafter consider changes in pig growth performance. During the first few weeks after the second dose is given, immunized pigs may grow faster than both castrated pigs and entire male pigs.

"After the second dose, those animals start eating very large amounts of feed," says de Lange, noting that producers will have to adjust feeding programs to manage pigs' increased appetites and to manage competition around the feeder.

When it comes to genetic markers, several have been validated for potential use in breeding programs. So far, Squires has identified 80 markers in 28 candidate genes for boar taint and has demonstrated their effectiveness in unrelated lines of pigs, which demonstrates their potential for wide applicability in pig breeding. The ultimate goal is to use these markers in breeding programs to develop pig lines that are free of boar taint, but otherwise grow as normal boars.

De Lange's analysis indicates that use of entire males will improve producer profits substantially. Entire males also produce less manure and thus excrete less nitrogen and phosphorus in the manure than castrates, thereby decreasing the environmental impact of pig production. In addition, the reduction in skatole production will also reduce the odour of swine manure, one of the major complaints against swine production systems.

But entire males will pose challenges for the pork production system. For example, additional handling of pigs in slaughterhouses will be required to remove male reproductive organs.

While rules prohibiting pig castration may not impact the Ontario industry in the near future, de Lange and Squires believe options will be needed at some point.

"We have to prepare ourselves for the management of entire male pigs. In the short term, immunization against boar taint is going to make it happen," says de Lange. "The longer-term aim is to be able to identify animals that have reduced

taint, so we reduce the need for immunization."

A final research report is due in 2012. The research is supported by Ontario Pork, Pfizer, Ontario Genomics Institute, Ontario Ministry of Agriculture, Food and Rural Affairs and the Natural Sciences and Engineering Research Council of Canada. □

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