

Welcome to May's Newsletter

Ciarán Carroll



Welcome to the May edition of our monthly newsletter. May was another busy month for Teagasc PDD. A very successful International Conference on the Neonate, titled "Importance of nutrition and environment on birth weight, muscle growth, health and survival of the neonate" was organised by Peadar Lawlor and held at Moorepark. Over 60 people attended, with many attendees coming from Europe and the US.

The big news event of the month was the official opening of the new Pig Research Facility at Moorepark. Minister for Agriculture, Food and the Marine, Mr. Michael Creed, TD officially opened the new facility on 19th May before an attendance of almost 70 people. One of the highlights of the event was a showing of the 1964 RTE production, "On the Land" which saw Dr. Jim O'Grady present an overview of research results from Moorepark. Jim was the "original" pig researcher at Moorepark and it was great to see him present for the official opening. The Minister presented Jim with a copy of the production and we hope to get it up on our website very shortly

and it's well worth seeing by anyone with an interest in pigs!

Continuing on the research theme, our annual Research Dissemination Days took place on the 29th and 31st of May in Ballyhaise Agricultural College and Teagasc Moorepark. Our research team and students gave a thorough overview of current and upcoming projects. The proceedings, presentations and posters will be up on our website at www.teagasc.ie/pigs. As well as this our students have put together an excellent video on our research projects and it can be found on YouTube at:

<https://www.youtube.com/watch?v=lbAaZEqoRU>

In this issue:

- **Brexit – The who, why, what & where**
- **Safe Electricity**
- **Overview of the 9th Feet First Swine Seminar**
- **Fibre utilization in pig diets**

Brexit – The who, why, what & where

Michael McKeon

The U.K. is Ireland's largest and most influential trading partner with €1.2 billion of goods and services traded each week. This close relationship can be demonstrated by a 1% drop in the U.K. economic growth that would potentially reduce ours by 0.3%. The UK also import nearly 40% of our total pigmeat exports so any change in tariffs or a reduction in their economic health, will subsequently be felt on Irish pig farms. Since June 2016, when the UK decided to leave the European Union, there has been considerable discussion on Brexit, as to what it means and the implications for Ireland and specifically our exports. This short summary paper aims to outline developments to date, the future options available to the UK and the possible effects of these on Irish pigmeat exports.

The Who

In January 2013 David Cameron declared that if he was re-elected as prime minister in the following election then he would announce a referendum on E.U. membership. In 2015 the conservative party was returned to power with an outright majority and the referendum date was set for 23rd June 2016.

The Why

The UK has always had a significant number of anti-EU supporters and was at times seen by some other European Union states as a 'reluctant partner'. As a result of the Syrian immigrant crisis/free movement of labour and an apparent rise in the support of the UK Independent party headed by Nigel Farage, the referendum was called as a way of 'putting-the-issue-to-bed'.

Unfortunately it gave the 'Brexiters' a larger platform to get their message out.

The What

What happened then? The referendum outcome was that the majority agreed that the UK should leave the E.U. Under existing E.U. treaty law this entailed that Article 50, which addresses how a country can leave, must be triggered. After this was done (March 2017) the article establishes a two year deadline to wind-up negotiations - unless there is unanimous agreement among member states to extend the deadline. The two year deadline is very short as the UK has become very intertwined over the last 40 years. There are 20,833 EU laws that must be examined/negotiated by both sides, which at 500 working days (over the two year period) equates to 40 laws per working day! In light of this workload it would appear sensible for a transitional arrangement to be entered, for a minimum seven-to-ten year period. Theresa May has indicated that she would like to see 'a phased implementation period' which suggests a transition period may be on the table.

The Where

Where the UK goes from here will largely depend on the future trade approach it takes with its current E.U. colleagues. The EU wish to finalise the 'divorce costs' (€60bn) before they discuss the future, while the UK would like a twin-track approach. From Ireland's viewpoint we are in a very difficult position as we cannot negotiate bilaterally therefore we must depend on the E.U. negotiators. We are the only country with a

common border with the UK and they are our biggest trade partner, so the outcome of these negotiations may have a larger impact on us than any other E.U. member – logistically and financially. The Central European Policy Institute estimate that the Brexit cost to Ireland could be a cumulative 3.5% of GDP over 10 years.

So what would be the best option for the U.K from Ireland's perspective?

The four principle options are shown in order of Ireland's preference for the UK:



1. European Economic Area /Switzerland

The U.K. leaving the E.U. but joining Norway, Iceland and Liechtenstein in the European Economic Area would, in an ideal world, be Ireland's preferred option. Unfortunately this is extremely unlikely to happen as they would still have to make financial contributions, abide by all Brussels regulations with no input and allow free movement of labour.

The other option could be to negotiate a specific solo deal to be allowed continued access to the single market. Switzerland negotiated its own individual deal with the E.U. which came into force in 2002. This option initially appears attractive for the U.K. but Switzerland are members of the Schengen Area (allows free people movement) and are a very small exporter when compared to the U.K. This deal also took

nine years to achieve which would lead to heightened economic uncertainty in the U.K.

2. Custom Union

They would withdraw from all policy and obligations with the E.U. with the exception of trade. They would continue to have a tariff-free trade area with the E.U. members and a common external tariff agreement (E.U. & U.K.) with other third countries. This option would allow Ireland to continue to operate tariff-free trade with the UK while also ensuring that the current tariff on product from low cost pig producing countries (U.S.A. & Brazil) would remain in place. Unfortunately this is unlikely as other E.U. members could view the U.K. as having cherry picked all the benefits of E.U. membership but none of the responsibilities e.g. contribution to E.U. budget, free movement of people etc. In addition Theresa May indicated in a speech in January that the U.K. did not want to remain within the Custom Union as they wanted to be free to negotiate trade deals with other countries. Turkey entered a trading deal with the E.U. where they are limited members of the Custom union but have no 'free movement of people' obligation, don't have to pay into the C.A.P. budget and are a member of the custom union with agricultural products excluded. Unfortunately this is unlikely to be agreeable to the U.K. as they would then have no determination over their own trade agreements or production standards.

3. Free Trade Area

In a free trade area there would be an agreement between the U.K. and the E.U. not to place tariffs on each other's trade. This would allow the U.K. to undertake trade agreements with any country while not being penalised by the E.U. members.

While tariff-free trade with the U.K. would be very good news for Ireland, the British government could also decide to lower existing tariff levels to other third countries. This could result in U.S. and Brazilian pigmeat having access to the U.K. market at a lower tariff rate than currently exists – E.U. tariffs currently add 50% to the cost of pigmeat carcasses from outside E.U. The effect of this would be to lower the cost of pigmeat on the U.K. market which would be well received by U.K. consumers and seen as a real tangible ‘Brexit Benefit’ for the U.K. electorate. Even if some of the mainstream U.K. supermarkets don’t stock U.S. / Brazilian pigmeat (due to their use of growth promoters) it’s highly likely that the catering/food service/food manufacturing businesses would. For Irish pigmeat it would lead to increased competition and a reduced market price/market share. This would likely lead to some diversion of Irish (and Danish, German, Spanish, Dutch) pigmeat to other markets e.g. Asia.

4. World Trade Organisation

If the Brexit negotiations fail to reach an agreement at the end of the two years or they breakdown in the interim then the automatic default position is that the U.K. will be effectively treated like any other third party country outside the E.U. and suffer the same ‘common external tariff’ on their exports into the E.U. This is the ‘dooms-day scenario’ as if the U.K.’s suffers this penalty would probably ‘retaliate in-kind’ by placing similar tariffs on imports from the E.U. and tariff-free/reduced for imports from outside the E.U. The pigmeat price in the U.K. would then fall and the price of our exports into the U.K. would increase by 55%. The other option is that the British government would scrap all tariffs and

‘embrace’ the free market and allow tariff-free pigmeat products whether from E.U. or non-E.U. origin. This would allow us to access the market tariff-free but the market price would be significantly lower and competition much higher as we would be in direct competition with U.S./Brazilian product.

Potential Bright-light:

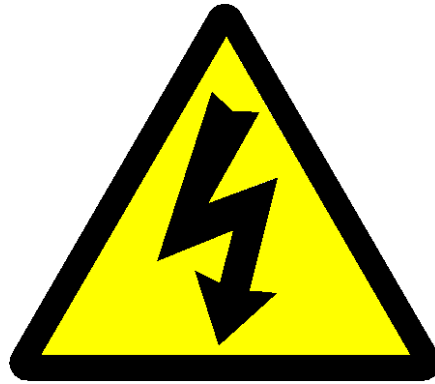
In 2016 the E.U. signed an agreement with the Ukraine which restricts the movement of people, gives the Ukraine single market access for certain products but doesn’t require it to abide by E.U. law or make financial contributions. There is also an option for collaboration on defence and security issues. Many believe that this could provide a workable template for Brexit. In return for giving the U.K. continued access to the E.U. single market for cars and financial services they may be willing to align their tariff restructure with that of the E.U. on certain other products. This could lead to a continuation of the current external tariffs on Brazilian/U.S. pigmeat.

Conclusion

The Brexit negotiation outcome is difficult to ascertain as it has never happened before in the E.U. or even at this scale of trade/integration at a global level. Ireland must try to ensure that the negotiations don’t collapse and revert to W.T.O. default positions as this will severely affect Ireland’s export trade and in particular our pigmeat trade which was worth approximately €345 million in 2016. Ideally we would like the UK to continue in the Customs Union but as this is unlikely the next best option is a Free Trade Area based on the Ukraine agreement. This may allow the current status quo on external tariffs to remain for agricultural produce and specifically pigmeat. **References available on request*

Safe electricity

Gerard McCutcheon



Electricity and electrical installations on pig farms must be treated with the utmost care. Hazards arise through faulty installation, lack of maintenance and abuse of equipment.

Electric shock is a major hazard. The severity of the shock will depend on the level of electric current and the duration of the contact. At low levels of current (c. 1 milliamp) the effect may be only an unpleasant tingle but could cause a loss of balance or a fall, medium level could cause muscular tension (so anything gripped may not be released). High levels of electric shock of 50 milliamps or greater (for a period of 1 second) can cause fibrillation of the heart which could be fatal. Electric shock also causes burning of the skin at points of contact.

It cannot be emphasised too strongly enough that the electrical installation maintenance and repair of electrical equipment must only be done by a competent qualified electrician. All work done should be signed off and recorded in the Fire Register for the farm.

Most fires in electrical equipment are due to misuse or neglect. Overloading of circuits by having too many pieces of equipment or incorrect fuses can lead to overheating which can result in fire.

All staff should be trained so that they do not misuse equipment and to ensure that damaged or defective equipment is reported, taken out of use and properly repaired. Regular inspection of all electrical equipment especially plugs, sockets and cables is good practice to reduce the risk of electrical fires.

Fires involving electrical equipment can be dealt (if small enough) with using CO² or Dry Powder. Switch off the electricity supply before commencing any firefighting. Do not use water on any fire involving electrical equipment.

You may be electrocuted!!

Feet First – 9th Zinpro Swine Seminar Barcelona, Spain, 7 April 2017

Keelin O'Driscoll



In April this year members of the Teagasc PDD were delighted to attend the 9th Feet First Spanish Swine Seminar, hosted by Zinpro, the performance mineral company. There were four excellent presentations relating to low stress handling, management of the lactating sow, epigenetics in fattening pigs, and long toes and inflammation in the sow.

Low stress handling of pigs

Nancy Lidster, D.V.M., Coach & Trainer

This presentation highlighted the benefits of low stress, calm handling for both pig and producer. Nancy has a background as a pig producer as well as being a veterinarian. In the early days managing her farm with her husband, they found that the ease of management of their pigs varied wildly from batch to batch, seemingly without cause, which was very frustrating. However, after being introduced to cattle handling principles, they got the idea of videoing some of the behaviour of the pigs on their farm, to see if they could figure out what was going wrong. They then branched out to recording the behaviour of pigs and personnel on other farms, in transport, and in processing plants, and found that by comparing pig behaviour in this wide variety of settings, and with different types of handler, they were able to pull together some conclusions

about what was going on. The main conclusion is that pig behaviour/mis behaviour, does not happen randomly; pigs respond to handlers in predictable fashion, and so if handlers understand how pigs might respond, this can help to ease handling for both the pig and the stock-person. Observation of the signals the pig is giving off, such as the position of its ears, whether they are bunching, allows the handler to relieve some of the fear, by standing back a bit from the pigs. This should allow them to move forward in a calmer manner. Take home points from the presentation include:

1. Pigs move best when they are calm and not afraid. Allowing pigs to move at their own pace can result in faster movement of pigs than when forcing them forward.
2. Pigs move better if they are allowed to have time to become aware of their surroundings, so handlers need to notice what pigs pay attention to. For instance, shadows and gaps in the slats can be frightening for a pig, so being forced over these can cause balking.
3. Pigs feel safer if they are moving with other pigs. Gentle handling will help to avoid 'bunching' and 'circling' of pigs, which

prevents movement forward and can sometimes result in pigs heading backwards.

Milk and colostrum quality and epigenetic impact on the progeny

Chantal Farmer, BSc., MSc, PhD, Agriculture & Agri-food Canada, Quebec, Canada

This presentation really focused on getting the most out of your lactating sow when it comes to milk production, with the goal being to wean as many piglets with the greatest weight possible. Milk is the main food source for piglets. However, although there was an increase in milk yield between the early 1970's and 2000, there has been no increase since, even though the number of piglets born has continued to increase. This means that each piglet is getting proportionately less milk, so optimising milk production is essential. One interesting fact is that the udder fills within 35 minutes, so intervals of only 35 minutes between suckling bouts are optimal. If the interval is an hour, then the udder will not have filled any more than it would have after 35 minutes, and the piglets will still only get the same amount of milk. Continuous high noise (e.g. fans) can interfere with suckling bouts, as can the duration of the day – more frequent nursing occurs during 16h days than 8h days. Recent work by Dr. Farmer has shown that if a teat is not used at all during the first lactation, then it will not produce as much milk in the second lactation as it should. However, being suckled for only 2 days during the first lactation is enough to ensure enough mammary development so that performance the following lactation is not hindered. Thus, to ensure good milk throughout a sows productive life, it is important to make sure that all of a gilts' teats are used for at least 2 days after farrowing.

Epigenetic controlled studies in fatteners

Zach Rambo Ph.D., Swine Research Nutritionist, Zinpro Corporation

Epigenetic effects are changes to the DNA of an animal which can be passed on from generation to generation, which involve switching on or off (rather than changing/deleting./addition of) various genes. It has been shown in human studies that the effects of stressful experiences such as extreme hunger, or exposure to a disease during pregnancy on the mother, can be passed down to her offspring, and even her grandchildren. Dr. Rambo told us about some recent work with pigs investigating the effects of stressors on sows, and their future offspring. Pregnant sows which underwent heat stress had progeny with a higher core temperature than sows not exposed to heat stress. The production consequence of this is that increased feed is consumed by the pig, to maintain this higher temperature. Maternal nutrition can also affect the foetal muscle fibre development, and consequently postnatal growth. Increasing the plane of nutrition between day 20 and day 80 of gestation, which is when muscle fibres are being laid down, results in improved ADG of the piglets produced between day 70 and 130 of life. Mineral supplementation during gestation can also affect postnatal growth; sows supplemented with amino acid complexed trace minerals (i.e. more easily used by the animals than inorganic trace minerals) produced offspring with a higher average daily gain post weaning. These studies demonstrate that the performance of finisher pigs is dependent on management and nutrition from conception to the slaughterhouse.

Long toes and inflammation impact on gene expression

Mark Wilson, Ph.D., Swine Reproductive Physiologist, Zinpro Corporation

Inflammation consists of a reaction of the body to injury or infection, characterised by heat, swelling, pain and redness. It is also associated with an influx of immune cells to the area. Claw lesions and lameness can be significant causes of inflammation, and this can have a negative effect on growth, and in turn on the future claw horn that is produced. It is extremely important to keep an eye on the toe length of sows, as long toes, which can arise from the production of poor quality horn, have been shown to significantly affect walking ability. In fact, after claw trimming, sows that had had long toes show

much improved locomotion, having a decreased stride time and a decreased stride length. These improvements are good for sow comfort and welfare, and consequently for productivity. In fact, in a study investigating the effect of claw trimming on 2nd and 3rd parity sows, there were significantly more piglets born alive from sows in both parities if they had had their hooves trimmed. This work shows how management to improve sow welfare can have the knock on effect of also improving performance.

The conference was extremely informative and interesting. We would like to thank Zinpro for hosting us during the conference.

Fibre utilization in pig diets

Alberto Torres Pitarch

When formulating or buying a pig diet, the main nutrients that most of us would pay attention are energy and lysine levels, together with Phosphorous and Calcium. Usually we spend less time looking at the fibre level of pig diets. However, many of the ingredients used in feed formulation contain high levels of fibre, and highly fibrous by-products from the biofuel, grain milling, starch extraction or vegetable oil industries are often used as feed ingredients due

to their increasing availability (Table 1). But...What does "fibre" actually mean?

- Is it a nutrient? Is all fibre the same?
- How is it measured?
- Why is it important for the pig?
- How much fibre should be included in pig diets?

This article tries to answer all these questions.

Table 1. Levels of fibre components in some cereal grains and by-products (g/kg DM). Source: Jha & Berrocoso 2015 & FEDNA 2012

	Wheat	Barley	Corn	Sorghum	Rye	Wheat bran	Wheat middling	DDGS	Sugar beet pulp
Dietary fibre	112	202	89	83	153	449	289	322	737
Crude fibre	23	47	23	23	23	98	80	109	182
Cellulose	13	39	17	15	15	72	67	58	203
Lignin	18	35	8	16	21	75	39	32	37
NSP	95	167	81	66	132	374	250	192	700

What is fibre?

From a nutritional point of view, fibre can be defined as carbohydrates present in plant materials that are indigestible by the enzymes naturally secreted by pigs. In practice, fibre is generally described as a complex and highly variable component of plant-based feedstuffs that is mainly present in the wall of plant cells.

Is all fibre the same? How is it measured?

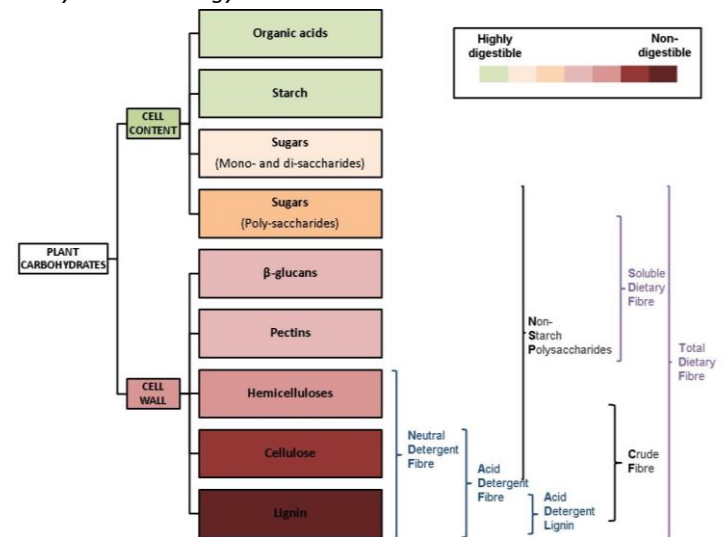
As shown in figure 1, there are many different ways to analyse and report the “fibre content” of a diet, terminology starts to get tricky and most of the analyses overlap leading to confusion. The first analysis of fibre that was used in animal nutrition is “Crude Fibre”, it includes all of the cellulose, part of the hemicellulose and part of the lignin present in the diet. The most classical way of reporting fibre content is the Van Soest fibre fractions: “Neutral Detergent Fibre” (NDF), “Acid Detergent Fibre” (ADF) and “Acid Detergent Lignin” (ADL) each of them less digestible for the pig. You would also have read about the term “Non-starch polysaccharides” (NSP) that refers to the different complexes of sugars including cellulose and hemicellulose. Another term used in nutrition to refer to fibre is “Dietary fibre”, it includes mostly all the plant carbohydrates and is classified depending on its solubility in water (important physico-chemical characteristic related to viscosity, gut fill capacity and passage rate).

Why is it important for the pig?

One would think, if all these fibre components are poorly digested, why would I include any fibre in the feed? The dietary fibre components that resist digestion in the stomach and the small intestine are fermented in the large intestine by the microbial population that lives there. Volatile fatty acids generated by the microbes in the large

intestine are absorbed as an available source of energy for the animal, contributing from 5 to 28% of the maintenance requirement. However, it is difficult to assign an energy value for the fibre fraction of the diet. The energy value depends on the vegetable origin of the fibre and its composition. For example polysaccharides or pectins have a higher digestibility than cellulose, while lignin is totally undigested by the pig or the microbes (Figure 1). Nonetheless, the physical properties of fibre are especially important for gut health. The gut filling capacity of fibre is particularly relevant in gestating sows and also to prevent constipation problems at farrowing.

Figure 1. Components of plants carbohydrates and fibre analysis terminology



Source: Adapted from Kerr et al. 2013

How much fibre should be included in pig diets?

Considering all I wrote up to now, it seems that fibre is a cheap energy source that also has beneficial properties for pig's gut health and we should therefore include as much fibre as we can in the feed. But that is not right! Piglets have an immature gut system and high levels of fibre may have anti-nutritional effects that will contribute to poorer growth and may lead to diarrheal problems. In growing pigs, many studies reported

negative effects when including high fibre ingredients in pig diets on energy and crude protein digestibility. Protein and carbohydrates present in fibrous ingredients are less digestible than those present in more conventional ingredients. The reduction in energy digestibility is higher in young animals like growing pigs than in adult animals like sows. Therefore minimum and maximum fibre levels are recommended and they are different for each age and production stage of the animal. Table 2 shows recommendation levels of fibre in gestating sows, lactating sows, weaning pigs and growing pigs.

Table 2. Crude fibre and neutral detergent fibre inclusion levels recommended for pig diets (min- max, %)

	Crude fibre	Neutral Detergent Fibre
Gestating sow	5.8 – 11.0	17 – 18
Lactating sow	4.5 – 7.2	14.5 – 15
Weaned pig	2.5 - 4.8	7.0 -13.9
Grow-finishing pig	3.4 - 6.5	11.0 – 16.5

Source: FEDNA 2012

Strategies to improve fibre utilization in growing pigs

Processing and technological treatments

Processing technologies are based on mechanical, thermal and chemical modification of the feedstuff. Mechanical forces, such as pressure, may cause abrasion and breakage of particles, thereby breaking the seed coat, reducing particle size and fibre length and opening the cell wall structure. A reduction of particle size means an increase of the surface area available for the enzymes to degrade the feedstuff. This reduction can be achieved with hammer milling but also in

most of the processing technologies used in animal nutrition (pelleting, flaking, extrusion etc.). The reduction of the particle size also affects the hydration properties of the feed increasing the water holding capacity. Thermal processes can break weak bonds between the fibre components and can also increase the solubility of fibre. Although some controversial results have been published, many in-vivo studies showed up to 6% increases in fibre fraction digestibility after mechanical processing and 17-24% with moisture thermal processing such as steam-pelleting, extrusion-cooking and steam-flaking.

Endogenous enzymes

The addition of exogenous enzymes to animal feeds can improve nutrient digestion. The efficacy of enzymes strongly depends on the composition of the feedstuff. Table 3 shows the active enzymes that are used to target different substrates. Therefore, the success of an enzyme depends on composition of the target feedstuff. For example, variable effects have been shown in experiments where 30% corn DDGS was included in growing pig diets. Variations in fibre digestibility improvements from -3% to +5% have been reported depending on the commercial enzyme used and its activity. Since corn fibre fractions are rich in cellulose, hemicellulose, and poly-saccharides (e.g. xylose and arabinose); enzymes targeting these substrates should achieve the best results. Combining ingredient/diet processing technologies with enzyme use may increase the efficacy of enzymes as contact between the enzyme and substrate is increased.

Table 3. Enzyme activity and associated substrate

Activity	Substrate
Xylanase	Arabino-xylose (NSP)
B-glucanase	β -glucans (NSP)
Mannase	Oligo-mannans (Mannose)
Cellulase	Cellulose (α -Glucans)
Pectanase	Pectins (NSP)
Amylase	Amylose

Conclusion

The fibre fraction is an important nutrient to consider in pig diet formulation. Fibre is fermented in the large intestine and contributes to energy supply when volatile fatty acids are absorbed from the hind gut. Fibre is a complex of different compounds from cells of vegetable origin with nutrient utilization values that range from 0% for Lignin to 70% of non-cellulose polysaccharides. It's physico-chemical

characteristics can improve the gut health which makes it an interesting component of the diet for sows. Its utilization in growing pigs can be increased by way of mechanical processing and exogenous enzyme supplementation in the diet.

Did you know?

- The term "Crude Fibre" represents a small portion of all the actual fibre in a feedstuff
- Fibre fermentation in the gut is an important source of energy for sows
- Fibre helps to reduce constipation problems at farrowing
- Fibre inclusion above the recommended levels reduces nutrient digestibility
- Enzyme supplementation can increase fibre digestibility

**References available on request*

Student Profile

Alberto Torres Pitarch

Alberto is a PhD student on the PIGZYME Project, which looks at feed enzymes as means of improving feed efficiency in pigs. Alberto is supervised by Dr. Peadar Lawlor (Teagasc PDD), Dr. Edgar Garcia Manzanilla (Teagasc PDD) and Prof. John O'Doherty (UCD). Alberto completed an MSc in Sustainable Animal Nutrition from Aarhus University, Denmark and Debrecen University, Hungary before taking on his PhD with Teagasc.



Location: Pig Development Department, Teagasc Moorepark

Research Interests: Pig nutrition, environment and feed additives

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Arrivals

The PDD would like to welcome Dr. Carmen Villodre Tudela to the pig research team in Moorepark. Carmen is a native of Murcia in Spain and recently took up a post-doctoral position with Peadar Lawlor on the Enterprise Ireland project (ProSwine: Development of a probiotic strain as a substitute for in-feed medication for pigs). She will conduct animal trials to evaluate the efficacy of a probiotic strain which was isolated in a previous collaborative project between Teagasc and Waterford Institute of technology. The hope is that the probiotic strain which has anti E.coli properties will be commercialised for use in pig feeds by an Irish company in the future. Carmen completed a PhD in Veterinary Science in 2015 at the Department of Animal Production at the Universidad de Murcia. Since graduating, Carmen worked as a post-doctoral researcher at the Animal and Food Science Department of Universitat Autònoma de Barcelona conducting research in collaboration with industry (pig producers, feed companies). Carmen has a wealth of experience and is a very welcome addition to the project and to the PDD.

We would also like to welcome veterinarian Lorcan O'Neill to the PDD as a PhD candidate on the AMURAP (Antimicrobial Use and Resistance in Animal Production) project. Lorcan will be collecting data on antimicrobial use and management on pig farms in collaboration with advisor Gerard McCutcheon and researcher Edgar Garcia Manzanilla.

First Aid Course

The PDD are currently investigating the facilitation of a QQI Level 5 first aid course for clients. If you or any of your staff would be interested in first aid training please contact Amy Quinn at amy.quinn@teagasc.ie. This course will be run based on demand.

ESPHM 2017

PhD Walsh Fellow Maria Costa attended the 9th European Symposium of Porcine Health Management held in Prague from the 3rd to the 5th of May. The symposium joined veterinary practitioners, researchers and the animal health industry from all over Europe to discuss pig health management. Several topics were discussed from antimicrobial resistance to new viral diseases, from the influence of feeding on the digestive system to gut microbiota and finally from pig immune responses to the role of passive immunity (maternal antibodies) on the development of piglets' immunity. Maria presented two posters: one relating welfare to biosecurity on farm, where we hypothesized that better biosecurity would lead to better welfare given the connection of this two topics to animal health; and another one relating biosecurity to pig performance in which selected production parameters (Average Daily Gain, Average Daily Feed Intake and the Number of Pigs Produced per Sow Per Year) were improved in farms with higher biosecurity, concluding that refining biosecurity practices on farm may have a favourable economic impact on Irish farms.

For More Information

This newsletter was edited by Amy Quinn, Pig Development Officer, Teagasc Moorepark, Fermoy, Co. Cork. For more information on any of the newsletter content please contact Amy at amy.quinn@teagasc.ie



Please visit our website at www.teagasc.ie/pigs/