

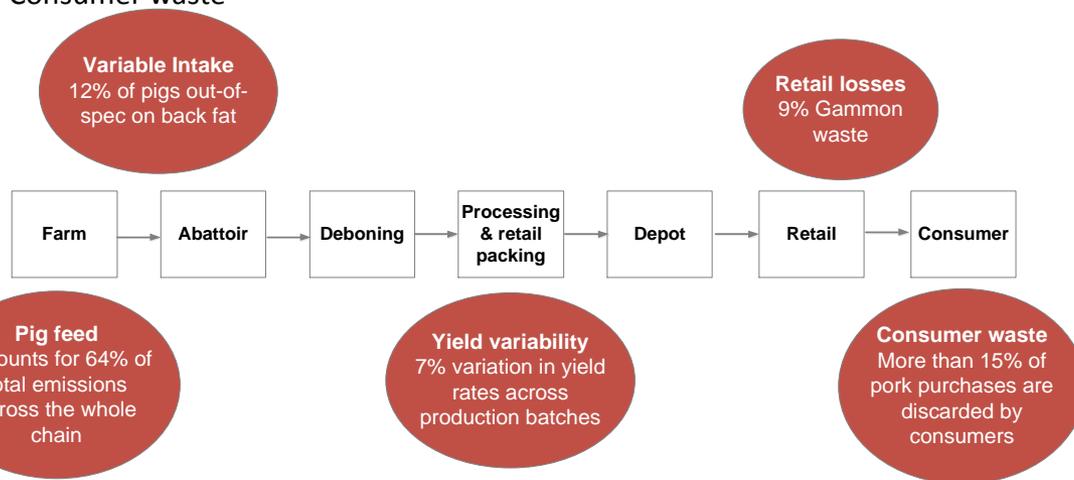
Collaboration in the pork supply chain saves £395,000 and identifies further opportunities



Whole chain collaboration between Co-operative Food and its pork supplier, Tulip, has delivered declared annual retail savings of £395,000 – and identified significant further opportunities. These benefits were realised following an examination of the value chain, from the farmers who rear pigs to the households that consume the bacon and gammon products. The aim was to pinpoint ‘hotspots’ of material use, GHG emissions, water and waste - and then to find ways of using less resources without compromising commercial performance.

This case study focuses on 5 of the hotspots identified and highlights successes and good practices:

- GHG emissions from the production of pig feed
- Out-of-specification pigs at intake
- Yield variability in bacon processing
- Retail losses on gammon; and
- Consumer waste



Identified solutions and opportunities include:

- ✓ Supporting best production practices through the Co-operative Food’s Pork Producer Group
- ✓ Increasing quantities of food co-products used for feed
- ✓ Reviewing the impact of intake variability
- ✓ Maintaining consistency in packing lines
- ✓ Conducting regular product range reviews
- ✓ Reviewing product life protocols and pack innovations

Introduction

Pig Feed	Variable Intake	Yield Variability	Retail Losses	Consumer waste	Project Method
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GHG emissions from the production of pig feed

This is a much recognised hotspot for the UK pork sector and Figure 1 shows that much work has already been done to reduce emissions associated with feed by nearly a third. The sector has achieved this by adopting the following best practices:

- Reduced use of soyabean meal;
- Increased use of food & drink co-products in rations;
- Reduced protein content in feed; and
- Improved feed utilisation.

Opportunities for further reductions include:

1. Reducing feed waste – An AHDB-Pork (formally BPEX) bulletin flags that as much as 5-20% of pig feed can be wasted on farm¹. Defra reports that c. 1.8m tonnes of feed is supplied to the GB pig sector². *At £237 per tonne in 2015², this was costing British farmers between £21-85 million per year.*

AHDB–Pork reports that the main causative factors are: faulty bins (caking); manual transfer of feed; faulty pipes; faulty feed troughs; and vermin/birds. Poor feed conversion ratios also represent a waste of feed, through inefficiency.

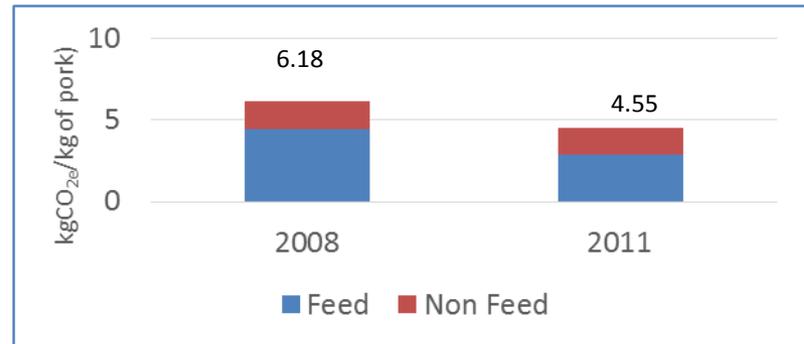
AHDB-Pork provides information and support for producers on efficient production and improving feed conversion ratios – as well as providing training programmes on specific topics, such as rodent control. <http://pork.ahdb.org.uk/>

1. AHDB – Pork Knowledge Transfer Bulletin 9: Feed Efficiency, On-farm checks

2. Defra Animal feed Statistics 2015 -

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/432180/animalfeed-statsnotice-07may15.pdf

Figure 1: Greenhouse gas emissions from pig rearing (per kg of pork)



Source: AHDB-Pork (2014) *An update on the roadmap for the English pig industry*

At present, the Co-operative's supply chain is engaging with pork producers through the Co-operative Food's Producer Group. This project has identified an enhanced role for this group - providing the basis through which best practice could be communicated and/or KPIs tracked.

2. Increased use of food & drink co-products in feed – The industry uses about 40% co-products at present – including by-products (such as wheat meal) and former foodstuffs/ surplus food, originally intended for human consumption. But there are current limitations to the amount producers are able to secure. Although some sectors of the food and drink industry have a long history of diverting appropriate co-products to the feed sector, there is still more that can be done. WRAP is working with businesses to help them overcome barriers, and realise significant commercial benefits <http://www.wrap.org.uk/content/foodredistribution>

Out-of-specification pigs at intake

The study found a very strong correlation between pig weight and the % of the pigs falling outside specification on back fat (>14mm) (Figure 2). For example, over 25% of the pigs over 95kg were out of spec on back fat and 43% of pigs over 100kg.

- From an environmental perspective this suggests a potential inefficiency in the conversion of feed to meat.
- From a farmer's perspective, lower feed conversion to meat, and higher levels of back fat, results in higher feed costs and lower revenues, since there is a price penalty for producing out of spec pigs.

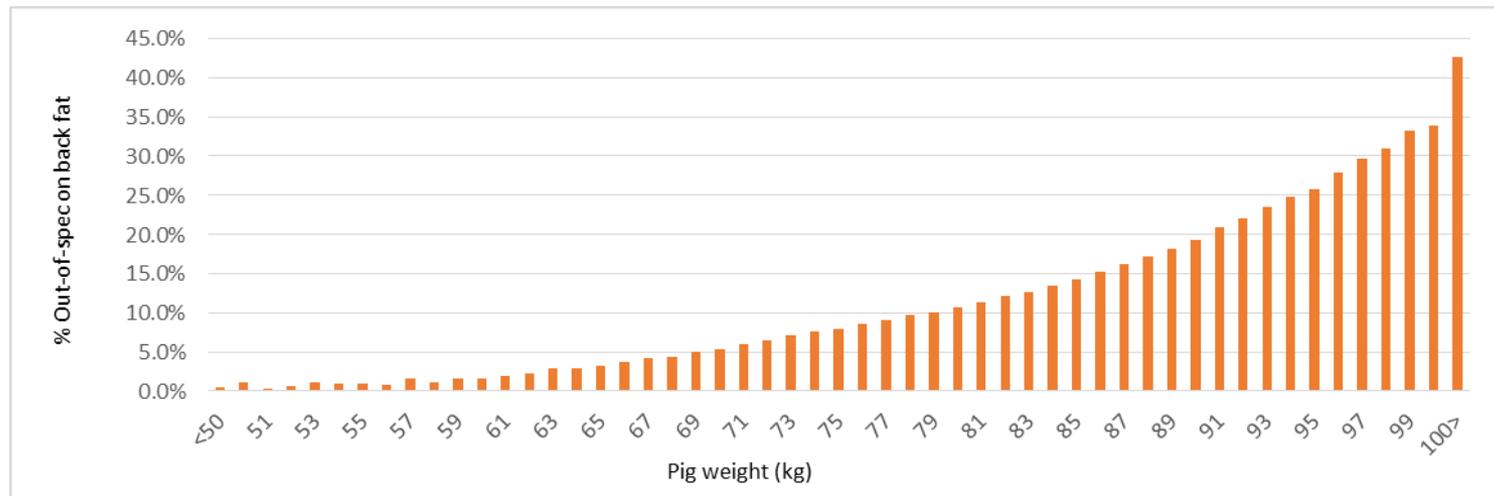
Solutions

A benchmarking exercise undertaken as part of the study showed that a few individual batches accounted for a high percentage of the out of spec pigs.

Co-operative Food's Producer Group could again be a good mechanism through which to communicate and benchmark best practice – for example, identifying what the good performing farmers are doing that should be replicated.

WRAP is undertaking further work to quantify the commercial impact of intake variability - to help communicate its significance.

Figure 2: Correlation between back fat and weight



Data source: Tulip Ltd

Yield variability in bacon processing

A review of 6 weeks' production data from the Tulip Redruth site showed high levels of fluctuation in raw material yield rates across bacon production runs. Figure 3 shows the results from the top 5 stock keeping units (SKUs) that account for more than 80% of sales volume. This shows that yield rates can fluctuate significantly – up to more than 10%.

Yield losses can either result in no revenue (in the case of losses through giveaway), or a reduction in revenue (e.g. in the case of downgrades).

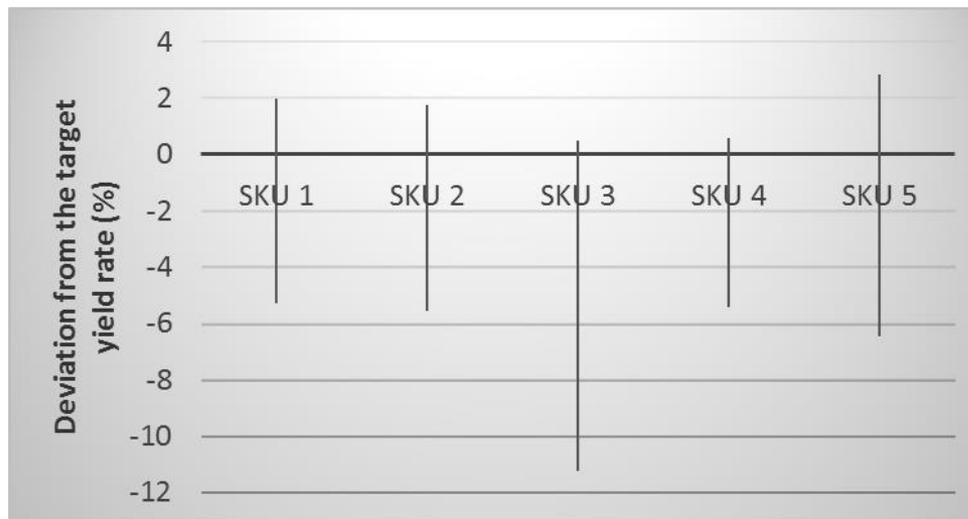
Additionally, the lack of predictability in yield rates can cause significant issues in production planning and scheduling leading to over- or under-production.

Solutions

The first phase of tackling this issue was to ensure that the variability was being captured and not causing inconsistency in final products.

This was achieved through a programme of re-training the inspection staff, and introducing a Red/Amber/Green performance tracker to monitor the performance of each production run - covering yield rate, giveaway and throughput KPIs.

Figure 3: Fluctuation in raw material yield rates for bacon production for the top 5 stock keeping units



Data Source: Tulip Ltd – Redruth

The ongoing second phase of work is to undertake a root cause analysis to determine the most significant causative factors of yield variability.

Potential causes include :

- The presses not working efficiently, causing non uniformity of loins;
- Inconsistency in the size of production runs, with short runs causing start up and run down losses to be more significant; and
- Intake variability/out-of-spec intake (discussed earlier) leading to additional processing or downgrades.

Retail losses on gammon

A review of the historic data on retail losses (markdowns and wastage) on gammon and bacon over a one year period highlighted the significant difference in performance of the two product categories. Figure 4 shows that the losses in bacon represented 1.8% of sales value and for gammon this was 9%.

Solutions

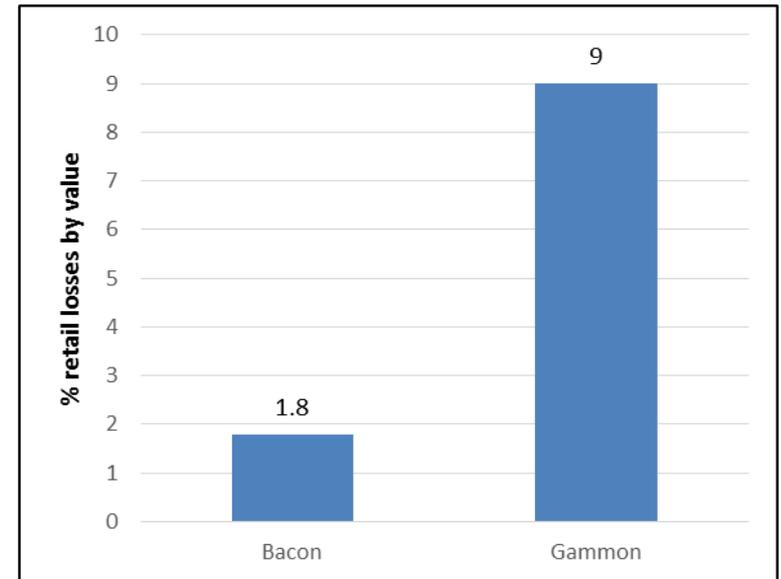
Since this initial analysis, Tulip and Co-op have undertaken a comprehensive review of the gammon and bacon category.

This included:

- A product rationalisation exercise to identify and delist the underperforming products (high waste, low sales SKUs);
- Range reviews in each store/cluster. This was particularly beneficial in the review of gammon joints, where demand is strongly correlated to store demographics; and
- A review of case fills. Co-operative Food's estate is made up of various sized stores, with varying demand for products. The review was undertaken to ensure that case fills were ideally matched to all store formats.

As a result of this review, annual retail losses in gammon have been cut by **£360,000** and in bacon by **£35,000** representing an overall saving of **£395,000**.

Figure 4: Retail losses of bacon and gammon



Data source: Tulip Ltd & The Co-operative Group

Consumer waste

A recent study by WRAP found that more than 15% of pork purchases are discarded by consumers*. For bacon, this equated to 21,000 tonnes – or >£100m (based on conservative retail price of £5/kg).

This is both a significant waste of resources, and cost to householders. And evidence suggests that consumers care about this waste. Asda's Green Britain Index 2015, for example, found that 71% of customers stopped purchasing a product because they had previously wasted it. Food waste is increasingly of media and political interest too, and there is a real opportunity for businesses to take action, be prepared, build brand value and gain a competitive advantage.

Solutions

There are a number of ways that food manufacturers and retailers can help consumers prevent waste. For example:

- Challenge 'product life' protocols - like historic quality & safety parameters. WRAP research has shown that improving life by just 1-day is feasible in most cases and can improve availability and sales, as well as realise bottom-line savings.
- Improve flow through the supply chain to make more life available to consumers, with the same benefits.
- Ensure consistent use of date codes & storage guidance
- Look at product & pack innovations.

More information:

* http://www.wrap.org.uk/sites/files/wrap/Product-focused%20report%20v5_3.pdf

<http://www.wrap.org.uk/content/concept-consumer>

<http://www.wrap.org.uk/content/reducing-food-waste-extending-product-life>

Tulip and Co-operative Food have both been taking a number of actions to help reduce consumer waste. For example, offering a range of different pack sizes to cater for the varying size of households; and introducing a re-sealable packaging system.

Figure 5: Re-sealable packaging to help prevent food waste



The Co-operative Food has also been going through a process of retesting the product life for all their protein products and has found that it is possible to add 1-3 days without compromising product safety or quality. The protocols for testing the product lives of meat and fish are historic and a review of labelling on mince, necessitated because of changes in EU labelling regulations, led The Co-operative Food to review these protocols. This approach is now being extended to cover all protein categories – and is **anticipated to save over £1 million**.

<http://www.wrap.org.uk/node/22795#Own>

WRAP has guidance, templates and support available for other businesses wishing to similarly review their product life protocols.

This work will continue with signatories to Courtauld 2025

<http://www.wrap.org.uk/content/courtauld-commitment-2025>

<http://www.wrap.org.uk/content/reducing-food-waste-extending-product-life>

<http://www.wrap.org.uk/content/food-waste-prevention-digests-and-webinars>

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Project Method

A 'lean' approach enabled the team to look strategically at resource use across the whole chain. Value-stream mapping was used to follow all the stages of the value chain, detailing levels of resource consumption, waste and other losses.

We have a longstanding track record of working collaboratively with our client the Co-operative Food Group and were pleased to work with WRAP in reviewing the whole supply chain using a systematic approach. This reinforced the need to tackle a number of opportunities that we were aware of, and identified a number of new opportunities.

Adrian Blyth, Commercial Director, Tulip



The work has highlighted the key resource impacts associated with pork production and in doing so identified a significant new role for the producer group that we set up with Tulip.

Ciara Gorst, Senior Agricultural Manager, Co-operative Food Group



By walking the whole supply chain, identifying root causes of losses and inefficiencies, and then brainstorming solutions, the whole team were able to identify and agree on opportunities to improve efficiency and productivity for all.

Andrew Wright, Corporate Responsibility Manager, Tulip



These projects are undertaken to inform and to benefit the whole of the sector. For more information on the approach and the potential to work with your business, please contact karen.fisher@wrap.org.uk



WRAP's vision is a world where resources are used sustainably. It works in partnership with governments, businesses, trade bodies, local authorities, communities and individuals looking for practical advice to improve resource efficiency that delivers both economic and environmental benefits.

Our mission is to accelerate the move to a sustainable resource-efficient economy through:

- re-inventing how we design, produce and sell products,
- re-thinking how we use and consume products, and
- re-defining what is possible through recycling and re-use.

First established in 2000, WRAP is a registered charity. WRAP works with UK Governments and other funders to help deliver their policies on waste prevention and resource efficiency.

WRAP is a registered Charity No. 1159512 and registered as a Company limited by guarantee in England & Wales No. 4125764. Registered office at Second Floor, Blenheim Court, 19 George Street, Banbury, OX16 5BH.

Find out more about our work www.wrap.org.uk

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