2012 – the year of the happy and productive pig

Dr Grant Walling, Managing Director, JSR Genetics

My prediction for the pork industry, that the never ending battle between enhancing welfare and boosting productivity will continue, also incorporates a New Year wish – judgement of welfare should be made on an outcome, rather than a fixed system based approach.

In this way, genuine indicator traits that can be quantifiably measured, are used to assess systems and drive progress, for example mortality, pH and blood cortisol levels. Objective and functional, they are preferable to antiquated, 'rose tinted' views of how ancestral pigs used to live.

I anticipate that the 'welfare vs productivity' tug of war will continue with European producers having to assess various management options now that they are coming under increasing pressure to convert to partial loose sow systems by the end of 2012. British producers suffered that pain some time ago! This is one such example of a 'more natural' system with animals mixing in group situations, which can lead to stress. The increased use of Electronic Sow Feeding Systems (ESFs) – where each sow is monitored via her own electronic ear tag – and other aids to allow individual management in a group housed environment, is to be expected.

The other legislation casting a shadow over Europe is the castration of boars, now only under anaesthesia. This will no doubt give further impetus to scientists investigating the detection, avoidance and prevention of boar taint which, caused by two main compounds, androstenone, produced in the testes and skatole, produced by bacteria in the gut, surge when male pigs reach puberty.

It will be interesting to see which countries – and technologies – will take the lead. My prediction is that the Dutch are likely to be the pioneers, however, the technologies to be used are still up for debate.

Injecting to prevent puberty in male pigs and therefore avoid boar taint has still to prove itself in the minds of some. One high welfare, ecological farmer has strongly objected to pigs being injected just for some farmers to make 'an extra pound a pig'.

Genetic technologies seem to be able to improve the levels of incidence, and at JSR we have been working with scientists at the University of Guelph to isolate and examine the candidate genes controlling skatole and androstenone levels and identify pigs with virtually undetectable boar taint.

Whilst genetic technologies are able to improve the level of incidence, they cannot yet fully cure the problem. On this basis, the use of electronic E-nose taint detectors in abattoirs to detect boar taint in slaughter pigs may prove the preferred option. But, with the risk of boar taint increasing as animals grow, producers may have to reduce slaughter weights.

The next battleground may well be the farrowing crate with increasing noises being made about free farrowing systems, even indoors. However, whilst very good demonstration projects exist on academic farms, a large scale commercial operation indoors, with the huge investment required in skilled labour and time, has not yet proven to be economically viable. Will 2012 start to clarify these issues once and for all?

There is perhaps a danger that in a world increasingly hungry for meat any 'enhanced' welfare system carrying additional inefficiency or cost will be outcompeted by cheaper supply systems, never mind the values inherent in the methods of production.

So, back to my New Year wish – any changes to the production system should start with the premise that costs cannot afford to rise and efficiencies cannot be decreased and results should be evaluated objectively. So, the constant tug of war between 'welfare and production' goes on.

Can a win-win equilibrium be found? Perhaps 2012 will be the year. ■

Bad science? – just say no!

Dr Grant Walling, Managing Director, JSR Genetics

There's nothing like a big industry event to focus the mind, give a fresh perspective of what you as an individual, or a company, are doing right, wrong, or even 'could do better'!

Always interesting, very often essential, they're also the best way to get a broad overview of the latest technology.

So my recent visit to Pig Focus Asia, the pig industry showcase, was no exception and didn't disappoint. The same, however, can not be said for all the contributors present.

Bad science

What amazed me was the amount of basic 'bad science' still being used to promote what could be, who knows, perfectly good new technology.

It is a well established protocol that 'good science' involves measuring the results of a new technology against a control group of pigs, kept in exactly the same conditions, on the same farm.

This allows us to assess the effect of the specific technology and eliminate any other factors that would be common to both groups.

However, a worrying number of the pharmaceutical presentations offered at Pig Focus Asia declined to follow this basic 'control group' principle. Often they simply treated all animals on the unit and then reported an improvement in performance.

Working in this way is irresponsible and poses many questions. Was the improvement due entirely to the treatment?

Did other changes take place at the same time – altered work routines for example – that could contribute to the result? What about seasonal changes? Without a control group for comparison there is no benchmark and producers cannot really begin to judge how such a product would perform on their unit.

Reasons, or should I say excuses, for not including a control group in such tests were varied and, of course, always understandable. Some stated that such trials could not be easily implemented on commercial farms. Others that it is preferable for all animals to be treated at the same time, reducing their collective disease burden and the reservoir of bugs on the unit.

Whilst all this is true, any responsible company hoping to introduce new technology to benefit the supply chain should be performing scientifically rigorous trials on products before, not after, they are launched onto the commercial farms.

Yes, at any stage of development trials are expensive to do and often difficult to plan and implement, but these costs and challenges are all part of being a responsible supplier to the pig industry.

This is why JSR takes not only great pride, but also a great mutual benefit too, in sponsoring the Harper Adams University College Pig Unit and regularly undertakes collaborative trials and research with the facility.

Ask questions

When faced with any product performance results that look 'too good to be true' producers should take a moment to think about how those results were achieved.

Ask a few questions, make sure the product has been properly trialled and, particularly, ask to compare the data against that of the control group.

If more producers started to 'say no' to products that have not been properly assessed it will encourage companies to complete those 'difficult and complex' trials that, whilst being 'time consuming and expensive', are the only way to introduce innovation into an industry that deserves not only new, but proven, verified technology capable of making an irrefutable contribution to their on-farm performance. ■

Advances in AI – more to achieve?

Stephen Waite, Head of Science, JSR Genetics

The role of AI, in delivering the 'best of the best' genetics – and farrowing rates of up to 95% – is already firmly established as pivotal to the success of the pig industry. So how much more is there to achieve? Can research and development yield real positive benefits? In our experience, the answer would be yes; on-going initiatives at JSR Genetics are offering pig producers improvements now – and plenty to look forward to.

One such project is the viability of offering sex selected semen, which would be a huge step forward for the pig industry. The potentially achievable, and preferable, split would be eight gilts to two boars. However, the difficulty is being able to sex semen at a speed that is commercially viable.

Currently, the BPEX semen dosage standard guarantees over two billion single sperm in every single dose – so, for a single dose of single sexed semen, over two billion sperm would have to undergo the sex selection process.

In pigs, this process can be achieved using flow cytometers which work by detecting the tiny weight differential between male and female sperm – only around 0.8%. For pigs, the quickest you can do this is 2,000 cells per second so it takes 11.5 days to produce a one billion female only dose or 23 days to sex a two billion female only dose, which is not viable due to cost. However, if lobbying to have the UK standard dose lowered is successful, single sexed sperm could become a sound commercial proposition – just as it is in the cattle industry.

We already have trials underway with research partners such as UK based Harper Adams University College, investigating the effect of semen concentration on farrowing rates, and are confident of proving that using a lower dose will work without compromising production. Once we can ascertain an optimal low dose for pigs – and we suspect this may be around 400 million – we will carry on our work with the University of York, who are currently involved in research with leading flow cytometer manufacturers, to make that dose as easy as possible to sex. Every year, sexing cells is getting faster, say by a factor of ten. Now new chemicals that bind onto the male/female cells to make them easier to sort by weight are opening up yet another promising avenue for research.

Last November JSR carried out 100% changeover of two studs to fully automatic packing machines that, using touch screen technology, fill up to 1,300 flat packs of semen per hour with an accuracy of ±1%. The newly designed flat packs feature a tapered spout that will fit onto any catheters with a tight, leak free fit and easy to use twist off end. These can now be resealed if opened by mistake. The packs also feature larger, easier to read labels.

JSR, in partnership with the University of Kent and the Bridge Fertility Centre, have just been awarded a £500,000 Technology Strategy Board Grant which involves research into pig IVF, an initiative of particular interest to international customers.

It means that, rather than sending genetics in the form of live animals to international customers – a complex and expensive exercise involving testing every animal at a cost of £250 each – embryos could be suspended in a flask, requiring just one test and be sent as luggage on a normal commuter flight. This more convenient, cost effective service would offer substantial savings to the value of around £600,000 per 1,000 animal order being passed down the supply chain.

These collaborations, with the University of Kent, the Bridge Fertility Centre and also Harper Adams University, are excellent examples of how by bringing people together, all experts in different fields – to promote skills and expertise – there can be gains all round, often not only for the pig industry but for human health and well being too. ■