

# EU PiG

EU PiG Innovation Group

## Technical report

## Meat Quality

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# Challenge: How to Promote Pork to Consumers?

## Introduction

In this technical report an overview is provided of best practices, that are successfully applied in pig farms in Europe. Pig farmers and farm advisors can use this report to know more about how the best practices have been implemented on the farms and what challenges these practices are able to tackle. This fourth-year report on the theme “Meat Quality” treats the following two challenges:

- How to promote pork to consumers?
- Being competitive in small-scale farming: developing a niche-market for pork.

Best practices focussed on “How to promote pork to consumers” could be implemented by producers informed in store materials, working with the retail sector or wider promotional activities to reach the end consumer.

## 1. Background to the challenge

The challenge “How to promote pork to consumers?” is rather similar to the previous challenge “Opening farm to engage with public”, which has been awarded as EU PiG Meat Quality Ambassador in the third year (2019), as regards objectives, types of practices to achieve these objectives and related commitments for farmers.

Public concerns relative to adverse consequences of large-scale livestock production have been increasingly voiced since the late 1960s. One reason large-scale livestock production has raised concern is that a significant component of the industry has separated from traditional family farming and has developed like other industries in management, structure, and concentration (Donham, 2010).

Food supply chains are increasingly complex and dynamic due to (i) increasing product proliferation to serve ever diversifying and globalising markets as a form of mass customisation with resulting global flows of raw materials, ingredients and products, and (ii) the need to satisfy changing and variable consumer and governmental demands with respect to food safety, animal welfare, and environmental impact (Trienekens et al. 2012).

Consumers generally have limited knowledge about basic pork production and safety issues (Meuwissen et al. 2007) and consequently have difficulties with distinguishing between

different labels of fresh or processed pork products. Nowadays consumers base their buying decisions on their personal perceptions of value, resulting from a balance between price and quality and differences in social, cultural, and educational status. The lack of knowledge about livestock production practices and their impact on animal welfare and meat quality also explains the poor consciousness in large part of meat consumers worldwide. The numerous initiatives of the food supply chain in response to the consumer requirements for improved animal welfare are having the most visible influence on their purchase behavior (Faucitano et al. 2017).

Young adults in developed countries are distanced from agriculture and the meat industry needs to do a better job of communicating with them. Retailers are major drivers of animal welfare standards enforcement and they respond to pressure from both activists and consumers (Grandin, 2014). Consumers are interested and will likely respond to labels signifying country of origin and the existence of on-farm food safety programs. However, they can't respond if they are not told of the designations. It is also clear that transaction costs may make retailers loath to incorporate such labelling strategies into their meat marketing strategies. It is also worth noting that different production attributes, in this case traditionally raised, may also attract consumers (Goddard, 2011).

A Danish study (Denver et al. 2015) shows that consumers are interested in animal welfare, and that moderate price premiums for medium levelled animal welfare products might attract consumers who would otherwise be inclined to purchase standard products. Labels guaranteeing medium levels of animal welfare may therefore indeed play an important role in promoting higher animal welfare standards. Consumers seem to be more willing to pay a higher price premium for animal welfare in luxury pork such as tenderloin than for every-day pork such as minced meat.

Concerns for the ethical treatment and rights of animals, the impact of livestock production on the environment, and the role of animal foods in human health have been debated by the public (MacDonald and Reitsemer, 2017). However, the relative importance of production characteristics is likely to vary between consumer segments and cultural differences amongst these segments or countries. For example, traditionally, it has been said that Northern European countries gave more importance to attributes such as animal welfare or environmental impact, whereas in the Mediterranean area meat quality was more appreciated. However, according to a recent study in Germany and Poland, production characteristics that consumers perceive as most important relate to health and safety aspects rather than to animal welfare and environmental impact (Grunert et al., 2018).

Due to the growing attention to sustainability, and the international trend toward agricultural trades and stakeholder involvement in food, there is a need for a system-based approach in the field of food systems sustainability (Labreque et al. 2015). In the ongoing public debate about livestock production systems and especially for pig production, natural living conditions, including sufficient space for each individual animal, outdoor access and litter bedding are the

most discussed public issues. In contrast, many consumers are very price sensitive and additionally demand products to have high food safety and high quality (Sonntag et al. 2019).

Results of a study on how animal welfare information provided by media sources impacts beef, pork and poultry demand, suggested that media attention to animal welfare has a small, but statistically significant impact on meat demand. Long-run pork and poultry demand are hampered by increasing media attention whereas beef demand is not directly impacted. Loss in consumer demand is found to come from exiting the meat complex rather than spilling over and enhancing demand of competing meats (Tonsor and Olynk, 2011).

## 2. Addressing the challenge

Knowledge about the aspects of pork production that can give rise to concerns can be used in two ways. First, the communication about those aspects towards consumers and citizens can be adjusted or extended to give them better possibilities to make food choices or to develop their own opinions about pork production. Second, producers could change the pork production system such that it better satisfies consumers and citizens (Kanis et al. 2003).

Chain actors believe that consumers should be adequately educated about animal welfare and be informed that intensive farming does not necessarily mean and imply animal non-wellbeing, paying attention to avoid incorrect or inadequate information that could create negative effects on the market. There is a need for commonly agreed definitions of animal welfare and production systems with participation of all stakeholders in the food chain, to avoid emotional, ill-informed and inaccurate descriptions by some organisations in the media (Spoolder et al. 2011). In the UK, retailers and catering suppliers are responsible for ensuring that labelling of pig meat products is clear and unambiguous, but producers, animal welfare groups such as the RSPCA, and Government, have a role in making certain that consumers understand the difference between the standards of welfare in the various methods of pig production and ensuring that pig meat produced in the UK is of a high welfare standard (House of Commons, 2008).

Activists and academics are increasingly advocating for public procurement of locally grown food as a key market opportunity for farmers. In the United States, linking farmers directly with school cafeterias through farm to school programs are among the efforts that advocates say can provide a significant boost to rural economies; in this country a study showed that farmers sold their products to schools for two primary reasons: to diversify their marketing strategies and to contribute to social benefits through direct action (Izumi et al. 2010). In this context pig farms equipped and organized to host students, citizens and consumers to show them how pig farming is performed are welcome as they are likely to increase consumer's trust and demand for pig meat. Nevertheless, the risk of introducing pig diseases in the pig farm through the visiting people is very high if very strict and effective biosecurity measures are not in place. For this reason, closed circuit TV is recommended to show pig farming practices in remote from a visiting room on the farm or from a classroom at school/university without any risk of disease

transmission. Anyway, hosting visitors on the farm can be a way to promote direct sale of fresh meat and cured meats in companies that process meat and have a farm shop.

### 3. EU PiG Best Practice

In order to identify the top five best practices across all the EU PiG regions, a series of criteria, aiming at measuring the effectiveness of the collected practices to match the specific challenge, were defined.

The following set of criteria will be scored for each practice.

- **Excellence/Technical Quality**
  - Clarity of the practice being proposed;
  - Soundness of the concept;
  - Scientific and/or technical evidence supporting the proposed practice.
- **Impact**
  - The extent to which the practice addresses the challenges pointed out by the Regional Pig Innovation Groups (RPIGs);
  - Clear/obvious benefits/relevance to the industry;
  - Impact on cost of production on farm and/or provide added value to the farming business or economy;
  - The extent to which the proposed practice would result in enhanced technical expertise within the industry e.g. commercial exploitation, generation of new skills and/or attracting new entrants in to the industry;
  - Knowledge exchange potential from the proposed practice;
- **Exploitation/Probability of Success**
  - The relevance of the practice to each Member State (MS) or pig producing region/system;
  - Timeframes for uptake and realisation of benefits from implementation of the proposed practice are reasonable;
  - The extent to which there are clear opportunities for the industry to implement the practice/innovation;
  - Degree of development/adaptation of the practice to production systems of more than one MS;
  - Easily implementable by other farmers.
- **Innovation**
  - The extent to which the practice differs from existing approaches being used;
  - The extent to which the best practice can inspire other producers and/or allied industries;

- The extent to which the practice has been tried and tested.

Scores must be in the range 0-5 (to the nearest full number). When an evaluator identifies significant shortcomings, he or she must reflect this by awarding a lower score for the criterion concerned. The guidelines for scoring are below (no half scores should be used).

<b>0</b>	The practice cannot be assessed due to missing or incomplete information.
<b>1 - Poor</b>	The practice is inadequately described, or there are serious inherent weaknesses.
<b>2 - Fair</b>	The practice broadly addresses the criterion, but there are significant weaknesses.
<b>3 - Good</b>	The practice addresses the criterion well, but a number of shortcomings are present.
<b>4 – Very Good</b>	The practice addresses the criterion very well, but a small number of shortcomings are present.
<b>5 - Excellent</b>	The practice successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

The selection of the top five best practices followed the procedure described below:

1. The Thematic Group (TG) leader filtered out any best practices that did not address the challenge(s) in question. These could either be removed from the Grand Prix or sent to another TG leader (if the best practice was fitting the requirements of another call);
2. All members of the TG sent their scoring sheets to the TG leader;
3. The TG members provided brief comments to the first 10 practices they chose as best practices, as these comments facilitated the discussion about the first five;
4. The TG leader standardized all individual scores by calculating Z-scores;
5. The first 10 practices were ranked according to the average Z-scores of all participants of the TG. All other lower ranked practices were excluded;
6. The TG leader collected all the comments of the individual members of the TG for each of these 10 practices and sent them around to the TG;
7. In a dedicated meeting the TG discussed the results and finally decided on the top five good practices for each challenge based on the comments provided by the group.

## 4. Results and Discussion

### 4.1. Validation of the top five best practices

The following top 5 best practices within the challenge of 'How to promote pork to consumers?' have been selected by the thematic group:

Title of best practice	Country
Pick Pork - Pork Midweek Meal Campaign	United Kingdom
Meat promotion through transparency	The Netherlands
Organic farm guided tours	Spain
Create awareness through company tours and the sale of unique Berkhout meat with a story (Ambassador)	The Netherlands
YouTube channel and Facebook page	Denmark

#### Pick Pork - Pork Midweek Meal Campaign

Research showed consumers thought pork was unhealthy, tough and unversatile. GB fresh pork sales had been in decline - 1 million less British households bought fresh pork in '17 versus '13. The task was to slow the decline by rejuvenating pork's image. The Midweek Meals campaign brought together the supply chain to change perception (<https://www.youtube.com/watch?v=J-oXO3msquY&list=PLezjvDGHW5p7xd0hYCyMBhKPu1oJVqo2H&index=10> ). The aim was to position lean pork cuts as an alternative to chicken. An integrated TV campaign (<https://www.youtube.com/watch?v=Yui0HX010I0&list=PLezjvDGHW5p7xd0hYCyMBhKPu1oJVqo2H&index=18> ) was used to inspire consumers to try pork's new, healthy, quick and easy dishes, alongside retailer activity. The £ 4 million midweek meal campaign is a programme to rejuvenate the image of pork. First 2yrs: Attitudes that pork is suitable as a midweek meal increased by 10%. Household penetration of pork stabilized at 70% versus a target of 67%. The campaign needed the support of the entire supply chain to succeed. Farmers, processors and retailers all had to work together to achieve the common goal of slowing the decline. Over the 2 years, the campaign has delivered an incremental £25m in retail sales from advertising alone. 65% of the uplift was driven by non, light or medium pork buyer. In Year 2 of the campaign, Loin medallion volume sales increased by 24% YOY. £4m of investment over 2 years.

The Pick Pork Campaign sets out an infrastructure for delivering high impact consumer marketing that can be adapted to any market. This means that across the EU the campaign

methodology can be applied to drive up sales of pork (<https://www.lovepork.co.uk/collections/pick-pork/> ).

### Meat promotion through transparency

We supply our customers with 100% honest meadow meat (guaranteed free of antibiotics) of very good quality. Grazing pigs in the meadow is quite special. Passers-by and visitors will find meadow pigs give a beautiful image in the Brabant landscape. Interested parties can see with their own eyes how the animals grow up healthy. This is a form of nature-inclusive production. Interested people can see with their own eyes how the animals grow up healthy. The business is unique because they are given experimental space to further develop their business with meadow pigs. This has been agreed in a Green Deal with the Ministry of Economic Affairs, the Province, ZLTO, HAS and the municipality of Hilvarenbeek. This results in a lot of spontaneous promotion. Special attention to: - nature conservation and development, trees and flowery field edges. - recreation in nature, enthusiasts can make use of the picnic areas and hiking trails available. - Education and guided tours. The production costs of a carcass are considerably lower compared to the sale of pre-packaged, ready-made parts or homemade meat products. It is not easy to provide insight into how these pig farms operate financially. There is a great variety between and within farms. The carcass yield varies between 'twice normal' and up to € 1.500 in sales in packaged parts. It is estimated that 50 to 75 pig farmers can earn a living in this way in the long term. Their grazing pigs are also used for effective nature management. Their obtained 'Green Deal' gives them the opportunity to demonstrate that their operations make a meaningful contribution to animal welfare, agricultural nature and landscape management and the protection and improvement of nature and the environment.

### Organic farm guided tours

We want to show to consumers the origin of our products as well as share our philosophy based on the respect for both the animals and the environment. We open our farm to visitors because we believe that by seeing our activity, we simply enhance people's trust. Visits are offered to both families and schools and last about 1:15 mins. The visit includes a video session, showing our activities as well as an explanation of the farm's history, and a physical visit to the different stages of the productive chain (sows, piglets and fattening pigs). We also include a tasting session of our own branch of cured products in our shop. There is a picnic area just 5 minutes of walk from and people can stay to enjoy the beautiful scenery. We are announced in TripAdvisor. Our web page ([www.salgot.com](http://www.salgot.com)) offers a calendar with available days for farm visits (3-4 days/month). Visitors have to book in advance. School groups can also visit the farm since we offer pedagogical programs according to the children's age. Fee visit: 10 euros. Infants younger than 9 free entrance. School fees: - Primary school: 4 €/student - Secondary school: 8 €/student. It is hard to exactly estimate the percentage of increase in sales, but we believe diversification helps family business. Labour costs of the contracted people needed to do the visits are covered by the fee visit. Opening the farms in



small business like ours can be implemented in many other production Systems in other countries. Opening the farm doors together with the tasting sessions helps to promote our own products. Moreover, it can help families to value organic farms' production system and invest in products that respect both the environment and the welfare of the animals. Thanks to the school visits, children are able to learn the pig production chain. It is important to take biosecurity measures and reduce the number of people for visit to avoid disturbing the animals.

### Create awareness through company tours and the sale of unique Berkhout meat with a story

Our goal is that the end user buys a tasty and familiar piece of meat that meets and even exceeds his expectations, directly from the producer ([www.bijkato.nl](http://www.bijkato.nl)). We have built our own brand name. This is promoted by organising open days and farm tours, walking and cycling tours. This allows consumers to see and feel that we care for our animals with passion and experience in an honest, trusted way. To this end, we have invested in: developing a brand, creating points of sale, meeting rooms and skyboxes. The total costs for this are more than € 350.000 over the past 6 years. Making consumers curious about the sector and our Berkhout pig. The collaboration with Puur Brabant ensures that our meat has a unique story and is for sale in the local farm shop. There is a lot of ignorance about our sector, so many people form their own opinion about it. This offers an enormous opportunity to positively promote the sector with its own story. We are proud of what we do and are happy to show this to consumers! To promote our sector and our unique Berkhout meat, we give people the opportunity to take part in one of our tours. Open days: free entrance Farm Tour € 15,00 = pp (adults) / € 7,50 pp (children up to 14 years) Walking tour € 7,50 pp (adults) / € 5,00= (children up to 14 years) Cycling tour € 27,50 pp (adults) / € 15,00 = pp (children up to 14 years) Expected revenue increase: 15%. Create your own unique story and do not let people make up their own story about the sector.

### YouTube channel and Facebook page

Rasmus is the founder of a YouTube channel called "Bondemaan og Co." The channel shows every day working routines in a modern pig production. Rasmus wants to show the society how it is to work in Danish pig production. The videos should provide the consumer with a more varied understanding of the industry. Each video has around 1000 views. Besides his YouTube channel he is also founder of a Facebook-page "Bondem aan Rasmus" with 2500 "friends" He considers which topics are suitable for a video. He creates one or two videos each month and uses his spare time to do it. On his Facebook page he has a kind of Q&A live sessions once a week where it is possibly to ask him all kind of questions. It is important to think about the content of each video and how it is presented. It should be understandable without any knowledge of agricultural production. Furthermore, it is important to explain why different routines are performed to avoid misunderstandings. This practice does not have a direct impact on production results. It is possible to implement this practice without any cost despite the time it takes to create videos. Even smaller videos made with mobile phones is a way to get going.

This practice does not have a direct effect on the prices and it is very easy to implement. It is relevant to countries like Denmark where the society is no longer closely connected to agricultural production.

## 4.2. Cost and benefit analysis of the EU PiG Ambassador

### Create awareness through company tours and the sale of unique Berkhout meat with a story

The goal of Berkhout meat BV is, that the end user buys a tasty and familiar piece of meat that meets and even exceeds his expectations, directly from the producer. They have built their own brand name. This is promoted by organising open days and farm tours, walking and cycling tours. This allows consumers to see and feel that they care for their animals with passion and experience in an honest, trusted way. To this end, investments have been made in the development of the brand, the creation of points of sale, meeting rooms and skyboxes. The total costs for this investment have been more than € 350,000 over the past 6 years. The objective is to make consumers curious about the sector and about Berkhout pig. The collaboration with “Puur Brabant” ensures that their meat has a unique story and is for sale in the local farm shop. This offers an opportunity to positively promote the sector with its own story. To promote the sector and the unique Berkhout meat, people have the opportunity to take part in different tours with related prices and tariffs. These can be open days with free entrance, dedicated farm tours, walking and cycling tours.

#### Tariffs and prices

Open days	Free entrance
Farm tour	€ 15,00 pp (adults) and € 7,50 pp for children
Walking tour	€ 7,50 pp adults and € 5,00 pp for children
Cycling tour	€ 27,50 pp adults and € 15,00 for children

The peak period for the visits is from May to the beginning of September and the two weeks around Christmas. In peak periods 15 - 20 pigs of a 100 kg are sold per week and in quiet times 5 to 6 pigs per week.

According to this information Berkhout BV is able to generate annual revenues due to the sales of extra pig meat of almost 70,000 €/year. The details of the calculation are shown in the table below.

Peak period	May - September
Number of weeks in peak period	18 weeks
Number of extra pigs sold per year (in peak and quiet times)	494
Price per pig 2018 (€/kg s.w.)	1,36
Revenues per year	67,184

Against a total cost of 350,000 € invested over a period of 6 years, this certainly is a profitable activity. This calculation assumes that the costs of hosting the people on the farm equals the tariffs paid by the people visiting the farm.

### 4.3. Expert analysis

The experts of the Thematic Group Meat Quality agree with the need of the pig industry, specially the intensive one, to gain trust of consumers by educating on how pigs are produced and its implications. Opening the farms, when caring for biosecurity aspects, is a proper tool to enhance trust and support consumers' choices. The practice that was selected as Ambassador meets the criteria of being innovative and farmer managed, proactive in raising societal awareness of the pig sector.

### 4.4. Conclusions and advice to industry

In this final paragraph we provide some advice on tips that the industry could use to enhance consumers' trust:

- Tasty pork with a story, directly from the producer, meets and even exceeds expectations of pork consumers and offers the opportunity to positively promote the pig sector with its own story.
- Open pig farms are effective to show consumers the origin of pork and the different stages of the productive process.
- Pig farms open to visitors should put in place strict biosecurity measures to limit the risk of introduction and diffusion of pig diseases.
- Use of social networks and ICT can provide real information on how pigs are produced without far exposition to any biosecurity risk;
- Integrated TV campaign to rejuvenate the image of pork and to promote it to consumers need the support of the entire supply chain (i.e. farmers, processors, retailers) to succeed.

Analysis of cost and benefits of hosting visitors in pig farms is hardly feasible as this activity is not part of the production process; in farms provided with farm shops to sell their own

produced pork cuts and processed products, the higher biosecurity risk related to farm visits can be compensated by increased consumers' loyalty and consequent larger sales on farm.

## 5. The Future

Pig farmers own stories, about the pork they produce, provide consumers/citizens with relevant information from people living in direct contact with pigs, and do not let only to other people (e.g. scientists, competent authority, policy makers, NGOs for animal protection, supermarket chain) not involved in the pig supply chain to tell the story of the pig sector. Farms open to visitors are an effective mean to show citizens and consumers how pork is produced in the real world although strict biosecurity measures should be in place to limit the risk of introduction and spread of pig diseases. To this regard, social networks, ICTs and integrated TV campaigns can be effective too to inform citizens and consumers about pig farming practices in compliance with EU standards for animal welfare, environment protection and food safety.

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# Challenge - Being competitive in small-scale farming: developing a niche-market for pork

## Introduction

In this technical report an overview is provided of best practices, that are successfully applied in pig farms in Europe to increase the trust of consumers towards pig farming and the consumption of pig meat. Examples are given here of “Being competitive in small-scale farming: developing a niche-market for pork”; they are producer focused examples of how rare breeds are being promoted and marketed to aid in both preservation and as an alternative to commercially produced pork. Pig farmers and farm advisors can use this report to know more about how the best practices have been implemented on the farms and what challenges these practices are able to tackle.

## 1. Background to the challenge

The modernisation paradigm, based on specialisation and economies of scale, can be altered when farmers collaborate, share knowledge, create alliances and define alternative development and marketing strategies based on diversification. Scale enlargement and specialisation certainly contribute to increased farm efficiency, but generate economic vulnerability when prices are volatile. Diversification may stabilise incomes but requires farmers to develop their marketing skills. Based on the seven case studies, we conclude that diversification and economies of scope contribute significantly to more resilient pathways of development. The limitations of the mainstream agricultural development model, based on economies of scale and specialisation, are becoming increasingly evident. The dismantling of price support policies has made highly specialised farms clearly become economically more vulnerable and they face higher market risks than more diverse farms employing ‘alternative’ management strategies (De Roest et al. 2017). “Convert to a niche market segment with higher requirements as to animal welfare and environment” has been considered as one out of four alternative options for pig farmers, in a recent Dutch study to explore the effect of social interaction on diffusion of investment strategies in groups of pork sector stakeholders (Ambrosius et al. 2019).

The EU is supporting measures that stimulate enhanced value-added products in order to conserve local and threatened livestock breeds. The potential demand for traditional and “unaltered” product from the rustic pig breeds could contribute to their conservation. A market niche exists, where consumers appreciate these high-quality products and where no “add-ons” are required to enhance their uptake (Kallas et al. 2019). Small-scale pig farmers can promote

a different 'upscale' pork by using breeds that will focus on pork taste exclusively, and feeding diets (possibly apart from corn and soybeans) to enhance flavour (Talbot et al. 2004).

Pig native breeds are still present in most EU Member States, as alternative to conventional pig breeds and crossbreds, commonly used in intensive farms because of their high productivity. The majority of these breeds are less productive but the taste quality of their meat has been acknowledged as different and higher compared to commercial pork (Čandek-Potokar et al. 2016).

The interest for traditional genetic resources, here comprised local pig breeds, has been increased in the last decades. Yet, at the time being, majority of local pig breeds still need to be supported with subsidies to ensure their conservation. However, the best strategy is if breeds could reach self-sustainability which is possible by an efficient marketing strategy of their products.

The Iberian pig is one of the scarce non-improved swine breeds which survives the modern techniques of pig production based on improved genotypes. This is attributed both to its perfect adaptation to the Mediterranean natural ecosystem and the high quality of its products. The Iberian pig is a native breed of the Iberian Peninsula characterized by its fat production ability, the high-quality products that can be obtained from them (Lopez-Bote, 1998) and its high rusticity. Although the Iberian pig production system has been described to have high standards on animal welfare (Aparicio & Vargas, 2006), spaying females can be an impediment for the Iberian pig final product to reach the European markets as a recognized animal friendly product (Martinez-Macipe et al., 2011). The production of Iberian pig is deeply bound to the Mediterranean ecosystem. It is a rare example in the world swine production where the pig contributes so decisively to the preservation of the ecosystem (Lopez-Bote, 1998). The Iberian Pig Breed is the most important Mediterranean swine type, both in population size and economic importance. Most of Iberian breed pork is consumed as cured products. However, the consumption of fresh meat has recently increased (Clemente et al. 2012).

Six native breeds are still farmed in Italy (i.e. Mora Romagnola, Cinta Senese, Casertana, Calabrese, Nero Siciliano and Sarda). According to literature evidence, local breeds are worse than the improved ones in reproductive performance and productive traits as growth rate, feed conversion and carcass composition but they show interesting quality of meat and fat. The link with free-range rearing increases the commercial value of products of local pigs, because of both effective characterization and consumer suggestion (Franci and Pugliese, 2007). Alternative extensive and outdoor pig farming based on the local pig breed Cinta Senese has expanded in Tuscany in the last 25 years. The meat of this local pig breed obtained a PDO recognition based on a product specification which enforces the link between the quality characteristics of the meat and the local hum and natural conditions. The farms in which the Cinta Senese pigs are raised are highly diversified and pig farming often is a secondary activity next to the production of wine grapes, olives and agritourism. Forests are exploited which

otherwise would have been abandoned which contributes to the multifunctional role of agricultural development of the region (De Roest et al. 2017).

Pulawska, Zlotnicka White and Zlotnicka Spotted pigs are the first breeds of pigs to have been created and raised in Poland until today. These breeds are characterized by greater fatness and lower muscle content compared to highly productive breeds kept in Poland. However, the meat of these animals is of very good quality due to the high content of intramuscular fat, which ensures the optimum palatability, tenderness and juiciness of the meat. Animals of these breeds are very well adapted to local and also extensive management conditions. Over the course of breeding, they did not lose valuable traits inherited from their ancestors, such as resistance to disease and stress. The role of native breed pigs is not only to preserve a certain gene pool but also to fill a market niche (Szyndler-Nedza et al. 2012).

Locally produced meat products have become more popular due in part to the increased separation between food producers and consumers in the USA. Many consumers prefer purchasing food products whose origin can be identified while others find value in supporting local producers (Curtis et al. 2011). Niche markets claim product differentiation by superior or unique product quality and social attributes. Quality attributes include certain swine breeds, and meat quality, freshness, taste or flavour, and tenderness. Social or credence attributes often are claimed and include freedom from antibiotics and growth promoters; local family farm production; natural, organic, outdoor, or bedded rearing; humane rearing; known origin; environmentally friendly production; and the absence of animal by-products in the feed. Pork niche markets utilize various sales methods including Internet sales, local abattoir sales, direct marketing, farmer networks, and targeting to organized groups (Honeyman et al., 2006).

Agro-economic research works, mainly led in Europe, about consumer perception of labelled meat products (both beef and pork) showed that fresh or processed meat products bearing a quality label have a weak position on the saturated food market. Bought as safe meat products during food scares, they are usually a niche market. They benefit from an increasing demand, but this is stated in surveys rather than observed in actual purchases. Their proper market share remains low in food consumption (Giraud 2004).

Pig production and pork demand are developing rapidly in a number of Asian developing countries. In Vietnam, still 80% of the national pig herd is kept on smallholder farms while policy mainly focuses on intensification of pig production (Herold et al. 2010). In this context an effective method to ensure benefits of increasing prices to smallholders of indigenous breed pigs be seen in the formation and development of a professional breed and marketing organization that link public and private institutions with an organized farmers association. The latter would safeguard appropriate benefits of the rural poor from a systematic and sustainable marketing of quality-controlled pork of regional origin. At the same time, this would contribute to the sustainable utilization of valuable local genetic resources (Phuong et al. 2014). Pig raising can offer significant opportunities for improved livelihoods for many households in Northwest Vietnam, one of the poorest and most remote regions in the country (Huyen et al. 2016).



## 2. Addressing the challenge

Niche meat marketing opportunities are emerging as consumer awareness and demand increases for differentiated livestock products (Picardy, 2015).

A recent study in the USA has investigated farmer attitudes toward niche pork and their personal reasons for raising swine and barriers to successful niche production. Choosing niche over commodity swine, participants' reasons were grouped into three intra-related categories: (1) farm and producer viability, (2) animal and environmental welfare, and (3) consumer preference and taste. Despite these benefits, participants were faced with numerous challenges, which were organized into four intra-related categories: (1) alternative production requirements, restrictions and knowledge; (2) access and affordability of credit and inputs; (3) alternative supply chain for processing, marketing and customers; and (4) non-niche production competition and governmental policies. In sum, the success of these niche pork operations equates to high welfare for the pigs, economic viability for the operation, personal enjoyment for the farmer, customer satisfaction with meat flavour and quality, and responsible environmental practices, inclusive of many components of an alternative food system (Picardy et al. 2019).

## 3. EU PiG Best Practice

In order to identify the top five best practices across all the EU PiG regions, a series of criteria, aiming at measuring the effectiveness of the collected practices to match the specific challenge, were defined.

The following set of criteria will be scored for each practice.

- **Excellence/Technical Quality**
  - Clarity of the practice being proposed;
  - Soundness of the concept;
  - Scientific and/or technical evidence supporting the proposed practice.
- **Impact**
  - The extent to which the practice addresses the challenges pointed out by the Regional Pig Innovation Groups (RPIGs);
  - Clear/obvious benefits/relevance to the industry;
  - Impact on cost of production on farm and/or provide added value to the farming business or economy;
  - The extent to which the proposed practice would result in enhanced technical expertise within the industry e.g. commercial exploitation, generation of new skills and/or attracting new entrants in to the industry;
  - Knowledge exchange potential from the proposed practice;

- **Exploitation/Probability of Success**
  - The relevance of the practice to each Member State (MS) or pig producing region/system;
  - Timeframes for uptake and realisation of benefits from implementation of the proposed practice are reasonable;
  - The extent to which there are clear opportunities for the industry to implement the practice/innovation;
  - Degree of development/adaptation of the practice to production systems of more than one MS;
  - Easily implementable by other farmers.
- **Innovation**
  - The extent to which the practice differs from existing approaches being used;
  - The extent to which the best practice can inspire other producers and/or allied industries;
  - The extent to which the practice has been tried and tested.

Scores must be in the range 0-5 (to the nearest full number). When an evaluator identifies significant shortcomings, he or she must reflect this by awarding a lower score for the criterion concerned. The guidelines for scoring is below (no half scores should be used).

<b>0</b>	The practice cannot be assessed due to missing or incomplete information.
<b>1 - Poor</b>	The practice is inadequately described, or there are serious inherent weaknesses.
<b>2 - Fair</b>	The practice broadly addresses the criterion, but there are significant weaknesses.
<b>3 - Good</b>	The practice addresses the criterion well, but a number of shortcomings are present.
<b>4 – Very Good</b>	The practice addresses the criterion very well, but a small number of shortcomings are present.
<b>5 - Excellent</b>	The practice successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

The selection of the top five best practices followed the procedure described below:

1. The Thematic Group (TG) leader filtered out any best practices that did not address the challenge(s) in question. These could either be removed from the

Grand Prix or sent to another TG leader (if the best practice was fitting the requirements of another call);

2. All members of the TG sent their scoring sheets to the TG leader;
3. The TG members provided brief comments to the first 10 practices they chose as best practices, as these comments facilitated the discussion about the first five;
4. The TG leader standardized all individual scores by calculating Z-scores;
5. The first 10 practices were ranked according to the average Z-scores of all participants of the TG. All other lower ranked practices were excluded;
6. The TG leader collected all the comments of the individual members of the TG for each of these 10 practices and sent them around to the TG;
7. In a dedicated meeting the TG discussed the results and finally decided on the top five good practices for each challenge based on the comments provided by the group.

## 4. EU PiG Best Practice

### 4.1. Validation of the top five best practices

The following top 5 best practices within the challenge of 'How to promote pork to consumers?' have been selected by the thematic group:

<b>Title of best practice</b>	<b>Country</b>
Porco Celta: extensive production system	Spain
Expression of the product: union of local breed, land and men (Ambassador)	France
Iberian production	Spain
Outdoor pig farm plus processing	Italy
Romagnola pig free range farming and processing	Italy

#### **Porco Celta: extensive production system**

The challenge was to recover and preserve a native breed (from Galicia) which is currently endangered: Porco Celta. It is characterized by its high rusticity which allows the animals to be adapted to the changing weather conditions in Galicia. We also wanted to rear the animals under traditional and natural conditions. Farms dedicated to the breeding of Porco Celta are usually small and produce in extensive conditions. They do not use artificial insemination. Piglets are usually nursed for an average 6 weeks and fattened up to 12 months. The carcass

weights are around 120-130 kg. The animals' diet is composed of a mixture of cereals, according to age and productive phase, which is supplemented with natural resources obtained from the land (pasture, scrub, fruits). Farms producing Porco Celta are distributed all around Galicia (Lugo has 50%). The 2 key points for a Porco Celta farm to be profitable are the establishment of good biosecurity measures and the provision of quality food. Link to website: <http://asoporcel.es/>

Prolificity: 8-12 piglets/ litter Average daily finishing growth from 0.5kg to 0.85kg/day. Standard Methods used to evaluate the % lean are not applicable to this breed. Alternatively, we classify carcasses according to the thickness of the dorsal fat, which ranges between 4 and 5cm in the optimal carcasses. The fattening period is higher: 12 months of age with carcass weights of 120-130 kg. Mortality: - Suckling piglets mortality: 5-10% - Weaning mortality: 2-5 % - Finishing pigs mortality: 1-5%. The feeding cost for finishing pigs is around 155euros/animal/fattening period. The handling is very simple and generally only one person is needed to take care of one farm. Regarding the facilities, the higher cost is always the perimeter closure of the plots which is essential to maintain a good biosecurity level. Cost associated with extra land. Prices: Piglet (<3 months): 90 €; Finishing pigs (9-12 months): 300-600 €; Sows 400 – 800 €; Boar: 450- 700 €. Obtaining differentiated pork products thanks to its quality and the way animals are bred: in a traditional and natural system. Moreover, the recovery of native breeds and traditional systems entails an important role in preserving the country's genetic heritage. Finally, for those consumers concerned about what they consume, this system offers products that respect both the environment and the animal welfare. The Porco Celta breed production System may be translated to other local breeds, with different environmental conditions, but with similar aims.

### **Expression of the product: union of local breed, land and men**

Breeders in the AOP (PDO protected designation of origin) Kintoa have chosen the specifications required to enable the production of a high value-added product, by protecting a living heritage (the Basque Pork breed), while preserving its territory (intermediate zone of mountains maintained, moors, forests, grasslands), and developing the activity on its territory: - Purebred animals - Extensive raising for more than 12 months - Non-GMO food from the geographical area of the PDO (70%) - Pastoral empties 2 to 4 months after each batch - Wooden shed integrated into the landscape - Valorization of natural resources - Slow growth of animals. Slaughtering at a minimum of 12 months, minimum carcass weight of 100 kg and minimum backfat thickness of 25 mm. KINTOA PDO meat is a deep red meat, very marbled (content of intramuscular lipids > 6% in the loin), a white fat, a silky touch. After cooking, the meat is tender and juicy. The requirement of the specifications allows the production of a quality product and a good valuation of the carcass price paid to the farmers. In 2017, the average price was € 3.69 / kg carcass. The price scale can go up to 4.07 € / kg and an annual increase estimates a carcass price in 2020 of 4.35 € / kg. Creation of wealth for the rural territories through the Protected designation of Origin.

## Iberian production

The Iberian Pig breed is an Iberian native breed with a high fat deposition ability, high quality products and rusticity. We work with genetics of 75-100% pure Iberian. The production system used is: Sows are kept under natural conditions. Natural service is used (1 boar/7 sows) and after the service, sows are moved to the farrowing facilities provided with heating systems. When piglets are 28-30 days old, they are weaned and moved to weaning rooms for 30-40 days. Next, they are fattened in pens in the field fed with cereals until they are moved to the fields under extensive conditions (July). In autumn, the animals take advantage of the natural resources of the “Dehesa”, such as acorns, for 3 months until they reach 170 kg. This final stage of the fattening period is called “Montanera”. Advantages are: differentiated quality product with a high IM fat; conservation of a native breed; production system based on natural resources, animal welfare, and reduction of antibiotics. Production costs are higher: - A worse fattening conversion ratio: 50%. - Piglets weaned per sow: 6,5-7. - Litter per sow: 2 litters/year. The equipment and bedding costs are lower than the conventional ones. The land (Dehesa) rental used for the fattening period costs around 4000 € (for 60 fattening pigs during 3 months). The price received in 2019 was 3,04 €/Kg of liveweight. Price is much higher than for conventional pigs there is a System of labelling the product (there is a National Regulation on how to label the pig products obtained from Iberian pigs). Meat quality schemes can be implemented in other countries in which consumers appreciate differentiated products, using local breeds and local nutrition. The same System as Iberian pigs should be modified according to the environment and market of each country.

## Outdoor pig farm plus processing

The owner began to farm a few pigs outdoor 28 years ago as a hobby and then he gradually increased the number of breeding sows, the land availability for pasture and the pork production. At the moment he keeps 90 sows and 4 boars of different native and commercial breeds: Cinta Senese, Mora Romagnola, Nero Siciliano and Duroc. Finishing pigs are crossbred with the purpose of getting rustic pigs, adapted to outdoor conditions, and good quality of the pig carcass and meat for processing it into traditional cured cuts and products (i.e. ham, loin, belly, salami). Pigs are slaughtered at the live weight of 180 kg at an age of 15-18 months. Most slaughter pigs (70%) are sold to a contracted company for producing high quality processed pork products; the rest (30%) of the slaughter pigs are processed on farm in a small processing plant and sold on farm or in local markets. Pig performance of Cinta Senese crossbred are much lower than those of commercial breed and hybrids. 90 sows in the Borghi farm produce around 1.200 pigs per year slaughtered at an age of 15 to 18 months at the live weight of 180 kg. Most pigs are sold at the contracted price of 4 €/kg of live weight, much higher than commercial pigs due to sow's lower productivity, slow growth and higher feed conversion rate. Feed for pigs is partly produced on farm (cereals) and partly bought on the market. Higher production costs are offset by the market price. Pigs are slaughtered in two small local slaughterhouses. The income from the sale of a live pig 180 kg heavy is 720 € although it can be doubled if the meat is processed on farm and sold on farm and/or in the local market (i.e. farmer markets, co-purchasing groups). This is an example for other

European pig farmers/processors of crossbred pigs based of local native breeds, reared outdoor in order to obtain good pork carcass and meat to be processed into optimal cured pork cuts and salami.

### **Romagnola pig free range farming and processing**

Cà Lumaco farm started in 2003 to produce free range pigs of the Romagnola native breed. Before that time the activity of the owner was pig processing to produce traditional cured pork cuts and salami. The introduction of a Romagnola free range farm was directed to obtain the possible highest quality of meat for high processed pork. To this end a first piece of land was fenced and equipped with a hut, manger and drinkers to keep a sow and its litter. The main lesson learnt concerns the high quality of the meat of Romagnola pig reared outdoor and fed with cereals corn, barley, wheat bran, soya bean, fava beans, chestnut and acorn. Unfortunately, the pig performance are much lower those of commercial breeds. Fertility and prolificity are low (5-7 piglets/sow per birth) and piglet mortality also is very high due to the cold climate in several months a year. In 2017 Cà Lumaco has produced around 400 pigs. 335 piglets have been slaughtered at 8 kg of live weight and sold at the very high price of 200 €/piglet. Other 65 pig have been slaughtered at a live weight of 180-200 kg and an age of 22-22 months and have been processed into traditional cured meat and salami. The ham is cured for 3 years and sold deboned at a price of 80-85 €/kg. This is an example for other European pig farmers and processors of pigs of a pure local breed, reared outdoor about what are the advantages and disadvantages of this type of activity.

## **4.2. Cost and benefit analysis of the EU PiG Ambassador**

The pig farmers in in the PDO (PDO protected designation of origin) area of Kintoa have established a product specification required to enable the production of a high value-added product by protecting a living heritage (the Basque Pork breed), while preserving its territory (intermediate zone of mountains maintained, moors, forests, grasslands), and developing pig raising activity on its territory. The main characteristics of the product specification are:

- The breeding of pure Kintoa pigs;
- Extensive raising for more than 12 months;
- No-GMO feed produced within the protected area of the PDO (at least 70%);
- Pastoral empties of 2 to 4 months after each batch;
- Wooden shed integrated into the landscape;
- Slow daily growth of animals as pigs are slaughtered at a minimum of 12 months, at a minimum carcass weight of 100 kg and with a minimum back fat thickness of 25 mm.

Kintoa PDO pig meat is a deep red meat, very marbled (content of intramuscular lipids > 6% in the loin), a white fat and a silky touch. After cooking, the meat is tender and juicy.

The requirement of the specifications allows the production of a quality product and a good valorisation of the carcass through high prices paid to the farmers. In 2017, the average price

was € 3.69/kg carcass and the estimates for 2020 of 4.35 €/kg. The pig herds are in general very small and the farms are highly diversified and do not rely exclusively on pig farming. In the entire Kintoa area 19 farmers raise altogether 500 sows and 50 farmers raises 3,800 finishing pigs. The average number of pigs per farm is about 25-30 sows and 120 – 160 finishing pigs. The farms dispose of about 35 ha of pasture and 25 ha of forests.

With respect pigs raised in conventional intensive farms the small pig farms in the Kintoa area have completely different technical results of sow herd. The number of piglets weaned per litter is 6.5 against 12.15 in the intensive pig farms and the number of litters per sow is 1.80 compared to 2.34. These basic differences are reflected in all other technical performance indicators by comparison to Brittany France References.

	Brittany	Kintoa
Pigs weaned per sow/year	28,49	11,70
Pigs reared per sow/year	27,69	11,37
Pigs sold per sow/year	26,62	10,93
Pigs weaned per litter	12,15	6,50
Litters/sow/year	2,34	1,80
Pigs born alive per litter	14,2	7,6
Pre Weaning Mortality (%)	14,5%	14,5%

As the finishing pigs are concerned, the Kintoa pigs belong to a slow growing breed and meat is maturing up to an age of at least 12 months. The table below shows the major differences with the conventional intensive pig farms in France.

	Brittany	Kintoa
Finishing Daily Liveweight Gain (g/day)	803	406
Finishing Feed Conversion Ratio	2,75	3,90
Ave number of days in finishing unit, (calculated)	112	270
Average live weight at slaughter (kg)	120,3	140,0

The average daily gain of the Kintoa pigs is just over 406 grams a day compared to 803 gr/day of the conventional intensive pigs. Also the feed conversion rate is significantly different, using much more feed to produce one kg of meat in particular in the last months of life of the Kintoa pigs. These major differences have a very relevant impact on the production costs. According to the calculations these are 64% higher. The major differences are due to the higher feed

costs, which can be attributed to the longer production cycle. Also the other cost items are higher due to the same reason. However, the much higher finisher pig price more than compensates the higher production costs. At the end the small Kintoa pig farmers makes a net profit of 0,58 € per kg live weight, whereas their colleague pig farmers make a loss of -0,08 €/kg.

	Brittany	Kintoa
Feed, (Euro/kg live weight)	0,67	1,03
Other variable costs, (Euro/kg live weight)	0,20	0,34
Labour, (Euro/kg live weight)	0,10	0,18
Finance cost, (Euro/kg live weight)	0,16	0,30
Total costs (Euro/kg live weight)	1,13	1,85
Net profit (Euro/kg live weight)	-0,08	0,58

It is evident that the high prices of Kintoa pigs are achieved on a niche market characterized by very small volumes of meat. Only a small number of consumers is willing to pay high prices for meat of this specific pig breed. Anyhow, for the farmers in the Kintoa area it is a highly profitable business, that can however not easily be up scaled to large volumes of pig meat. It is an example of income generation in less favoured areas which contributes to the local economy and to the local employment in rural areas.

### 4.3. Expert Analysis

The experts of the Thematic Group Meat Quality agree with the opportunity for small scale pig farms to differentiate their production for niche markets, through high value-added pork, originating from local native pig breeds. The practice that was selected as Ambassador meets the criteria of being innovative, farmer managed and proactive in proposing high quality PDO pork in both preservation of rare pig breeds and local heritage and territory, as an alternative to commercially produced pork.

### 4.4. Conclusions and Advice to Industry

In this final paragraph we provide some advice on tips that pig farmers may take in to account for being competitive in small-scale farming in developing a niche-market for pork, from local rare pig breeds:

- The majority of rare pig breeds are less productive but the taste quality of their meat has been acknowledged as different and higher compared to commercial pork;



- Extensively/outdoor farmed pigs of rare breeds, may be profitable and contribute to the local economy and to the local employment in rural areas with marginal land;
- PDO specification may help to certify and guarantee the quality of pork from rare breeds although it can be a burden to the quick development of a business in areas where PDO is still to be set up.
- Convert to a niche market segment with higher requirements as to animal welfare and environment is an alternative option that pig farmer may consider to protect their business from pork price volatility.

Analysis of cost and benefits for extensively produced pigs of Kintoa breed, according to PDO specification, shows that this is an example of income generation in less favored areas which contributes to the local economy and to the local employment in rural areas. This niche market is characterized by very small volumes of meat which only a small number of consumers is willing to pay its high price. Anyhow, for the farmers in the Kintoa area it is a highly profitable business.

## 5. The Future

In general, the technological innovation for small-scale pig farms developing niche markets for pork from pig rare breeds, is rather complex. It mostly relates to:

- Farming practices to obtain good enough productive performances, that are usually much lower than those of commercial breeds;
- To organisational innovations between alternative supply chain for processing, marketing and customers
- And also to marketing innovations whenever pork sale is performed totally or partly by the farmer.

Despite this complexity, the innovation of this business consists in the possibility offered to the pig farmer to produce income on a small scale and to keep his business protected from raw pork price volatility.

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