Ask The Experts

Dr Jules Taylor-Pickard,
Alltech Solutions Deployment Team Manager

Q With the pork producing industry being constantly squeezed with higher costs and welfare requirements, do you have any advice on maintaining profitability?

A After taking into account any extra capital costs imposed by law or necessity for pig farmers, the efficiency of production is the key issue regarding maintaining profitability. Optimising feed conversion ratio is paramount in terms of getting the best out of the most expensive input, i.e. feed costs. In recent years price fluctuations in feed materials have made this even more important. The best approach is a holistic one, where all factors that may impact FCR are considered, including digestibility (normally addressed by appropriate enzyme or pronutrient use), optimal processing methods (to improve digestion but not damage nutrients), feed material quality and storage, a home mixer (for example, avoiding contaminated feed) and using properly balanced diets to maximise the genetic potential for growth.

Q Organic pork production is having a difficult time as margins are getting less but our options for improving production, apart from management, are limited. What can we use to try to be more competitive?

A There are some feed products available that are recognised for use by organic associations. Certainly yeast-based digestive enhancers are registered for use in organic systems, and these are very useful in developing the correct microfloral environment, as well as enhancing the development and responsiveness of the immune system within the gut of young pigs. This allows them to reduce potential digestive upsets and improve feed efficiency and growth. In an organic, outdoor unit, young pigs are more susceptible to pathogen challenges from their environment, making the establishment of good bacteria in the gut very important, as this will make them more resistant to the establishment of other pathogens.

Q What can be done to improve fertility in sow herds? Main problems are costs of AI, especially if return services are needed. I am buying a complete feed, but is there something else that can be addressed?

A Sow productivity is a major issue, and from a feed perspective can be helped in two ways. Firstly, the quality of minerals is important, as these have a direct bearing on fertility, as well as other physiological issues. Any imbalances can impact fertility, so make sure you are not overfeeding one mineral if you are relying on inorganic sources. It is safer and more efficient to use organic forms (chelates or proteinates) in feed to deliver well balanced and effectively absorbed minerals. Secondly sows are highly sensitive to any mycotoxins in feed, which have a direct impact on fertility and reproductive health in these animals. If you are using a good quality feed, then the materials used in its production should have been checked to ensure they are free or very low in toxins. However, it is always prudent to include a mycotoxins binder in feeds for sows as an insurance against toxins, especially if feed is being stored for any length of time or the quality is not guaranteed. In addition, certain oils are important in the diet of breeding animals, as these are crucial in hormone production. Including omega oils in the ration can help with cycling and sustaining pregnancy.

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Q In sow herds, costs for AI can be a major consideration and successful first conception as well as good litter size is crucial to profitability. Is there anything that can be done via feed to help farmers achieve this and reduce some of their costs?

A Sow productivity can be directly affected by nutrition, especially with respect to mineral and omega oil supply. The omega oil balance is important as this provides the building blocks of hormones which regulate fertility and ensure successful conception/implantation.

Minerals, especially antioxidants, are important for giving protection against oxidative damage of gametes (ova and sperm), which is not only involved in successful fertilisation, but also the 'survival' of fertilised ova during their progression through implantation and into foetuses. This is linked to litter size, as the more that survive gestation, the greater the litter size.

Making sure your sow is in good breeding condition is, of course, directly linked to appropriate nutrition in the lead up to mating and the level of conception success.

Feeding a high quality, suitable feed (according to sows condition pre-mating) which is highly digestible, especially in terms of minerals for ensuring good body reserves during pregnancy, is key to reproductive performance.

Q The mortality rate for young piglets can be very high. Is there anything from a nutritional point of view that can be done to reduce this? Mostly it seems to be linked with scouring diseases.

A Newborn and young piglets are particularly susceptible to developing gastric infections and management, in terms of cleanliness of the facilities, is important. However, there is a need for the young piglet to be exposed to common pathogens, in order for the animal to be able to develop its own appropriate immunity.

Young animals need to develop what is known as 'immuno-competence' early in life, especially pre-weaning as they are at great risk of digestive upsets when being weaned onto hard feed. The correct development of the gut and establishment of a balanced bacterial profile (for fibre fermentation) can be assisted by the addition of gut active yeast-derived (mannan-oligosaccharide) products in feed, which bind pathogenic bacteria, preventing their establishment in the gut.

Piglets supplemented with these products have enhanced immune-competence, due to the 'presentation' of inactivated bacteria by the mannan-oligosaccharides, which directly interacts with the immune system, increasing pathogen recognition. This is especially important in weaning where the so-called 'immune gap' can leave animals open to digestive problems.

Specialist nucleotides can be provided in creep and weaning diets, which promote the development of the gut tissue itself, improving gut function at an early and vulnerable age.

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Q The uniformity of my pig herd is becoming a problem, with many pigs not making the desired weight, or falling outside of the range to go to slaughter. This adds extra costs in terms of labour and keeping the 'failed' pigs separate and feeding them to final weight. What feeding strategies can be applied to reduce this variation?

A The uniformity of pigs is dictated by several factors, including the influence of early nutrition, exposure to disease and optimising digestibility throughout the growing and finishing period. Proven strategies can be applied to maximise these factors and minimise variability in the herd. For example, feed enzymes have been routinely used in pig diets in the last couple of decades, and certainly have a major influence on uniformity of the herd, as the digestibility of the feed is increased for all individuals. This means that those pigs which may have poor enzyme production (within their own gut) at weaning are not adversely affected in terms of growth, as the supplemental enzymes perform this function instead. This reduces the number of poor performing piglets, and feeding supplementary enzymes at an early age means that all the pigs are able to get sufficient nutrients from the diet to keep them on a good growth curve with improved FCR. It is this mechanism that improves uniformity in the final finished animal.

Q The cost of keeping newborn piglets healthy and growing at target rates is an increasing concern to my business. How can I optimise their performance and minimise any veterinary costs due to digestive problems and poor thrift, especially as they go through weaning?

A Giving newborn piglets the best start is an important aspect for their future growth and performance, whatever their designated market. It is known that, at weaning especially, an 'immunity gap' may be encountered whereby growth is checked whilst the animals adjust to the new feed and any pathogens within their environment, especially when they are moved to new shed or outdoor areas. In order to ensure they develop correctly to gain the robustness to withstand these stresses, whether pre- or post- weaning, feeding specialist supplements and feed ingredients can assist. Nucleotides in pre-starter / creep feeds can assist in the development of the gut, allowing better adaptation and maturation to withstand the weaning process. In addition, ingredients such as mannan-oligosaccharides (MOS) have been shown to promote the development of the immune system, increasing the animals resistance to digestive disorders. In fact, the feeding of MOS in creep diets can minimise any 'immune gap' encountered at weaning – as the MOS acts as a safer presentation method of new pathogens to the gut immune systems. In addition, research has shown that sows fed MOS have improved immune transfer via colostrum to the piglets during initial lactation. If such products are used in initial creep feeds, then piglets have the best opportunity for avoiding problems which can check their growth or require veterinary attention.

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Q With the weather being problematic this year, as a home-mixer I am concerned about the quality of the grain I have in store for using in my pig feeds. What are the consequences of poorer harvests and can anything be done to ensure the quality of my final feed?

A The poor weather and extreme conditions experienced in recent years can certainly cause a major headache for home-mixers – especially if you are reliant on contractors to get the grain in, and so may be exposed to higher moisture content in the grain. Under these conditions, if you were unfortunate to have a wetter crop, then drying the grain carefully is essential if it is to be maintained in storage. Various issues should be noted in wet years, including the increased likelihood of fungal growth on the standing crop, even if it was harvested in dry conditions. In pigs, the toxins exuded by fungi cause major problems in both production and fertility, so an effective mycotoxin binder should be mixed with the feed to negate these problems. In addition, grain that has been subjected to longer or harsher drying methods typically has lower nutritional value, as the heat-sensitive vitamins are easily destroyed and the starch and protein can be made indigestible due to heat changes in their chemical structure. In this scenario, the importance of adding a good quality premix is heightened, and you may also consider using an appropriate enzyme, designed specifically for pigs at different stages of production, to ensure maximised digestion and extraction of nutrients from the final diet.

Q How can I maintain higher litter numbers from my sows? I have had problems in the past with the number of runts in the litter and later problems with uniformity with the smaller pigs that have survived.

A Optimising sow performance is very important for overall productivity from the herd, as well as the uniformity of the growing pigs destined for meat production. There are several ways this can be addressed – at both the sow level and in the weaned piglets. Research has shown that using certain specialised yeast-derived prebiotics can increase the amount of immunoglobulins produced in the sow's milk, giving even the smaller piglets in a litter a better chance of survival and allowing them to catch up more effectively with their litter mates at weaning. Such products have also been shown to increase litter sizes and uniformity when included in the sow's gestation diet. Specialist nucleotide products can be added to early creep and pre-starter diets, which promote the correct development of the gut in small mammals, increasing their ability to absorb digested nutrients. The addition of enzymes at this time is also very beneficial – as it takes up any shortfall in the piglet's own natural production of enzymes, which can vary with development. This will allow the nutrients in the diet to be broken down more efficiently and be available to the animal, increasing their capacity to grow. The overall nutritional quality and digestibility of these early diets is of great importance, as it will dictate how well the piglets grow and develop initially, which has a knock-on effect in terms of their later productive performance and the uniformity of the group going on.

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Q As a pig breeder, I want to make sure my piglets get the best start they can. Is there anything I can do to help this from a nutrition perspective?

A The growth of young piglets is directly linked to milk quality from the sow. Feeding high quality forms of minerals, i.e. the organic, chelated minerals which are bound to small protein sub-units, to sows can then be transferred into the milk, increasing the intake of minerals to the piglets, which will improve their growth and performance until weaning.

Q As an outdoor pig producer, I'm concerned regarding my pigs feet as they can show lameness during certain times of year depending on the ground conditions. Can I improve their feet condition via the feed?

A The main nutrients associated with hoof production and strength are protein, biotin and minerals. Ensure that your pigs have an adequate supply of highly digestible protein, organic forms of minerals in their feed and good level of fibre intake to achieve this. The bacteria in the hind gut of an adult pig will produce biotin from fibre digestion to ensure an adequate supply of this vitamin for hoof horn production.

Q We have experienced problems with certain digestive disorders in our weaning and growing pigs. Are there any natural or nutritional products we can use to reduce our reliance on drugs and veterinary interventions?

A There are several aspects to assisting your pigs in resisting disease that should be taken into account. First of all, feeding them specialist mannan-oligosaccharide products in feed can promote the development of their immune system, especially at weaning, which will better equip them to recognise and deal with any pathogens they may come into contact with at this vulnerable time. Using feed enzymes in creep and weaning feeds will help overcome any shortfalls in their own digestive secretions when they are young, ensuring better digestion and less intact nutrients flowing to the hind gut where they may be used by undesirable bacteria, leading to digestive disorders.

Q Since the move to keeping sows in large straw yards, we have seen various problems in terms of poor immunity, fertility and general productiveness. Is there something in the straw that could be causing this?

A It sounds as though you may have an issue with mould in the straw. Moulds and fungi produce toxins which can lead to multiple problems, especially in sows that are very sensitive to certain mycotoxins, leading to poor fertility. Typically, more than one mycotoxin will be present in contaminated bedding material, so several problems will be seen which may appear unconnected at first. Check your straw is not mouldy and also make sure you feed a mycotoxin binder, which will help alleviate these problems.

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Q Although we do our best with sanitation on site, our breeding sows sometimes produce piglets that fail to thrive as well as we aim for. What would be the cause of this and how can we control the situation?

A Piglets can fail to thrive, even in seemingly clean situations, if they have not received adequate immunity from the sow's colostrum during the window when they can take up the essential immunoglobulins they need. To resolve this, check that all piglets have sufficient access to the sow immediately after birth – smaller ones can be pushed out by their siblings. In addition, using immunity-promoting supplements such as Bio-Mos by directly oral dosing newborn piglets has been shown to impact the IgG levels, leading to better immunity. In large litters oral dosing can be a good way forward for the smaller litter mates. Up to 30% increases in circulating IgG status have been reported for piglets under this oral dosing regimen, which has a direct impact on their ability to survive and grow well.

Q We have access to a good source of liquid feed for our growing pigs from a local supplier. Is there anything we should be monitoring to ensure the feed is safe and not going to cause any disease problems?

A Liquid feeding can be a cost effective way of feeding your pigs, though its wet nature has some implications regarding its practical use, if you are to avoid any problems. Due to the high water content, it is less stable in terms of how long it will keep before it begins to deteriorate, and so should be used up as quickly as possible. Only take in deliveries as needed to prevent any sitting around on farm for significant periods. It is important to adhere to strict hygiene practices when handling the materials, including cleaning out pipes etc on a regular basis, as the availability of substrate in a wet state can lead to the rapid development of moulds which produce toxins. Feed refusals should also be cleaned away to prevent fungal and mycotoxin growth in troughs. It is very hard to diagnose mycotoxicosis, as the symptoms are multiple and highly variable. Many farmers include Mycosorb in such feeds as an insurance against any problems with mycotoxins in liquid feeding systems.

Q The grain we produced last year for our growing pigs was harvested and then dried rigorously to ensure grain storage quality. However, our pigs' FCR rates seem down when they receive this grain. The grain looks fine – what could be causing this?

A Rigorous drying can be necessary during poor harvests, but it can also alter the chemical composition of the endosperm inside the kernel. Essentially, higher temperatures or longer drying periods will start to cook the grain, changing the nature of the starch and protein making it less digestible in the animal. Using a suitable in feed enzyme can help to break down these 'resistant' nutrients, leading to better performance from your pigs.

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Q There's currently a lot of interest in mycotoxins. Will my pigs in large straw pens be more affected from their feed or from their bedding?

A The answer is that mycotoxins can be in either. The key is to obtain good quality, clean straw for the bedding, however this isn't always possible. If you harvest your own straw as part of on-farm cereal production, make sure it is cut long to prevent any soil contaminating the bales. As fungi are soil organisms, its presence increases the risk of toxin development. Likewise with feed, try to ensure all cereals are non-mouldy, and for bought in ingredients ask for a declaration regarding mycotoxin levels from your supplier. There are bedding applications available commercially (based on acids) to help prevent mould growth and you can use a mycotoxin binder in the mixed feed as an insurance against any toxins that may be present. It is also worth considering some analysis so that you know what you are dealing with. Alltech's 37+ programme now analyses for 50 mycotoxins simultaneously and provides an interpretation of the risk with associated action points.

Q We have a problem in terms of uniformity of piglet litter body weights. Is there anything we can do to improve this via our feeding regime?

A There are several specialist feed ingredients that can help with uniformity of growth. Essentially, making sure that all pigs get the best start is key to good growth later in life, as well as initial sorting at weaning. Feeding sows on diets containing pronutrients such as enzymes and mannan-oligosaccharides such as Actigen (a product which binds potential pathogens in the gut as well as enhancing immune function), increases immunity transfer to the piglets, reducing the risk of variation in the litter due to disease. In addition, milk nutrient levels are improved so the piglets are getting better feed from their mother and will therefore grow better. Synergen in sow diets will increase digestion and nutrient availability for milk production as well.

Q We are feeding our sows partly on silage which they enjoy and seem to do well on. Is there anything we should add to it to make sure they are getting the most out of the forage?

A Silage is fine for adult pigs as they obtain typically around a third of their daily energy needs from hind gut fermentation. In order to get the best out of it, try adding a live yeast product which will help promote optimum fermentation in the gut. In addition, make sure you only use non-mouldy silage; check each batch for quality. If you're making your own silage, then you should add a commercial inoculant at baling (a mix of live bacteria needed for correct silage fermentation) and make sure it is a long chop akin to horse baleage, as the very short, crimped baleage used for ruminants can cause gastric blockages in monogastrics.

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Q My group housed sows are sometimes fighting to establish pecking order – and they end up with scratches and minor wounds on their skin. Is there anything I can feed them to help them heal up?

A The integrity and healing of skin is dictated by the adequate supply of many nutrients. Of course, the fundamental cells of skin are constantly produced and sloughed off, so turnover is rapid. The elasticity of skin, allowing it to turn aside bites and scratches, is dictated by collagen production but the integrity and strength of the skin is known to be affected by mineral nutrition. As an example, in poultry, maintaining skin integrity is essential for welfare and to prevent carcase downgrades, and research has shown that supplementing diets with proteinated forms of copper and zinc leads to better organisation of the skin's underlying structures, and also reduces damage. This would be one nutritional strategy you can try with the sows to increase skin strength and healing.

Q I have the opportunity to use some wet feeding systems for my pigs – potato waste and whey mainly. Is there anything I should be adding to these types of feeds to make them best suited to feeding growing pigs?

A The main issue with wet feeding systems is keeping things clean – as any feed with high water content is more prone to spoilage from bacteria and mould. There are several commercial products you can use to keep spoilage down such as acidifiers, which can reduce bacterial and mould growth. Obviously, keeping the systems used in wet feeding very clean is essential as well. However, if your system is hard to clean thoroughly, then you can include a mycotoxins binder in the final feed as an insurance against toxins produced by mould. In addition, using a suitable sanitising agent that is not harmful to animals would be recommended during clean out.

Q I have come across several novel feed materials being introduced to the feed industry. One is the distillers waste from biofuel production. Is this okay to feed pigs and are there any issues to be aware of before formulating it into a diet?

A The waste from biofuel can be a very useful feed ingredient for animals. However, it can be highly variable in its nutrient value, depending on the methods that have been used for fuel production. Typically the waste (often known as 'distillers dried grains and solubles' or DDGS) is high in protein, as the starch element has been used for the fuel. In addition, the manner in which the waste is stored is important, as, being a moist feedstuff, it can be prone to mould contamination. There is published research data on the use of DDGS in animal feeds – and many have examined the role of feed enzymes in such diets. Mixed enzymes containing proteases for example are useful for getting the most out of the material. DDGS is set to become a major feedstuff as more biofuel is produced worldwide, however it's a good idea to ask the supplier to test the nutritional value of each batch so you know exactly what is in it, and can adjust the feed formulation accordingly.

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Q Recently, the problems of salmonella shedding in finisher pigs has been highlighted. What can be done to control this, and help prevent cross-infection on farm to younger animals?

A There are measures you can take to reduce salmonella problems in older and younger pigs. Supplements, such as mannose enriched fractions isolated from specific strains of mannan oligosaccharides, such as Actigen, have long been shown to be effective at a gut level in binding salmonella – which reduces the bacteria's ability to bind to the gut wall where it must stabilise in order to reproduce to significant colonisation levels.

In addition, probiotics can also be effective in outcompeting pathogens in the gut. Overall, long term use of these functional supplements can reduce the levels of contaminating bacterial loads in the environment on farm. This will help protect the younger pigs, who share the same environment, from high levels of exposure to pathogens like salmonella.

Using these kinds of feed ingredients all through the piggery – in sows to promote immunity in their litter, as well as in young and growing pigs – can help to control overall disease levels on farm, especially from fimbriated bacteria, ultimately improving herd health and productivity as well as reducing veterinary and sanitising bills.

Q Soybean meal seems to be increasing all the time as a feed material. Is there a suitable alternative that gives good digestibility in young pigs without compromising performance and uniformity in the herd (for all in/all out purposes)?

A There is a great deal of interest in protein alternatives due to rising costs and competition with human food. Certainly, the increase in availability of materials, such as by-products from biofuel production is interesting for the animal feed and production industry. However, by-products are more variable in their nutritional composition and quality – so must be used with care.

There has been a focus on using enzymes to help improve the digestibility and nutritive quality of by-products in pigs – and certainly they do help. However, if you are replacing high quality materials, such as soybean meal, then diets need to be checked to make sure that the amino acid balance is maintained at correct levels, and additional levels may be needed to maintain performance.

In addition, correct enzyme application in pig feed can greatly improve uniformity of the herd – making logistics on the farm much easier, as the enzymes will act on all the materials used in a diet to increase digestion.

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Q Recently, the problems of salmonella shedding in finisher pigs has been highlighted. What can be done to control this, and help prevent cross-infection on farm to younger animals?

A There are several measures that can be taken to reduce dependence on prescribed antibiotics. Improving on-farm biosecurity is an obvious one – and this can be evaluated via farm audits (such as Alltech's Pig ASSIST) – allowing the farmer to identify where problems may exist, and addressing them to help prevent exposure and infection in the first place. Feeding a suitable pathogen binder – there are now second generation mannan-oligosaccharide based products such as Actigen on the market, which are highly targeted and effective. These compounds bind common pathogenic bacteria in the gut – allowing them to be excreted harmlessly. This results in a lower dependence on drugs after the infection has taken hold – i.e. it prevents issues arising which require antibiotic use.

Q Animal welfare is becoming a major issue across European operations – what can we do from a feed point of view to help with this?

A Animal welfare is always going to be a major point with retailers and consumers – and it looks as though there will be increasing harmonisation across Europe regarding welfare laws and training for personnel working on farms. From a feeding point of view – care should be taken to ensure animals are housed in clean conditions – and that straw is changed regularly to prevent them coming into contact with high levels of pathogenic bacteria and fungal toxins – which will obviously be detrimental to health. Attention to sow diets and feeding weaning piglets is essential to ensure young animals have a healthy and robust start in life. Prebiotics fed to sows (such as Actigen) have shown increases in immunoglobulin transfer in colostrum, meaning healthier piglets with higher immunity. Feeding high quality protein to young pigs, including nucleotides to increase gut development, can help a great deal in this regard. Sick animals do not perform well – and so the upside is that better welfare typically leads to improved profitability.

Q Pig meat prices often fluctuate in the markets – so what can we do to improve profitability from pork?

A Always remember the 80/20 business rule – 20% commodity, 80% value added. There are several things you can do to add value to pork at retail. From a feeding point of view, research into increasing the nutritional and sensory quality of the end products for human consumption has shown that pork can be produced that has a higher mineral content (for example by supplementing with organic (Bioplex) forms of minerals in the diet) and also that certain antioxidants (for example selenium yeast, Sel-plex) can improve the meat in terms of moisture losses in packaging and cooking quality. This is due to the antioxidants increasing the strength of cell membranes, preventing leakage of moisture from the packaged meat and increasing juiciness of the cooked product. Several companies worldwide are now marketing such products – specifically aimed at consumers who are concerned with their own nutrition and health as well as gourmet meat.

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