

PIC® Matters

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NUTRITION UPDATE

SEASONAL DIET FORMULATION FOR PIC PIGS

It seems that the supply and demand theory works pretty well in pig production. Historically, as pig supply reduces in summer months, pig prices increase. This may vary across the globe as different regions might be affected differently by the changes in temperature and humidity across the different seasons of the year. However, at the end of the day, there will still be some changes in supply as the year goes by (Figure 1).

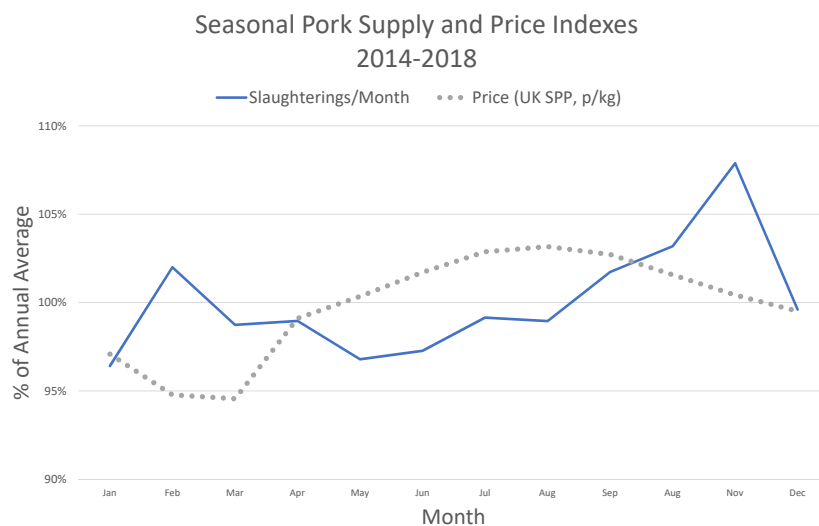


Figure 1: Seasonal pig supply and price indexes from 2014 to 2018, AHDB Pork

The above graph showcases the reduction in pig supply, which is likely linked to suppressed farrowing rates from seasonal infertility from summer matings and fall farrowings; increased disease outbreaks during winter and reduced growth due to lower feed intake during warmer months.

Some of the strategies that can be applied are listed below. The application of each strategy will depend on the current level already used in the production system and specific pricing scenarios available.

Common strategies include:

- Increased energy levels

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- Increased Lysine and other amino acids levels, such as tryptophan and valine
- Increased copper levels (max levels outlined by the local governing body)

PIC has developed an Excel-based tool (Figure 2) to aid nutritionists and producers with a cal-endar identifying dates to update each diet in order to get the most out of the high pig price during the summer months (Figure 3).

Specifically, this tool assists nutritionists to calculate when the growth promoting intervention should be implement- ed, and when it should cease for each weight range/phase. As you can see in Figure 2:

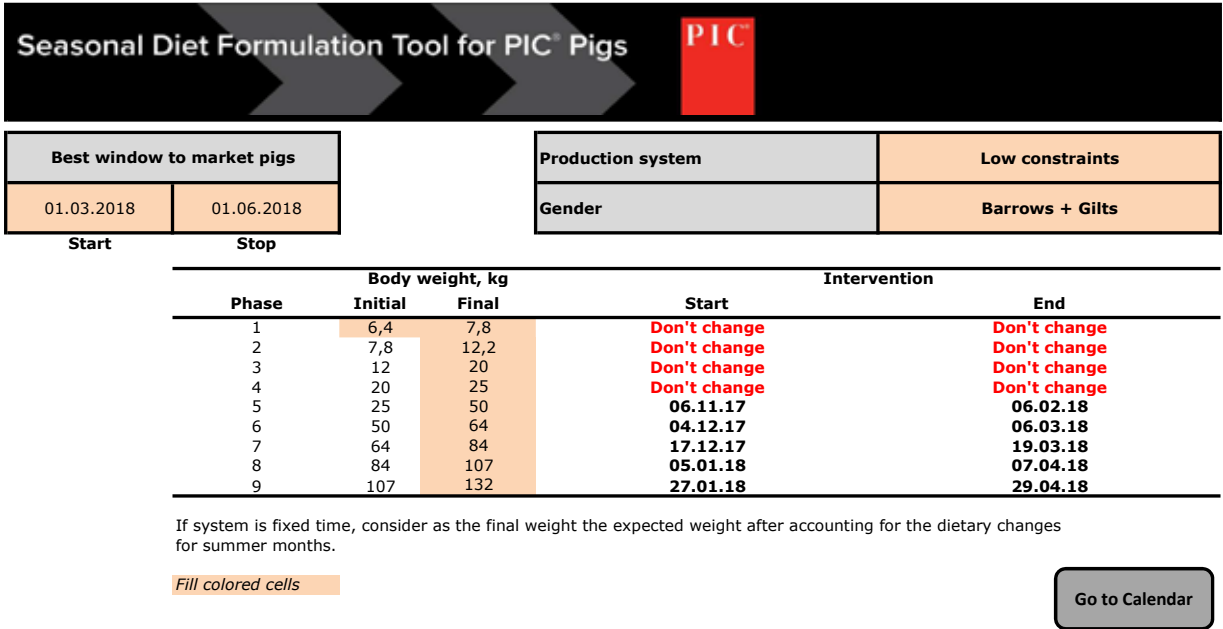


Figure 2: Seasonal diet formulation tool

1. You enter in the “best window” cell the time period in which you want the increased weights
2. Select the pigs gender
3. Enter the weight range of each diet
4. Select your present level of gain / performance from the systems constraint tab

This tool calculates the implementation/start date and ending date for the inclusion of the growth increasing inter- vention.

The start and ending date by phase is displayed in two ways. One display is the colour-coded blocks on the calendar, the other is the start and finish columns where start and finish dates of the intervention are shown by phase (Figure 3). *You can find the Seasonal Diet Formulation Tool at [If you have any questions or comments, please contact your PIC Account Manager or the PIC Nutrition Team for addi- tional information or support at any time.](http://www.pic.com: Go to “Nutrition calculators” at “Resources” (www.pic.com/resources/calculators/).</i></p>
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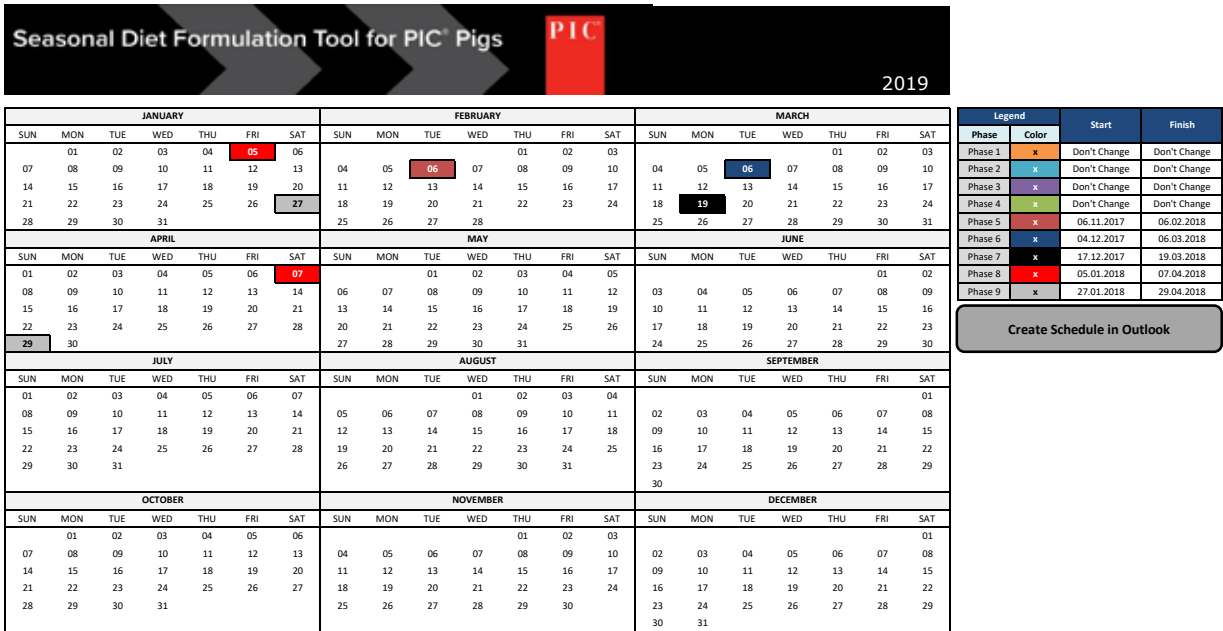


Figure 3: Calendar with dates for expected diet changes

PIC'S PORK QUALITY BLUEPRINT

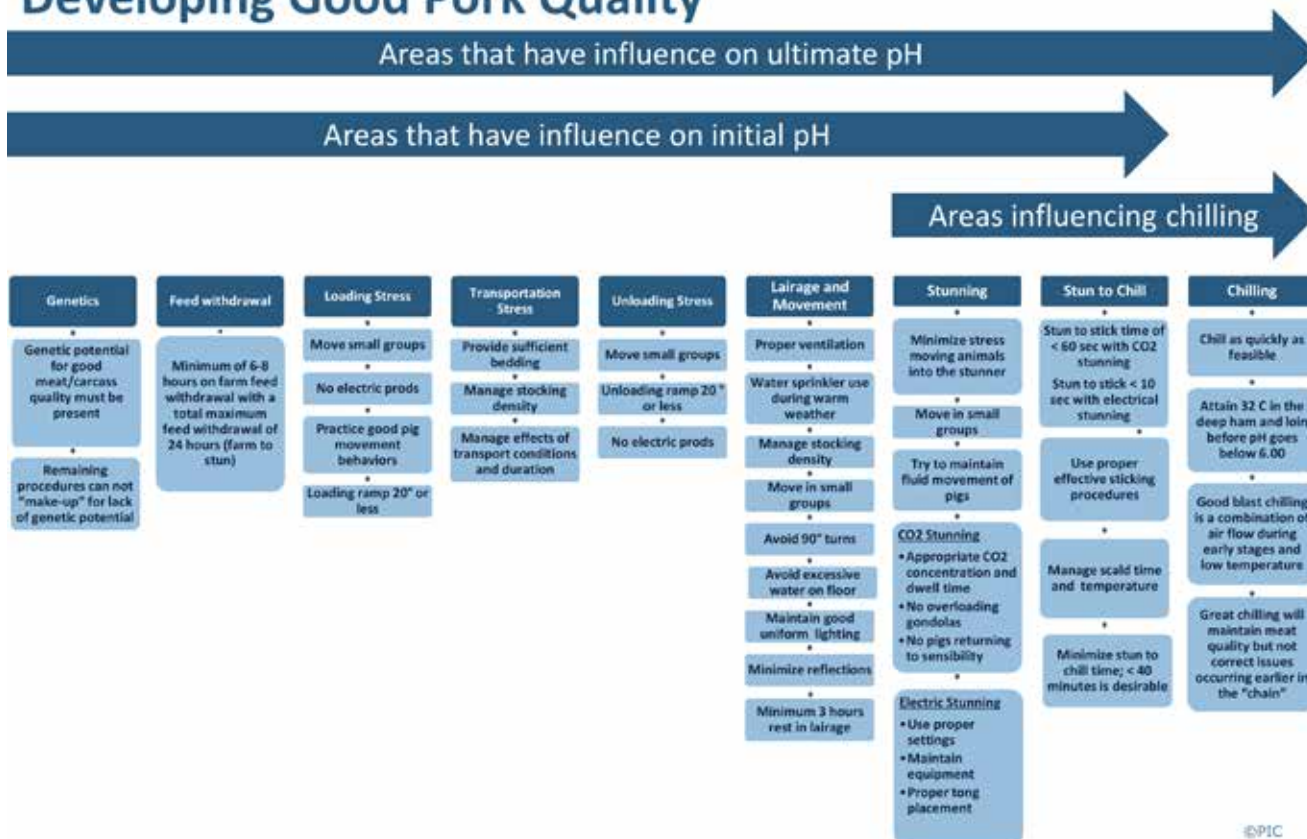
Join us as we explore 22 years of innovation and achievement!

PIC's Pork Quality Blueprint was first developed in 1996. Over the past 22 years, the Blueprint has been critical in helping PIC aid the industry to produce high-quality pork and was developed to help all stakeholders in the pork chain understand that handling **on farm, during transport and at the slaughter plant** has a large influence on pork quality. In fact, environmental factors influencing the animals and carcasses usually account for approximately 60-to-70 per-cent of the variation in pork quality traits.

What are these environmental factors?

PIC's Pork Quality Blueprint provides a summary:

Developing Good Pork Quality



"With the 'PIC Pork Quality Blueprint,' we emphasize that there are multiple factors that impact pork quality and the overall carcass value. We want to make sure that PIC customers are aware of how to optimise all of them," says Dr. Neal Matthews, co-leader of the PIC Pork Quality team.

"Excellent pork quality starts with good genetics and even the best procedures for pre-harvest animal handling, carcass processing and chilling cannot compensate for poor genetics," he says. "However, these handling procedures play a significant role in ensuring desirable quality and must be implemented if consistent good quality is to be achieved."

Let's examine **each of the Blueprint's** handling factors when used **on farm, during transport and within a slaughter plant**:

Feed withdrawal

Feed withdrawal before transportation saves the producer feed cost, decreases the incidence of gut spillage, decreases the incidence of DOAs (Dead on Arrivals) and improves pork colour and water-holding capacity. Ideal feed withdrawal time is between 12 and 18 hours while maintaining access to water. Minimum feed withdrawal time should be at least 6 to 8 hours on farm with a maximum time of 24 hours (includes on farm, transportation, and lairage feed withdrawal).

Loading stress

Stress imposed on the pigs causes a rapid and complex neuro-hormonal response, leading to the so-called 'adrenaline rush' that, in turn, causes increased heart rate, rise in blood pressure and increased muscle contractions. The direct

result of increased muscular activity is metabolic overproduction of lactic acid in the muscle that causes an accelerated pH decline early post-mortem adversely, affecting pork quality. To manage stress at loading, we have the following practical recommendations. Pigs should be moved in small, manageable groups. Mixing of pigs from different pens should be avoided. The loading crew should never use electronic prods and practice good pig movement behaviours at all times. Loading ramps should not exceed a 20-degree angle as chutes that are too steep, put a strain on the pig pasterns, causing pain and reluctance to move. Loading ramps should have solid sides.

Transportation stress

During transport, stress must be minimized. Environmental conditions are the most important factors to consider when transporting pigs. Anytime the weather is less than optimal (too hot/too cold), pig density should be adjusted. On the trailer, pigs should be able to lie down and stand up in their natural position. Recommended stocking densities during transport vary considerably across the globe; however, higher stocking densities will likely result in more DOAs and non-ambulatory or injured pigs.

Unloading stress

Unloading pigs at the slaughter plant is the last step of the very important transport process. Similar guidelines for loading procedures should be followed. Trucks should be unloaded with minimal or no waiting time.

Lairage and movement in packing plant

Proper pre-slaughter handling practices are very important in ensuring good pork quality. Holding pigs in pens is not only needed for having the required number of pigs for slaughter, but also to restore their natural metabolism and allow them to rest to reduce stress. Holding pen sizes differ per plant, but should be large enough for pigs to move freely and have access the fresh drinking water. Ideally, pens will accommodate 1 truckload, therefore avoiding mixing of unfamiliar pigs. The minimum preferred resting time is 3 hours regardless of transport distance. Throughout lairage, pigs should continue to be handled and moved in a calm fashion with minimal noise.

Handling during stunning

The newer CO₂ stunning systems are preferable for good pork quality as they allow group movement of pigs (five to eight pigs at a time). With electrical stunning and old CO₂ systems, the pigs must be handled under single file movement, which is stressful to them even under the best management practices.

Handling during stun to chill

It is critical for good pork quality that the time from stun to stick of the pigs is as short as possible. With electrical stunning, pigs should be bled before the kicking phase (clonic phase) of muscle activity sets in (< 10 sec). With CO₂ stunning it is ideal bleed pigs < 60 sec after exiting the stunner. Management of scalding water temperature is essential for minimizing the amount of heat introduced to the carcass. Typically, a temperature of 60°C for 6 minutes is effective enough for good hair removal. Temperatures may be slightly higher or lower depending on time duration of the scald or difficulty in removing hair. The key is to use the minimum amount of heat necessary to effectively remove hair from the carcass. Total stun to chill time should also be minimized (less than 40 minutes is preferred).

Chilling

Slow carcass chilling rate is a common factor associated with undesirable pork quality. More rapid chilling systems such as blast chillers (-30°C with 8-10 m/s wind velocity for a duration of ~100 minutes) are typically used to increase the chilling rate and improve meat quality. It is recommended that for ideal pork quality, internal temperature in the loin should be below 30°C in the first 1-1,5 hours of chilling and below 15°C within four hours of chilling. It typically takes 16 to 24 hours to complete the chilling process and bring the internal temperature of all cuts below 5°C.

REMEMBER:

While a key factor of pork quality is certainly genetics, pre-slaughter growth, environment and handling, plus post-slaughter carcass chilling management can actually account for a larger portion of the variation in pork quality, and therefore, be accountable for failure to realize genetic potential.

Guided by the Pork Quality Blueprint, PIC offers international technical services for their customers to help them identify opportunities to improve pork quality and total carcass value.

Through technical visits and audits, our team works closely with local teams to perform an analysis of all plant processes, identification of potential areas of improvement and recommendations on how those improvements can practically be implemented. It is an important way that PIC is helping customers realize the superior genetic potential of their pigs.

NEW ADDITIONS TO THE TEAM

Barrie Hicks

Barrie graduated from Seale-Hayne College in 1976 with a HND in National Resource and Rural Economy, and then managed the Meat Research Institute's pig unit for five years. He then entered the genetics industry in 1985 joining Cotswold, a national breeding company, as an area manager for the South and South West. He covered this area for about thirteen years before moving to the North of England for four years as a regional sales manager with the same company. In 2001, after moving back to the West country, he joined Hermitage Seaborough for the following seventeen years as their sales manager. Upon the takeover of Hermitage by PIC in July 2018 he moved across to the PIC sales team as a Key Account manager looking after the South of England and a number of customers in the North. He lives in Somerset and is married with two sons. In his spare time, he follows rugby with a particular interest in Exeter Chiefs and England.



Nick Butler

Nick has worked in agriculture for 32 years - in all aspects and species. He worked for ART Porcine then Innovis closely working with PIC to oversee GTC East and GTC West and the day to day running of the studs. During his time at Innovis, he was also responsible for the sales of all the IMV equipment in the UK including Pig, Cattle, Sheep and Equine. For the past 11 years he has worked in the pharmaceutical sector with Pfizer and Elanco and more recently with MSD Animal Health before moving to PIC to take up the position of Key Account Manager for the East and Scotland. In the pharmaceutical sector he held positions from Senior Product and Marketing Manager to Key Account roles. During this time, he has built up very good relationships with the vets and farmers in both the Pig and Cattle Industry.

He wanted to get back to his roots and dealing with the farmers and adding value to their business so joined PIC in September 2018. He has several hobbies including his cars and triathlon and can be found either running, cycling or spending time with his family and two dogs. Nick is looking forward to working with all the UK and Global team at PIC and getting more contact with the UK Pig sector as a whole.

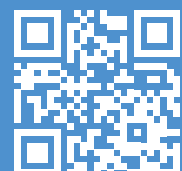


Fiona Roberts

Fiona joined PIC Technical Resources in January 2019 and is based in Dorset in SW England, married with one son. Having graduated with a degree in physiology, biochemistry and nutrition of farm animals she completed a PhD evaluating the physiological impact of incorporating soluble fibre sources into the diets of growing pigs. Following a postdoctoral placement at the National Institute of Animal Science in Denmark, Fiona has worked variously for a UK pig marketing group, in teaching and research, and as project co-ordinator on the zoonoses prevalence and control programme as part of the Pig Health Team at AHDB (Agriculture & Horticulture Development Board). Before joining PIC she was working as the Technical Manager for Integra; a UK based company operating globally providing inspection, advisory and consulting services to animal supply chains (red meat, poultry and fish species) across a range of retail and food manufacturing businesses. The emphasis was on ensuring adherence to animal welfare requirements at farm and abattoir level but mindful of production considerations and commercial pressures. In moving to PIC Fiona hopes that she can utilise her whole chain knowledge and understanding of European pig production in the role and apply the experience gained in issues such as welfare, outdoor production and responsible antimicrobial use.



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14TH AND 15TH MAY 2019

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Meet the PIC UK Team at the conference!

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