

Special points of interest:

- Global PIC News
- Iso-Weans—Are they an option for you?
- Lactational Oestrus—Ways of dealing with it

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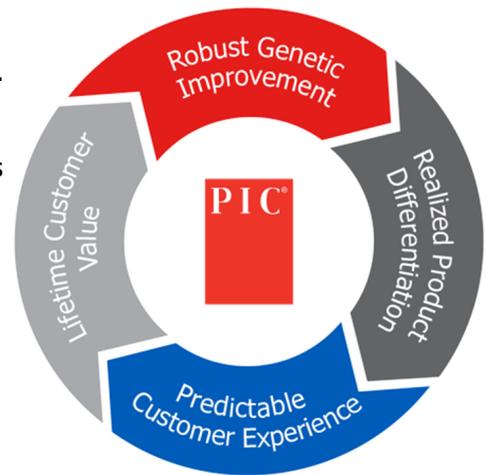
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Selecting for Customer Success

PIC believes that when you start down a path, you need to have a destination in mind. For over 50 years, PIC has focused our genetic improvement program on a single destination. This destination, which continues to be our focus today, is **Total Economics**, which means maximizing the commercial profit potential of our genetics in our customer's operations.

This focus means that we objectively combine our genetic predictions for the traits that have economic importance in our program with robust marginal economic values. The combination of these factors continues to drive our populations and products towards the optimum combination of traits. While likely not creating a perfect pig for any one, single biological trait, we focus on significantly influencing our primary trait of interest for our customers - their bottom line profit.

Whatever our customer's goal and challenges, they can be assured that PIC will utilize our strengths to carry their business through and support them to meet the objectives.



Andy's Comment



Snow in Russia

Welcome to the second issue of our newsletter. We hope that you find the information contained within useful.

There is exciting news from PIC's parent company, Genus, on pages 2 & 3. Very relevant with New Zealand's current import situation.

Internally, we have started a series of modernisation projects involving three of our units that currently produce breeding stock for our customers (these being

Bardfield, Maramarua and Tasman Park). Projects include investments in new feeding systems, upgraded ventilation, 100% concrete slat flooring and updated effluent handling. Our goal with these investments is to improve our herd health and lower our cost of production.

Both factors are critical to ensure that PIC NZ remains a sustainable business and stable supplier of high quality genetic products to you, our customers.

Global PIC News and Information



Genus tackles major pig disease with breakthrough technology

Genus (LSE: GNS), a global pioneer in animal genetics, announces the development of the first pigs resistant to Porcine Reproductive and Respiratory Syndrome Virus ("PRRSv"), through a long-standing collaboration with the University of Missouri.

The production of PRRSv resistant pigs is a significant breakthrough in combating this devastating porcine disease, and Genus is excited to be progressing the development of this technology under an exclusive global license from the University of Missouri.

PRRSv is the most significant and harmful pig disease faced by many farmers, causing animal reproductive failure, reduced growth and premature death. Even though it has challenged the pork industry for more than 25 years, there is currently no cure for PRRSv. The technology has the potential to eliminate the disease impact on the animals, improve the well-being of pigs, and enhance pig farm productivity, which ultimately will help meet the global demand for pork products.

Using precise gene editing, the University of Missouri was able to breed pigs that do not produce a specific protein necessary for the virus to spread in the animals. The early stage studies conducted by the University demonstrate these PRRSv resistant pigs, when exposed to the virus, do not get sick and continue to gain weight normally. Genus will continue to develop this technology, and we expect it will be at least five years until PRRS resistant animals are available to farmers. ***Genus intends to commercialize the technology through PIC, its porcine division.***

The university research results have been published in the peer-reviewed scientific journal, Nature Biotechnology, on December 7, 2015.

Speaking about this breakthrough, Dr Jonathan Lightner, Chief Scientific Officer and Head of R&D of Genus, said: *"The demonstration of genetic resistance to the PRRS virus by gene editing is a potential game-changer for the pork industry. There are several critical challenges ahead as we develop and commercialize this technology; however, the promise is clear, and Genus is committed to developing its potential. Genus is dedicated to the responsible exploration of new innovations that benefit the well-being of animals, farmers, and ultimately consumers."*

Dr Randall Prather, distinguished professor of animal sciences at the University of Missouri, said: *"We are delighted to have been working with Genus and to have discovered a major breakthrough in tackling this devastating disease that causes suffering to so many animals around the world."*

About Genus plc and the Pig Improvement Company (PIC)

- Headquartered in Basingstoke, United Kingdom, Genus is a world-leading pioneer in animal genetics. The company helps nourish the world through the responsible exploration of new technologies that benefit its customers, the well-being of livestock, and ultimately consumers.
- PIC is a subsidiary of Genus, and is the global leader in providing genetically superior pig breeding stock and technical support for maximising genetic potential to commercial pork producers. PIC has been delivering genetic improvements for over 50 years.
- Genus' customers' animals produce offspring with greater production efficiency, and quality, and use these to supply the animal protein supply chain. Genus is a leading partner of choice in dairy, beef and pork markets through PIC, for porcine customers, and ABS, which serves dairy and beef customers.

- Genus companies operate in over 25 countries on six continents, with research laboratories located in Madison, Wisconsin, USA. For more information visit www.genusplc.com.

About Porcine Reproductive and Respiratory Syndrome Virus

- PRRSV is a devastating disease that can cause persistent infection in pigs and lead to reproductive failure, reduced growth and premature death. There is currently no cure for the disease, which causes the suffering or death of millions of pigs and piglets each year. Current treatment is expensive with limited effectiveness.
- PRRSV is considered to be the most economically burdensome viral disease of pig farms in Asia, Europe and North America. Financial losses are mainly due to increased death loss, poor reproductive performance and increased use of vaccines and medications.
- Secondary diseases following a PRRSV outbreak on a farm can further reduce productivity and lead to additional costs. Diagnostic testing and herd monitoring after a PRRSV introduction are necessary to develop comprehensive control strategies, which are costly and have limited effectiveness.
- In 2006, a more severe form of PRRSV decimated pig populations throughout China. According to the China Animal Disease Control Center, in the summer of 2006, a new severe variant of PRRSV affected over two million pigs.
- A 2011 Iowa State University study estimated PRRSV cost the U.S. pork industry \$664 million per year, and in Europe figures are estimated at €1.5 billion per year.

About gene editing technology

- Gene editing allows precise changes to be made in the genome of the animal without introducing genetic material from another organism. In the case of the PRRSV resistant pigs, small changes were made to inactivate a single gene from the pigs that produces a protein, known as CD163, the PRRS virus requires for infection to occur.
- The gene editing technology used to create protection from PRRSV does not involve transplanting genes from one species to another.

Moving onto: The Importance of Isolation and Acclimation Procedures

Isolation / Acclimation — what does it mean? Why do we recommend it? How does it help you? How important is it?

PIC has always been aware of the importance of health status and biosecurity. The ability to minimise disease risk and to maintain as high a health status as possible is something that is important to us and to assist you in maintaining the best production possible. One comment that has been repeated fairly regularly is 'PIC animals seem to fall over as soon as they reach my farm'. While we are very protective of our own health status on our farms, we are also aware gilts and boars that end up health-challenged tend to not perform as expected.

One critical process that can assist PIC animals transition into your herd is to make sure that there are adequate isolation and acclimation procedures in place to allow the new pigs to fit into the new herd and develop immunity to any resident diseases without becoming sick.

Our recommendation is that PIC animals are isolated from your resident herd for at least 4 weeks before being introduced. This is to allow you to check and see if there are any issues with the stock that have arrived as well as to slowly start exposing the animals to the organisms and pathogens existing in your herd. It is important to vaccinate these animals under the recommendation of your vet, as well as having natural exposure time.

So, what else can be done to assist new stock to acclimate well into your herd? Please turn the page...

The Importance of Isolation and Acclimation Procedures continued...

PIC gilts are negative for a number of diseases including Mycoplasma pneumonia. Most customer herds are positive for this and other diseases.

This difference in health status is good in that PIC are unlikely to introduce new diseases to their customers but the downside is that there can be a few challenges in ensuring that they enter the herd with minimal disruption to the productivity of the gilts themselves and the recipient herd. Nothing that is not easily manageable though.

Over the years we have encountered a number of instances with customers where gilt conception rate and litter size have been compromised by the gilts still being in the active phase of "getting over" the new bugs they have encountered on their new home farm. Such affected gilts can often still be heard coughing around the time that they are being mated - a tell-tale sign that we have not got things right. The process of "getting over" these challenges should ideally be well out of the way long before mating so that the gilt's system can focus on reproduction rather than on generating immunity.

Changing some of these customers from receiving standard 95kg gilts to receiving younger gilts (what we used to call breeder weaners now "Iso-Weans") resulted in fewer issues with gilts dropping out of the herd, better gilt litter size and conception rate and better grower herd health. The latter observation (that pneumonia levels in the growing herd of recipient herds improved after gilts were introduced to them much younger) was often made in the past by customers but there is now increasing amounts of research world-wide that have backed up this principle.

This research, along with the advice of experts in the field, has lead us to a belief that this principle is not only a "useful tool" but is something that we should implement with all of our customer herds that are positive for Mycoplasma pneumonia. We now know that 1st litter gilts can, in some herds, infect their offspring in the farrowing shed and this infection pressure is carried into the grower herd where it makes the pneumonia incidence higher. The progeny of older sows do not get infected in the same way as gilt progeny do since the sows have solid immunity.

Ensuring that gilts do not "seed the grower herd" in the customer's farm by infecting their progeny requires that the gilts are :-

1. Exposed well to the Mycoplasma pneumonia bug so they all get it very soon after they reach their new home (we have guidelines that we can adapt for how to house and expose them), and
2. Introduced to the customer herd at least 240 days before their first farrowing. This is the time required for them to stop shedding the Mycoplasma pneumonia bug.

This means introducing gilts at between 24 and 80 days of age. We can accommodate a few scenarios to suit the customer but are increasingly introducing gilts straight off the sow at 4 weeks with good success. We look forward to discussing some of the options with you.



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Beware of Lactational Oestrus in Winter

A lactational oestrus is when a sow comes on heat either during lactation or on the day of weaning or in the first 1-3 days after weaning. In most cases these heats are not observed but sometimes they can be observed and acted upon. They are generally unexpected and unwelcome because they result in sows not coming on heat when you expect them to and thus cause substantial disruption of weekly mating targets.

Many lactational oestruses are not as fertile as a normal oestrus and while they can result in normal pregnancy, usually farrowing rate and litter size are lower when affected sows are mated. Apart from this fact, they generally just do not fit in with the mating system. Some farms can experience large "outbreaks" or "runs" of sows affected during winter which can be very disruptive. The typical picture during an outbreak will be a number of sows just not coming on heat 4-5 days after weaning and usually affecting mid-parity and older sows (seldom affects P1s).

The root cause of lactational oestrus is generally that the sow either gains weight during lactation or else has a number of things going on that enhance fertility causing her to come on heat prematurely. An example of the latter is the addition of chromium or betaine to a lactation diet. This has been shown to improve wean to oestrus interval in sows, but can also make sows come on heat too early in winter. Generally a number of factors come together to cause an "outbreak" of lactational oestruses. They might include: -

- A diet formulated to maximise sows coming on heat after weaning
- Conditions conducive to good feed intakes (e.g. low temperatures)
- Building up feed intakes too quickly in early lactation
- Not enough piglets on each sow (e.g. 10 or less)
- Anything that disrupts piglet milk intake e.g. fostering a new litter onto a sow or death or removal of one or more piglets
- Anything that disrupts feed intake e.g. poor feeding management, or with outdoor sows the day that the ad-lib feeder goes in can often cause oestrus 5 days later

Based on these, some management tools that can help to prevent it from occurring include: -

1. Control the "step-up" in feed intake during the first 10-14 days of lactation. For example start on about 2kg the day of farrowing and increase by 0.75kg/day or thereabouts
2. Make sure sows are well loaded up within 24 hours of farrowing; 12-13 pigs to match their functional teat numbers.
3. If you do take a litter off a sow and foster a new litter onto her than drop her feed level by 2kg on the day you do that, then return to normal
4. If a sow loses several piglets (e.g. removed early or they die etc.) then reduce her feeding level by 0.5kg/day for each piglet below 11 piglets and don't feed her ad-lib after that
5. Control any disease (e.g. coccidiosis) that reduce weaning weights (by reducing piglet milk intake)
6. Consider removing betaine and chromium from lactation diets during winter only

"Don't throw the baby out with the bath-water!" In other words if you overdo some of the "control points" above you can make your sows less fertile and late to come on heat at all, so the ideal fertility level is usually achieved with a balance between extremes and ensuring that sows lose minimal weight during lactation without actually gaining weight.

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We are also working on updating our website so watch this space!

PIC®

PIC Staff Celebrations

With the end of our financial year, it is a time that our own production results are collated and examined. Every year the 'winning' farms are announced with staff receiving a bonus and a plaque to display on farm. This year the results are: -

SOW FARM OF THE YEAR:

PIC Carleton Road (CR)

John Bettjeman—Manager
Norly Bersabe—Mating & Gestation
Hannah Foor—Farrowing & Lactation
Lloyd Biliran—Nursery & Finishing
The KPI's measured are the percent crate capacity, born alive and pre-weaning mortality.

WEAN TO FINISH FARM OF THE YEAR:

PIC Maramarua (MM)

Gian Camacho—Manager, Edevic Montano—Mating & Gestation
Jessie Dizon—Farrowing & Lactation, Michael Avila—Nursery & Finishing
The KPI's are based on the wean to finish sales percentage along with the final nursery and finishing mortality rates.

FARM OF THE YEAR

PIC Carleton Road

Criteria is the number of pigs sold per farrowing crate.

EMPLOYEE OF THE YEAR

Jack Manuel Jack relocated from the North Island last year to assist us in a staffing emergency. His first week in the South, he saw snow up close and personal for the first time! He was assigned to the SI GTC (PIC Hororata—HR) where he has developed skills in boar collection and laboratory procedures. In addition, he handles all the effluent disposal and outside duties. He assists with the twice weekly collection and processing of Liquid Genes for our units and our customers. He hasn't been absent on any critical collection day and can complete the entire routine on his own on the smaller collection days. He was willing to work extremely long hours in the GTC Manager's absence and dealt patiently with the inept substitute workers (being Andy, Simon, Bruce and Kay!).



PIC Carleton Road Staff: Hannah, John, Norly and Lloyd



PIC Maramarua Staff: Gian, Jessie, Edevic and Michael



Jack from PIC Hororata

Congrats Jack for being a great PIC employee!

And to introduce a new member of PIC staff to you:

Project Manager—Brian Goodes



I have been involved within the pig industry in various roles since the mid 1980's, growing up in the UK, being exposed to the outdoor pig industry at an early age in my first job after school. And I still enjoy the challenges the industry brings.

Since then I have had various roles within the pig industry from stockman through to Manager and then on to farm ownership, with most of these having had a strong outdoor pig focus which is where my passion for pigs lies.

Being outdoors is where I like to be, whether it's on a pig unit

or my recreation activities, where I can be found tramping, skiing and competing in both running and cycling events.

After the sale of our farm three years ago, we purchased a lifestyle block in Ashburton which has kept us busy, while allowing us the time to travel overseas to various countries and to spend more time with my partner and three children who all seem to be growing up too fast.

So, having had a break from pigs, I'm very excited about my new role with PIC and the challenges it will bring.