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Pork industry dependent on sow reproductive efficiency: Nuffield Scholar

As Australian pork producers struggle to compete with international suppliers on their own soil, Nuffield Scholar Shaun Welsh offers solutions that could shape the industry's path to survival. Melissa Branagh-McConachy reports.

In an unequal playing field where 75 per cent of processed pork available in Australia is imported from countries that use superior genetics, Nuffield Scholar Shaun Welsh says the domestic industry must improve sow reproductive efficiency to remain competitive.

His recommendation follows an international study tour that took him inside the world's leading pork enterprises and confirmed Australian producers' insufficient understanding of physiological factors – a weakness he says is hampering animals' capacity to express their genetic potential.

Australia's pork production industry competes in a global marketplace, with America and Europe emerging as major competitors in the domestic processing market. However, while Denmark and Holland are weaning between 25 and 30 pigs per sow per year (PSY) on average and the US is producing more, the Australian average is only 21.

"We could achieve comparable results if we adopted a similar approach," Mr Welsh says. "Australia has a genetic advantage in terms of its favourable disease status, but we are not operating under equivalent conditions. These countries have different cost structures, government and animal welfare regulations; higher permissible slaughter weights; and access to the world's best genetic material.

"Many European and US farmers also receive government subsidies which gives them a competitive lead."

While most processed product available in Australia is sourced from America and Europe, import restrictions prevent an international assault on the domestic fresh meat market, which Australian pig breeding is predominantly geared towards.

However, Mr Welsh says that to compete in the processed pork market, Australian producers must lift sow carcass weight output, either by growing bigger pigs or producing more pigs per sow. "As the Australian market demands smaller animals, increasing reproductive efficiency using genetic integration is the obvious approach," he says.

Bringing home the bacon

Sponsored by Incitec Pivot, the Nuffield Scholar travelled throughout America, Europe and Asia last year to pick up clues that would help Australian farm businesses maximise production.

An insight into intensive pig production in the US, Canada and Denmark convinced him that artificial insemination, lactation length and access to superior genetic material are giving those countries a distinct advantage that poses a threat to the Australian pig herd's viability.

"We face some of the most adverse trading conditions in the Australian pork industry's history," he says. "Drought has doubled feed grain prices, which represent up to 70 per cent of production costs, and the strong Australian dollar has opened floodgates for overseas processors and eroded Asian markets' buying power. Many producers will not survive."

Mr Welsh's own situation is a case in point. The 750 sow operation he managed for Northern Bacon in Tabulam, NSW recently closed its operations. He says in order to survive, piggeries must be turning out above average carcass weight per sow per year. This will require the latest artificial insemination technology, increasing awareness of lactation length and its role in reproductive efficiency, and investigating importation of specific genetic material.

Superior genetic material key to productivity

Mr Welsh says high PSY-producing herds visited during his tour had strong relationships with breeding companies that were equipped to continually meet market requirements.

While Australia maintains a closed herd and has not imported any porcine genetic material since 1986, he says access to superior genetics and large gene pools has seen countries such as Denmark experience a significant boom in total piglets born.

"Danish pig producers can access a genetic bank owned and operated on their behalf which has its own breeding company and research department," he says. "Denmark exports 90 per cent of the 25 million pigs it produces each year and research has increased the average litter size by more than 25 per cent over the past 12 years to almost 14 pigs."

Similarly, PIC North America provides genetic material to progressive swine producers and conducts an impressive breeding program based on information relating to loin depth, pH, meat colour and leanness percentage, combined with physical performance data including growth rates, back fat and reproductive efficiency. Vertical integration at the processing level has also influenced carcass qualities and aided genetic selection.

"Exposure to world's best practice has emphasised the need for Australia to investigate importation of specific genetic material that will allow producers to compete in the domestic processing market," Mr Welsh says.

Artificial insemination produces results

All leading farms visited during the Nuffield Scholar's tour employ the latest artificial insemination (AI) technology and have developed protocols to ensure correct implementation techniques are used.

"The high PSY-producing herds implement 100 per cent AI and follow a research-based routine that involves stalling sows for insemination; daily physical heat checking; regulated boar exposure at insemination; and two inseminations per sow, the first at the first sign of standing oestrus and the second 24 hours later," Mr Welsh says. "It is necessary to record how long individual animals are in standing heat to predict when ovulation will occur."

"Semen should also be used within three days for best results, and should be transported directly from the boar stud to the farm."

AI is not a new management practice in Australia, however Mr Welsh says the technology is predominantly used in conjunction with natural service which can be affected by unknown sub-fertile boars.

"One hundred per cent implementation must become the norm in Australia, and correct protocols must be implemented on a farm-by-farm basis to ensure reliable production," he says.

Lactation length critical to success

The only major difference Mr Welsh noted between American and European pig production was lactation length, with a weaning age of 18 to 22 days considered normal in the US, while Danish legislation prevents weaning of sows before 28 days: up to 35 days is considered standard.

Under both systems, farms weaned between 25 and 30 pigs PSY on average – up to 43 per cent higher than the Australian average.

"There is a correlation between lactation length and litter size, with scientific evidence from Holland showing that a sow weaned before 21 days will produce a lower litter size and experience higher embryonic mortality," Mr Welsh says.

“Europe produces 1.5 more pigs per sow than America, but shorter lactation length allows more litters in the US, thus both are achieving higher productivity levels than Australian producers.”

He believes that Australian producers should adopt an optimal lactation length of 23 to 26 days to ensure efficient output.

“Sows require about 21 days post farrowing to prepare their uterus for the next pregnancy and to maximise the number of embryos available for fertilisation,” he says. “Shorter lactation length generally produces a smaller weaner that takes longer to grow to slaughter rate, requires more feed and is subject to higher mortality.”

You cannot manage what you do not measure

Mr Welsh is adamant that Australian pork production enterprises must maintain accurate recording systems to succeed.

“The producers I visited overseas recorded comprehensive information that allowed management to make profitable business decisions and to reduce unnecessary wastage,” he says.

Mr Welsh says US producers use benchmarking figures including total pigs born, born alive and weaned, and the weight of pigs weaned PSY, the latter directly related to post-weaning mortality and time of slaughter.

“US producers also acknowledge that reproductive potential diminishes with age,” he says. “Potential production and herd longevity is maximised by developing replacement gilts that are no less than 130 kilograms or 210 days old when they are mated on the third oestrus.”

Mr Welsh found that producers overseas are improving output by managing disease and reducing wastage including stillbirths, pre-weaning mortality and post-weaning mortality.

“Better returns can be achieved by retrieving some of this missed opportunity and boosting production, reducing costs and producing a positive business outcome,” he says.

Environment control improves production

While producers in the northern hemisphere experience extremely cold winters necessitating buildings designed to maintain constant temperatures for pig production, Mr Welsh says Australian producers “must find ways to better control temperature fluctuations and seasonal changes that limit production and profitability”.

“The highest producing farms I visited had the best facilities with excellent fit-out, ventilation and environment control,” he says. “Bad design can compromise production.”

Increasing PSY worth its weight

According to Mr Welsh, if Australian producers improved their understanding of pig physiological factors, adopted similar management practices and technologies to those employed overseas, and invested in infrastructure, the national industry could increase the number of pigs weaned by up to two PSY.

“This figure, applied to an average 700-sow herd, would equate with an income increase of more than \$100,000 – an impressive reward for adjusting on-farm management,” he says.

“It’s about expressing genetic potential, but with pork production being price sensitive to feed grains, only producers that are prepared to outlay to maximise efficient production will be able to take advantage of future supply and demand issues.”

Applications open for 2008 Scholars

Applications for the next round of Nuffield Scholarships, for travel in 2009, close on 30 June 2008. There will be 16 scholarships offered, which are sponsored by a range of industry groups. For more information on the Nuffield Scholarship program visit www.nuffield.com.au.

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