

Editor: Ciarán Carroll

## Welcome to November's Newsletter

Ciarán Carroll



Welcome to the November edition of our monthly newsletter. Lack of profitability continues to be the focus for the sector. The recent pig price drop by some processors was unexpected and ensures that pig margins remain under severe pressure. The shortfall of pigs here as a result of a fertility problem earlier this year should become evident around now and this, combined with improved exports to China (on the back of culling in relation to African Swine Fever) will hopefully result in improved prices before long.

November has been a busy month for the Pig Development Department. Some of the group attended the Eurotier trade show at Hannover, Germany. The big focus this year was on the use of Smart Agriculture for pig production. On the feed side, the focus was on alternatives to Zinc Oxide in the feed and the reduction of antibiotic use.

Last month I mentioned the option of a full time Level 5 Pig production course in our Ag Colleges. It's that time of the year when students are filling out

application forms for post-leaving cert courses. I would encourage you to discuss this course with anyone thinking about going to Ag College from September 2019. They can contact me or their nearest Ag College for further information.

Another option which might prove attractive is a Farm Apprenticeship. Last week Teagasc held a workshop on Developing Agricultural Apprenticeships. Approval has been given to develop two new national farm apprenticeships; Farm Manager (Level 7) and Farm Technician (Level 6) based on proposals submitted by Teagasc. If successful, these could be rolled out from September 2019, so watch this space.

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- You cannot control what you do not measure
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## The Teagasc Pig Production Model in a nutshell

**Julia A. Calderón Díaz, Michael McKeon, Gerard McCutcheon, Edgar G. Manzanilla**

In 2016, we started to build a bio-economic simulation model for the Irish pig industry at the Teagasc Pig Development Department. Almost three years later the Teagasc Pig Production Model (TPPM) is now developed and fully validated. The model development has been a priority for the Pig Development Department as part of its commitment to improve farm production and profitability and to provide the necessary tools to achieve this.

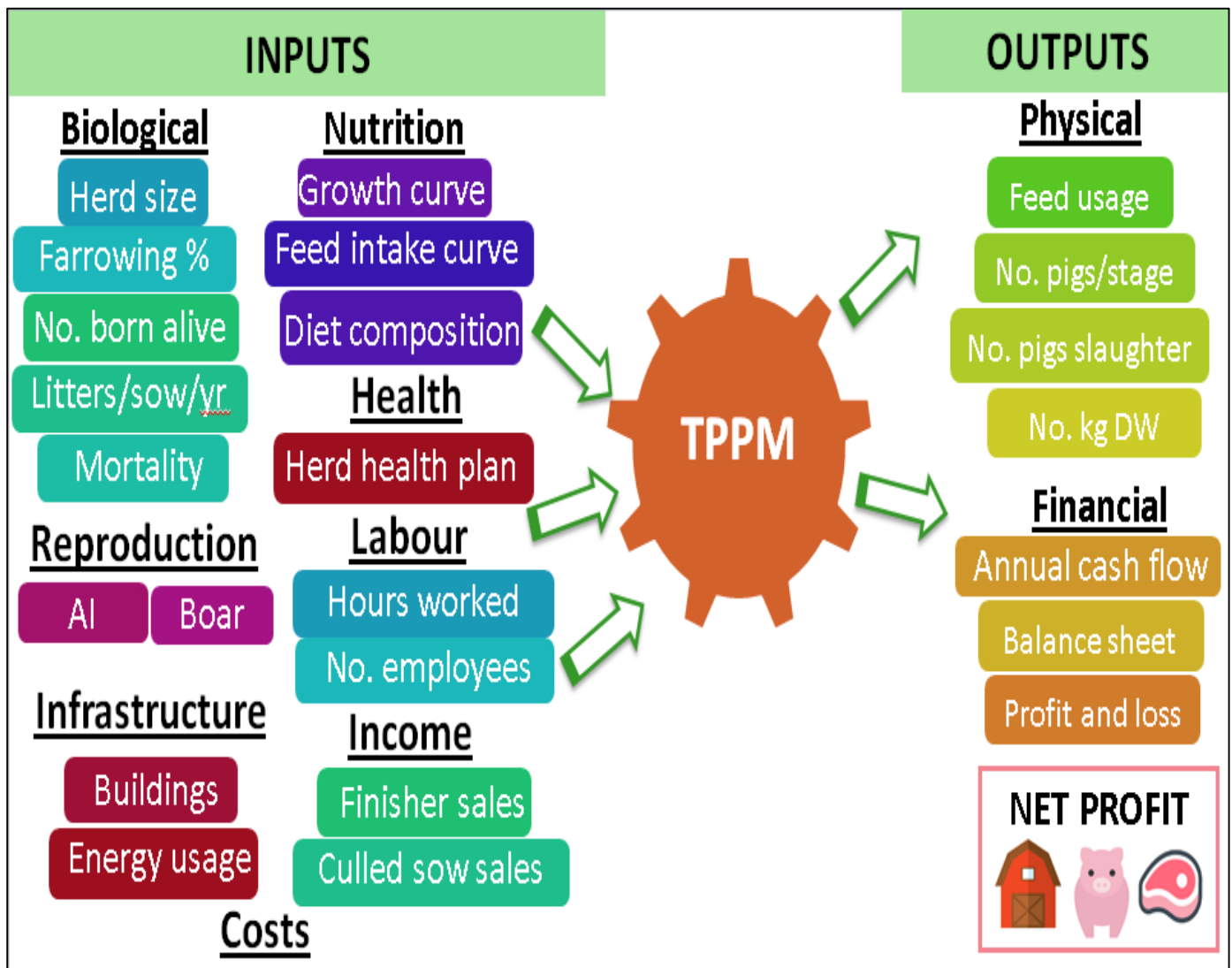
We expect that the TPPM will be used as a decision tool on different aspects of production such as investments, nutrition, welfare and health. The TPPM simulates biological and economic performance of a farrow-to-finish commercial pig farm with weekly farrowing batches. To build the model, we used real Irish data obtained from multiple sources including the Teagasc e-profit monitor (ePM), Teagasc research data and input from members of the Teagasc pig advisory team. Indeed, the TPPM represent a successful collaboration between researchers, advisors and farmers.

The model simulates, on a weekly basis, the annual production of a farm. The model consists of a series of inputs (Figure 1) including biological parameters such as herd size, conception and farrowing rate, number

of litters/sow/year, number of piglets born alive per litter and mortality rate for each production stage. Also, as feed costs represent over 70% of production costs, nutrition was considered the main *engine* for the model. A growth curve was provided to the model and net energy and SID lysine requirements as well as feed intake were calculated for each production stage based on the estimated weekly body weight. Additionally, the model has a built-in least cost feed formulator where we simulated wheat-barley based diets representative of the nutritional values for Irish pig diets.

Information on reproduction (e.g. number of services and number of boars for heat detection), labour (e.g. number of employees and number of hours worked per week), infrastructure (number of spaces per stage, energy usage, manure handling, etc) and income (e.g. finisher and culled sow sales) and their associated costs are also inputs for the TPPM

These inputs are used to calculate physical (e.g. feed usage and number of pigs slaughtered) and financial (e.g. annual cash flow, profit and loss account and a balance sheet) outputs. Net profit is calculated on a total farm basis, as well as per pig produced and per kg of carcass sold (DW).



**Figure 1.** Inputs and outputs of The Teagasc Pig Production Model (TPPM)

We used two methods to validate the input values used in the TPPM. First, a group of experts (i.e. pig advisors and researchers) revised the methodology and values used for the model. Once the experts agreed, a second validation was carried out by comparing TPPM outputs with real farm data from 20 anonymous farms with complete records (e.g. production parameters and financial receipt) from the Teagasc pig e-Profit Monitor (ePM). We calculated average biological parameters from the 20 ePM farms

and used them to simulate a farm. Then, results from the simulation were compared to the average performance of the 20 ePM farms.

Results from the validation showed that the biological values used to build the TPPM are almost identical to the average biological parameters of the 20 ePM farms (Table 1). Also, the TPPM closely simulated:

- Number of pigs sold (20,748 for the TPPM and 19,594 ± 11,555 for the ePM farms)
- Number of kg DW sold (1,709.6 tonnes for the TPPM and 1,648.4 ± 1,024 tonnes for the ePM farms).
- Feed costs for the different stages (Table 2)
- Total variable costs (€81.5 vs. €83.8 per pig produced for the TPPM and the ePM farms, respectively)
- Total fixed costs (€16.0 vs. 17.5 per pig produced for the TPPM and the ePM farms, respectively)
- Net profit (€25.34 vs. €27.5 per pig produced for the TPPM and the ePM farms, respectively).

**Table 1.** Comparison of the biological parameters used to build the TPPM with real Irish data from 20 farms with records in the Teagasc e-Profit monitor.

Performance variable	ePM farms	
	TPPM	Mean ± SD
Sow herd size	775	810 ± 495
Farrowing rate, %	86.0	85.4 ± 5.5
Litters /sow / yr	2.4	2.3 ± 0.12
Ave BA / litter	13.2	13.3 ± 0.57
Ave piglets/sow/yr	26.3	26.1 ± 1.79
Culling rate, %	50.1	50.6 ± 8.10
Sow mortality %	4.9	4.8 ± 2.51
Piglet mortality %	10.8	10.5 ± 2.79
Weaner mort. %	2.9	2.7 ± 1.24
Finisher mort. %	2.5	2.0 ± 0.98
Average sale wt. kg	109.6	108.5 ± 4.10
Kill out %	76.4	77.1 ± 7.00

**Table 2.** Comparison of the TPPM feed costs with 20 farms with records in the Teagasc e-Profit monitor.

€ per pig produced	TPPM	ePM Farms
		mean ± SD
Gestating sow feed	6.3	8.0 ± 1.17
Lactating sow feed	4.8	5.8 ± 1.32
Creep feed	2.9	2.8 ± 1.21
Link feed	4.4	4.1 ± 2.03
Weaner feed	12.0	12.5 ± 3.13
Finisher feed	41.0	42.7 ± 4.8

### What is next?

We have started to use the model to quantify the economic impact of different scenarios such as:

- Expanding finisher accommodation to increase live weight at sale from 110 kg to 120 kg.
- Installing a new feed bin and feeding finisher diets earlier (from approximately 25 kg of body weight instead of 38 kg of body weight)
- Bio-economic performance of PRRS negative and PRRS positive farms

Over the next months, we are also going to simulate bio-economic performance of farms differing in health status for other economically important diseases such as swine flu and *Mycoplasma Hyopneumoniae*; the impact of tail lesions in performance and the use of different specs diets including the use of alternative ingredients.

We have also developed decision tools that will be accessible to the farmers in Ireland and abroad. First, we built the **TPPM LEAST COST FORMULATOR** (Figure 2), a tool where farmers can formulate their diets

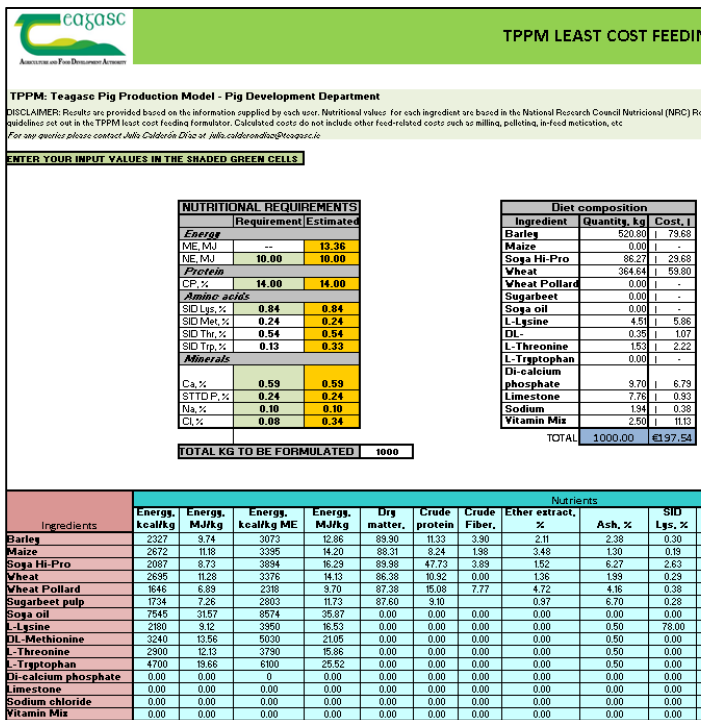
using a minimum cost approach. We are already using the **TPPM LEAST COST FORMULATOR** in the pig farm

managers course and it will soon be available through the Teagasc Pig Advisory Team.

**Figure 2.** The TPPM Least Cost Formulator, a tool for diet formulation using a minimum cost approach.

We are also building other tools such as the **TPPM PIG PERFORMANCE MONITOR** and the **TPPM PERFORMANCE MONITOR** which are currently being revised and improved before they become available to the public.

We look forward to using the TPPM to simulate real life scenarios and to use the results to facilitate decision making to address the challenges that Irish pig farmers face on a daily basis. If you would like to get more information about the TPPM please contact Julia Calderón Díaz at [Julia.calderondiaz@teagasc.ie](mailto:Julia.calderondiaz@teagasc.ie)



## You cannot improve what you do not measure

**Edgar Garcia Manzanilla**

This apparently simple principle is often forgotten in animal production, and pig production is no exception. Just think about the last time you were finishing your work late and you had data to enter in the computer or the paper datasheet. It is tempting to leave it for the next day or even not to do it. However we must remember that record keeping is probably the single most important activity in a farm.

Teagasc has run PigSys (eProfit Monitor) for decades now and it has been a very useful exercise to monitor and improve productivity. Many countries have done the same in their pig sector in different ways and it is very useful to take a look at their systems from time to time. Take a look, for example, at the articles published by Ger McCutcheon in previous newsletters on the data comparison from InterPig. You will always find interesting information about production in other countries compared to Ireland.

On the 23<sup>rd</sup> of November, Teagasc attended the 25<sup>th</sup> edition of the Porc d'Or (Golden Pig) awards in Spain. These awards recognize the work done by the best farm teams in the country. The system automatically collects the information from the computers in the farms and integrates this information in a single database called BDporc. BDporc is used to feedback information to each farm and to improve the industry as a whole. Because the pig sector in Spain is mostly divided into production sites (breeding, nursery and

finisher sites) this database and the awards are focused on breeding units.

BDporc collect a huge amount of data. However, for the awards, the farms are then divided into categories by size and only 3 awards are given in each category:

-Sow productivity: number of piglets weaned per sow per year

-Longevity of the sow: number of piglets weaned by sow in their lifetime

-Farrowing rate: number of sows farrowed from those served

**Table 1. Technical data of the winning farms in each category of the Porc d'Or awards 2018**

Categories	<200 sows	201- 500 sows	501- 1000 sows	1001- 2000 sows	>2000 sows
<b>Sow Productivity</b>	38.9	35.6	37.3	36.9	35.5
<b>Sow Longevity</b>	89.6	88.8	77.9	81.5	71.2
<b>Farrowing Rate</b>	93.6	94.4	94.3	94.4	92.5

The winning farms often change from year to year as different farm teams improve their management and their performance. But one common result in all farms of the use of BDporc and its benchmarking

system is the constant improvement that most farms achieve by looking at their figures and focusing their efforts on improving the weakest areas. This improvement can be easily seen in the average figures in Table 2. This table shows the improvement over the last 5 years but the improvement has been constant for the last 25 years.

**Table 2. Improvements in the productive data in farms in the BDporc database (2013-2017)**

	2013	2014	2015	2016	2017
<b>Farrowing Rate</b>	84.1	84.8	84.8	85.5	85.8
<b>Sow Productivity</b>	26.4	27.6	29.0	28.9	29.5

The gala to announce the winning farms is also a night out and an opportunity for farmers to discuss different areas of pig management and meet all the rest of stakeholders in the pig industry.

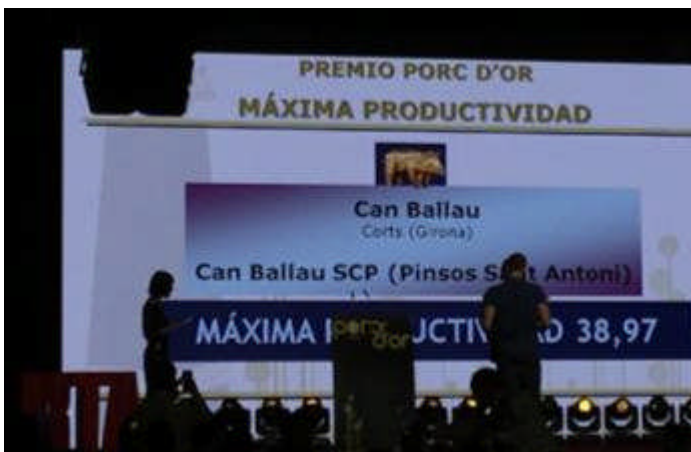


Figure 1. Farm “Can Ballau” receives the prize for the new record in productivity with almost 39 pigs weaned per sow per year in 2017.

In a similar way, the collection and analysis of information carried out in Teagasc is showing similar improvement for the Irish pig sector as we can see in Figure 2. As an industry we should now aim to include more farms and more information in our national database so we can provide better feedback to farmers and make faster improvement in efficiency. This collaborative approach will inevitably result in benefits for all pig farmers in Ireland.

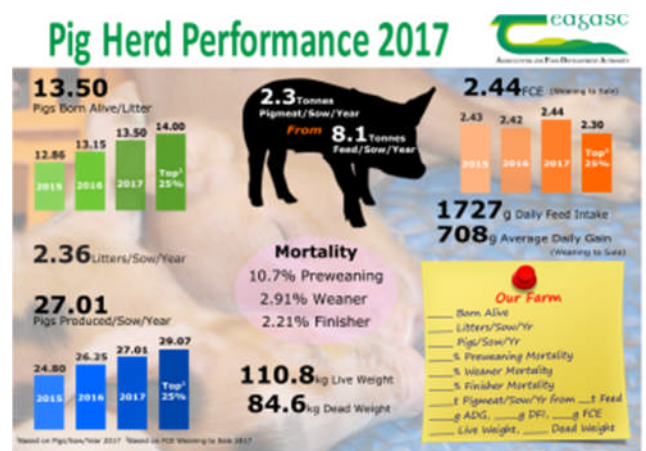


Figure 2. 2017 pig herd performance for the Irish herds participating in the eProfit monitor system.

## News Updates

### DG Sante meeting on progress on rearing pigs with intact tails

This meeting took place at the European Commission Office in Grange, Ireland. Teagasc PDD staff attended the two-day meeting. There was a wide range of presentations on this topic. The Commission acknowledged that progress has been made, but there is more to be done. The key take home message is that this is a complicated multi-factorial problem, not just in Ireland but right across Europe, with many member states still docking tails. Farmer representatives highlighted the difficulties of implementing an intact tail regime on their farms, both from a practical point of view where they experienced outbreaks of tail biting in both intact and docked pigs, and also from a financial perspective. The feedback session at the end of the meeting suggested that coordinated assistance is required and that it must involve farmer input to be successful. It also highlighted the importance of using Science to support recommendations made and that user-friendly technical information should be provided to competent authorities so that they can train farmers in their countries. The commission also suggested that financial support measures available in some countries to produce pigs with intact tails should be further investigated by member states (where there are currently no supports).

### Student Success



Congrats to our Walsh Fellow Student, John Moriarty (pictured above) who won the 2018 Teagasc Denis Minogue Memorial Award. The Denis Minogue Memorial Award is awarded to the student who delivers the most innovative project as part of their examination of Irish farming and advisory service practices. John recently completed his study investigating Digital & Visual tools for the pig industry. This is John's second award this year, having won the best poster prize at the European Forum for Agricultural & Rural Advisory Services (EUFRAS) conference in Hungary last July.

Other students to make the headlines recently are Walsh Fellows Hazel Rooney (OPTIPIG project) and Phoebe Hartnett (GILT LIFE project) who both featured in the That's Farming Student Focus - Women in Ag series. Both interviews can be found at:

<https://www.thatsfarming.com/tag/phoebe-hartnett>

<https://www.thatsfarming.com/news/hazel-student-nov>





The 2019 EUPIG Grand Prix is now open. This project, involving a network of organisations from 13 EU countries, seeks to identify and promote the best practices used on EU pig farms. Ireland had a winner in the inaugural year (2017) of this competition and came close again in 2018. The **closing date for submissions is Thursday 28 February 2019.**

There are four theme areas (Health Management, Precision Production, Animal Welfare, Meat Quality), with two challenges per theme. If you have a best practice for submission contact me [ciaran.carroll@teagasc.ie](mailto:ciaran.carroll@teagasc.ie) and I will upload it to the EUPIG portal.

The 2019 challenges are:

- **Health management** - **Early warning of diseases and production errors:** novel technology, thematic systems and predictive modelling
- **Health management** - **Influence of gut health on disease and production data:** tools, systems and methods of monitoring gut health. Novel approaches to ensuring appropriate gut health development.
- **Precision production** - **Reducing piglet mortality:** still births or “mortality until weaning”, also in

hyperprolific sows – where do you gain the best effect.

- **Precision production** - **Dashboard systems/benchmarking:** nudging / motivation systems to easily identify reduced performance & increased costs – keep the production on track.
- **Animal welfare** - **Strategies to reduce aggression between animals:** management systems, novel techniques or technologies that lead to a reduction in the aggression between production animals at any stage of production
- **Animal welfare** - **The quality of the farm atmosphere:** in connection with the health of the breeders and the animals.
- **Meat quality** - **Replacing GMO in soy in for feed production:** in some countries retailers ask explicitly not to use any feedstuffs that are derived from GMO raw material.
- **Meat quality** - **Strategies to open farms to public to improve transparency of animal production and trust in consumers:** pig farms increasingly are the object of public concern related to animal welfare, environmental sustainability and to the use of antibiotics.

### Teagasc Pig Farmers' Conference 2018

The conference proceedings and presentations are now online at:

<https://www.teagasc.ie/publications/2018/pig-farmers-conference-2018.php>



## For more information

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