Packaging optimisation for whole, fresh chicken

An investigation into the scope to reduce the amount and weight of packaging used to pack whole, fresh chicken and to extend the product shelf life helping to reduce household food waste.
WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.

**Project team:** Somerfield, Adare, 2 Sisters Food Group, Ulma Packaging, Sealed Air (Cryovac) and MSS Research

**Front cover photography:** New whole, fresh chicken pack developed through this project.
Executive summary

Following the success of a previous WRAP project to reduce the tray weight for chicken portions\(^1\), this project aimed to deliver innovation within the fresh meat category by reducing the weight of whole, fresh chicken packaging whilst maintaining, and ideally enhancing, shelf life. A radical change was envisaged from the standard packaging format (tray, moisture pad, film over-wrap and label), which required overcoming barriers to change in terms of production line capabilities, conversion costs and consumer acceptability.

Working together with Somerfield, Adare\(^2\), 2 Sisters Food Group\(^3\), Ulma Packaging\(^4\), Sealed Air (Cryovac)\(^5\) and MSS Research, this project investigated moving to a flexible packaging format for whole, fresh chicken with no tray and considered ways to extend the product shelf life.

To start, a market review was conducted to provide an indication of existing packaging formats within the fresh meat category and emerging trends. Detail from this review is given in the introduction to this report and formed the basis for the functional design element of the project. The review found a range of reduced-weight, ‘bagged’ packaging formats for whole and portioned meat products, which suggested that an extension of this packaging format to whole, fresh chicken would be successful.

The functional design stage of the project included generating initial pack design ideas and label specifications. A shortlist of design ideas was compiled by the project team, which sought to understand the positive and negatives of each of the designs and their success parameters. It was key to ensure that there were no detrimental effects on pack quality, product quality, shelf life or sales volume.

One design was chosen to go forward to the prototyping and consumer testing stage. The successful design comprised running a flexible, high-barrier shrink film from Sealed Air (Cryovac) along a horizontal flow-wrapper machine from Ulma Packaging; no plastic tray was required. Using printed film, with variable data over-printed on-line, also negated the need for self-adhesive labels. Together these changes led to a weight saving per pack of 15.5g, equivalent to 76%. The potential weight saving per annum across the grocery market for medium, fresh chicken based on this saving per pack is estimated at ca. 340 tonnes. Applying this weight saving to all sizes of whole chicken, gives a total market weight saving opportunity of ca. 1,700 tonnes per annum (accepting that some other formats exist such as ovenable foil trays and that savings will differ for smaller and larger products)\(^6\). The solution also delivered an extended shelf life of up to two days, giving consumers longer to eat the product and therefore helping them to reduce food waste.

Packing lines applying flow-wrap to whole birds are set-up in such a way as to use the rigid tray to efficiently progress the chicken through the packing operation. Therefore, any move to a format that does not use a tray requires a fundamentally different packing line set-up. The challenge addressed by this project was to identify a way of technically achieving the required pack format with a commercially viable justification in terms of capital outlay and return on investment. The investment cost per line for the new machinery is in the region of £140,000; the savings made from reducing the packaging weight and changing from permeable unprinted film to printed high barrier film could result in a payback of between two and three years.

\(^1\) Reduction of Retail polypropylene tray weights, WRAP, March 2007. See: http://www.wrap.org.uk/retail/case_studies_research/faccenda.html
\(^2\) Adare is a leading, international provider of marketing and customer communications solutions.
\(^3\) 2 Sisters Food Group are a major European food company supplying poultry products to the retail, food service and food manufacturing sectors.
\(^4\) ULMA Packaging is a specialist in packaging equipment and services, currently focused on a wide market diversity, through seven product lines: Flow Pack, Thermoforming, Traysealing, Vertical, Shrink, Stretch Film and Sleeve Wrapping.
\(^5\) Sealed Air (Cryovac) is a leader in materials science technology providing custom solutions, primarily for food, protective and specialty packaging, to many essential consumer and industrial markets.
\(^6\) Estimates based on sales of 23,000,000, 1.5-1.9kg fresh whole birds and 105,353,624 total fresh whole birds sold in the UK market, sourced from WRAP’s Packaging Benchmark data 2008.
Clearly the main success factor is consumer acceptance of the new pack; to give the partners confidence that this change of format would not adversely affect sales. Therefore, MSS Research was contracted to undertake two focus groups to gauge and assess consumer reaction to the new trayless packs. During the focus groups, the new pack was received very positively with no adverse reactions to the removal of the tray. Consumers were quick to realise the two key benefits of the new pack: more ‘environmentally friendly’ packaging and a fresher, longer-life product.

Following successful packing trials and positive feedback through the focus group research, limited in-store trials were carried out to ensure that the new packaging format performed through the supply chain and was accepted by consumers, with no loss of sales. The packs were trialled through the standard Somerfield supply chain, including through a regional distribution centre (RDC) and went into stores in Corsham and Malmesbury. Over the period, the trial stores’ percentage of medium chicken sales remained flat, indicating that the new pack performed as well as the standard packs during the trial.

Having taken over this project with the Somerfield acquisition, The Co-operative is currently investigating this new trayless format for the Co-op brand. Other major retailers are showing strong interest in the format (which is not exclusive to 2 Sisters or The Co-operative) It is hoped that this project will lead to other retailers and processors \
packers evaluating and implementing this and similar technology, to deliver real consumer and business benefits.
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1.0 Introduction

1.1 Market background

The UK market for meat and poultry is currently worth £24 billion, the largest and most important food sector with a 22% share of total consumer expenditure\(^7\). Chicken is by far the most popular poultry meat, probably because of its versatility as a food and the fact it is easy to add a wide range of flavours to.

The UK is estimated to be the second biggest poultry producer in the EU after France, producing in the region of 1.5 million tonnes of poultry meat a year (Table 1). Every year the UK poultry meat industry rears over 850 million chickens, 20 million turkeys, 19 million ducks, and around 100,000 geese\(^8\).

<table>
<thead>
<tr>
<th></th>
<th>Home Fed Production ('000 tonnes)</th>
<th>Imported ('000 tonnes)</th>
<th>Exported ('000 tonnes)</th>
<th>Total New Supply ('000 tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,514.32</td>
<td>355.22</td>
<td>173.72</td>
<td>1,695.82</td>
</tr>
<tr>
<td>2001</td>
<td>1,565.94</td>
<td>345.92</td>
<td>186.61</td>
<td>1,725.25</td>
</tr>
<tr>
<td>2002</td>
<td>1,556.66</td>
<td>366.11</td>
<td>213.65</td>
<td>1,709.12</td>
</tr>
<tr>
<td>2003</td>
<td>1,578.08</td>
<td>411.78</td>
<td>259.93</td>
<td>1,729.94</td>
</tr>
<tr>
<td>2004</td>
<td>1,571.07</td>
<td>476.45</td>
<td>267.86</td>
<td>1,779.66</td>
</tr>
<tr>
<td>2005</td>
<td>1,584.98</td>
<td>484.24</td>
<td>261.31</td>
<td>1,807.91</td>
</tr>
<tr>
<td>2006</td>
<td>1,516.31</td>
<td>451.46</td>
<td>233.49</td>
<td>1,734.27</td>
</tr>
<tr>
<td>2007</td>
<td>1,459.24</td>
<td>460.99</td>
<td>293.58</td>
<td>1,626.65</td>
</tr>
<tr>
<td>2008</td>
<td>1,429.73</td>
<td>406.50</td>
<td>278.20</td>
<td>1,558.03</td>
</tr>
</tbody>
</table>

Source: E&W Hatcheries Survey, DARD and RERAD
Available at: https://statistics.defra.gov.uk/esg/datasets/poulpsq.xls

According to Mintel\(^9\), the poultry market is dominated by chicken at 85% share with turkey and other poultry (duck and goose) making up the remaining 13% and 2% respectively. Total chicken has seen value growth of +6.6% vs +0.4% for volume, increasing price per kg from £2.14 to £2.27.

Within chicken, whole birds have seen growth of +6.7% and an uplift of +11.5% from fresh vs. a 15.5% decline in frozen. This reflects the transference across these sectors and also a wider trend of premiumisation within the category as growth in free-range and, to a lesser extent, organic whole-bird trade has boosted the value of fresh-bird sales. Fourteen per cent growth in cooked, whole chicken is supported by rotisserie chickens sold at supermarket deli counters and butchers’ shops. This data is shown in Figure 1.

\(^7\) www.foodmarketreports.com/published-reports/report/21.html
\(^8\) www.poultry.uk.com
\(^9\) Mintel 'Poultry and Game Meat’ July 2008
Source: WRAP, data from Mintel ‘Poultry and Game Meat’ July 2008
Bracket illustrates that ‘whole’ is broken down into fresh, frozen and cooked.

1.2 Current packaging formats

The UK retail market for fresh chicken (whole birds and portions) is currently dominated by tray packs. This packaging involves a plastic tray usually made from PET or Polypropylene, moisture pad (sometimes integrated into the tray), film and labels. Given the difficulty in collecting and recycling meat packaging, almost all of this packaging ends up in landfill.

Some retailers already sell niche whole chicken products (such as organic or free range) and other fresh poultry lines such as geese, turkey and duck in flexible packaging, which are generally wicketted polythene bags. In the frozen category, most products are also sold in bags. Given this format is already within the category, it did give the project team confidence that the new format would be acceptable to consumers.

There has been some movement away from tray packs for chicken portions, where a “To Freeze at Home” pack (Figure 2) is often merchandised in flexible packaging. This is made up of a number of individually wrapped chicken portions contained in a printed outer bag.
The red meat sector has also seen some innovation in skin and vacuum packs (Figure 3), but the vast majority of packaging in the meat and poultry category is still based on the use of tray pack formats.

**Figure 3** Marks and Spencer Vacuum meat joint ‘skin pack’ which keeps the meat at its optimum quality but cuts down the packaging by 69%.
2 Sisters Food Group currently use a tray, film and label for Somerfield fresh whole chicken (Figure 4). The weight profile of the current pack format is shown in Table 2.

**Figure 4** Current whole chicken packs.

**Table 2** Weight profile of the current pack format

<table>
<thead>
<tr>
<th>Somerfield Products</th>
<th>Current packaging weights per whole chicken (Actual, g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Medium Whole Bird</td>
<td>20.0</td>
</tr>
<tr>
<td>Large Whole Bird</td>
<td>30.0</td>
</tr>
<tr>
<td>Extra Large Whole Bird</td>
<td>30.0</td>
</tr>
</tbody>
</table>

*Note: no product weight guidelines were provided by Somerfield for the sizes listed.*

1.3 **Trends in fresh poultry**

The current trend appears to be towards convenience, where consumers can, for example, place a whole chicken still in its packaging straight into the oven, without any handling of the raw product. Figure 5 shows an example of this new format using an oven-ready foil tray, and Figure 6 an ovenable PET bag. This approach has an appeal to consumers, who are always looking for total convenience solutions. Similar trends can be seen for fish, with the launch of Bird’s Eye’s ‘Simply Bake to Perfection’ range using their Bake Perfect Bag™.
Aside from convenience aspects, some retailers are now starting to use PET dome packs, such as those used at Christmas and Easter for Fresh Turkey Crowns (Figure 7). These packs can be made from r-PET, but a dome pack for a fresh whole chicken can weigh considerably more than a Polypropylene plastic tray, so this approach, whilst perhaps improving product positioning and improving product presentation, adds to the weight of poultry packaging being used.
Figure 7 Sainsbury’s turkey dome pack.
2.0 Aims and objectives

This project aimed to deliver innovation within the fresh meat category through reducing packaging used for whole bird products whilst maintaining, and ideally enhancing, shelf life. A radical change was envisaged from the standard packaging format (tray, moisture pad, film over-wrap and label) delivered in such a way as to overcome any barriers to change in terms of production line capabilities, conversion costs and consumer acceptability.

Specific project objectives included:

- To develop a single layer, lightweight packaging format for fresh meat, replacing the typical polypropylene or polystyrene tray, film over-wrap, moisture pad and label for whole fresh chickens and chicken portions.
- To set a new ‘packaging benchmark’\(^\text{10}\) for lightweight packaging within the category.
- To at least maintain, and ideally extend, product shelf life through developing a lightweight pack capable of use with modified atmosphere (MA).
- To undertake consumer acceptability testing on the new packaging formats developed.
- To undertake filling line and distribution tests.
- To work with other retailers and the meat industry to cascade the new format (and its environmental benefits) across the sector.

\(^{10}\) Packaging benchmark was formerly called ‘Best in Class’.
3.0 Technical trials

3.1 Objective

The principal objective for the trials was to assess the performance of the new equipment in a production environment, along with confirming that the shelf life, pack appearance, printed film registration, date code printing and wastage levels were all acceptable. It also enabled trayless whole birds to be supplied to Somerfield for the store trial (Section 5 of this report).

3.2 Appraisal of lightweight formats

A number of lightweight formats were considered for trial and their relative merits are summarised in Table 3.

Table 3 Relative merits of lightweight formats considered

<table>
<thead>
<tr>
<th>Issue</th>
<th>Sealed bag format</th>
<th>Vacuum pack</th>
<th>Wicketed bag</th>
<th>Gas-flushed high barrier shrink film</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Lightweight format</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Packing line speed</td>
<td>45 per minute</td>
<td>40+ per minute</td>
<td>20 per minute</td>
<td>40 per minute</td>
</tr>
<tr>
<td>Machine feeding</td>
<td>Automatic</td>
<td>Automatic</td>
<td>Semi-automatic</td>
<td>Automatic</td>
</tr>
<tr>
<td>Investment cost</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Packaging material</td>
<td>Widely available</td>
<td>Limited suppliers</td>
<td>Widely available</td>
<td>Limited suppliers</td>
</tr>
<tr>
<td>Shelf life benefit</td>
<td>Same as current tray pack (no benefit)</td>
<td>Good – high barrier</td>
<td>No</td>
<td>Good – high barrier allows gas flushing (+2-4 days)</td>
</tr>
<tr>
<td>Printability</td>
<td>Yes</td>
<td>Yes, but usually labelled</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3.3 Methodology

Following set up and testing in conjunction with the Ulma Packaging Engineers, a series of pre-production tests were carried out with assistance from Sealed Air (Cryovac) representatives. These included tests to assess the appropriate machine settings to produce an acceptable pack appearance throughout the life of the product, gas mix trials, shrink tunnel settings and print distortion trials to assess how the artwork needed to be produced to allow for the bird shape and film shrinkage.

Once a printed film had been produced, additional testing was carried out to assess the consistency of the print registration and date coding equipment, prior to full pre-production trials in conjunction with the factory personnel.

For the store trial production, the line was operated as any normal production line, with just one operator to mind the machine.

3.3.1 The machinery

As with the current tray format, the new trayless format is packed on a horizontal flow-wrap machine. The main problem encountered was that the existing machines used for packing fresh, whole chicken rely on the tray to drive the line. With no tray there was a need for new machinery which was not readily available. Initial discussions were held with Redpack, Total Packaging Systems (Ossid) and Ulma Packaging. Following these discussions it was decided to progress with Ulma Packaging due to feasibility of operation, leadtime, availability, back-up and cost. The new machine (Figure 8) is not exclusive to 2 Sisters or Adare and is not a tied system.

A new Ulma machine was supplied to 2 Sisters, Scunthorpe in 2008 and after commissioning, proved that the new trayless format could run successfully at commercially viable running speeds.

Figure 8 The new Ulma Packaging machine used for the trials.

For internal operational reasons, the new Ulma machine was transferred to 2 Sisters Flixton site in early 2009, and this is where the birds were packed for the store trials.

During the trials, a number of issues were identified and subsequently resolved. The main issues were related to feeding the birds into the throat of the machine without snagging on the belt conveyor and machine guides, which resulted in film being pulled out of the seal rollers. Such issues caused excessive machine stoppages and downtime. These problems were overcome through a mix of operator training, machine setting adjustments, minor modifications to the machine in-feed section and the use of a slightly wider film width to allow for the variability in bird size/weight.
3.3.2 The packaging

The project initially considered a non-shrink, non-gas flushed pack, which used normal low density polyethylene film. This product would have been readily available from many suppliers.

However, as the project brief evolved to include shelf life extension to help reduce household food waste, the film requirement changed considerably. A high barrier film was suggested, which would give good clarity, high strength to safeguard against leaks, and the barrier properties to allow for gas-flushing.

It was therefore agreed to use BDF high barrier film from Sealed Air (Cryovac) for the trials as this is an established proven product which met these requirements. The Sealed Air (Cryovac) BDF film is described as a multi-layer, co-extruded, polyolefin, shrink film with high oxygen and aroma barrier properties. It protects oxygen sensitive products, is very resistant to tears and puncturing and gives a 40% shrink ratio. With the undulating surface of fresh whole chicken the strength and robust nature of this film were considered ideal for the initial trials. The BDF film can also be supplied in very thin form. Initial trials were on 25 micron film, but gauges as low as 19 micron were also used for the packing trials. A summary of its key features are given in Table 4.

Table 4 Summary of key features of Sealed Air Cryovac BDF film*.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging weight (factory)</td>
<td>Low</td>
</tr>
<tr>
<td>Packaging weight (shelf)</td>
<td>Low</td>
</tr>
<tr>
<td>Equipment investment</td>
<td>Medium</td>
</tr>
<tr>
<td>Equipment output rate – plain film</td>
<td>40</td>
</tr>
<tr>
<td>Equipment output rate – printed film</td>
<td>40</td>
</tr>
<tr>
<td>Flexibility (size, machine set up)</td>
<td>Excellent</td>
</tr>
<tr>
<td>Printability</td>
<td>Yes</td>
</tr>
<tr>
<td>Shelf life extension</td>
<td>2 days+</td>
</tr>
<tr>
<td>Chlorine free</td>
<td>Yes</td>
</tr>
<tr>
<td>Pack appearance</td>
<td>Excellent</td>
</tr>
<tr>
<td>Appearance throughout the shelf life</td>
<td>Excellent</td>
</tr>
<tr>
<td>Shrink method (water or air)</td>
<td>Air</td>
</tr>
<tr>
<td>Easy opening potential</td>
<td>Yes</td>
</tr>
<tr>
<td>Machine feeding (manual / automatic)</td>
<td>Auto</td>
</tr>
<tr>
<td>Additional operators needed to feed the machine</td>
<td>Not needed</td>
</tr>
</tbody>
</table>

*It should be noted that this initial data from 2 Sisters is for plain film and is based on the Sealed Air (Cryovac) BDF film, whereas the final film pack will be printed.

3.4 Results

3.4.1 Packaging optimisation

The weight for the new pack format on a medium bird size was 4.5g per bird resulting in a 15.5g weight saving per unit, equivalent to 76%. Based on this weight, moving to a printed film, wrapped, trayless pack for medium size fresh whole chicken will save ca. 342 tonnes per annum across the UK market. If all whole fresh birds were to follow this move the total weight saving would increase to ca. 1,700 tonnes per annum (Tables 5 and 6).

This extrapolation is based on units sold in 2008 and does not take account of the following:
- weight savings are estimated for larger and smaller products;
- some retailers have already moved to a trayless format; and
- some retailers use foil straight-to-oven trays.

11 Sales units are taken from WRAP’s packaging benchmark data for 2008 for whole fresh chickens. This groups sales & weights as follows: birds up to 1.4kg as small, birds 1.5-1.9kg as medium, birds over 2kg as large.
### Table 5 Packaging weights for UK, fresh, whole chickens

<table>
<thead>
<tr>
<th>Product</th>
<th>Current format, weight per unit (g)</th>
<th>New format, weight per unit (g)</th>
<th>Saving per unit (g)</th>
<th>Saving per unit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tray/Film/Label</td>
<td>Printed Film</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Bird</td>
<td>20</td>
<td>3.9</td>
<td>16.1</td>
<td>81%</td>
</tr>
<tr>
<td>Medium Bird</td>
<td>20</td>
<td>4.5</td>
<td>15.5</td>
<td>76%</td>
</tr>
<tr>
<td>Large Bird</td>
<td>30</td>
<td>5.6</td>
<td>24.4</td>
<td>81%</td>
</tr>
</tbody>
</table>

*Note: Current packaging weight was not supplied by Somerfield for small birds. For this report we have assumed an original packaging weight equal to that for a medium sized bird.*

### Table 6 Potential Weight Savings

<table>
<thead>
<tr>
<th>Product</th>
<th>Sales per annum (actual units)</th>
<th>Saving per unit (g)</th>
<th>Savings per annum (g)</th>
<th>Savings per annum (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Bird</td>
<td>70,624,802</td>
<td>16.1</td>
<td>1,137,059,312</td>
<td>1,137</td>
</tr>
<tr>
<td>Medium Bird</td>
<td>22,092,430</td>
<td>15.5</td>
<td>342,432,665</td>
<td>342</td>
</tr>
<tr>
<td>Large Bird</td>
<td>12,636,391</td>
<td>24.4</td>
<td>308,327,940</td>
<td>308</td>
</tr>
</tbody>
</table>

### 3.4.2 Shelf life extension

The supply chain currently spans ca. 7 - 9 days, with chicken packs on-shelf in the retail store for ca. 3 - 4 days. Some packers are gas-flushing poultry packs, although there are issues in getting enough gas into the breast cavity of the bird. 2 Sisters currently use a permeable film wrapped around a plastic tray, so a barrier film is not required in these circumstances to maintain the current shelf life.

The new format, developed through this project, extends the shelf life of the product by up to two days by using high barrier shrink film from Sealed Air (Cryovac) in conjunction with gas-flushing. Barrier films are usually complex multi-layer constructions, which can be expensive and which are difficult to recycle, although they can help extend product life.

Chicken processors sometimes use ‘mother bags’ (collation packs) to transport the fresh birds after they have been packed, and these can be gas flushed to give a similar life extension. However, the new format means that the same benefit can be obtained by the new, individually gassed birds, so mother bags are not required. This saves material, weight of transit packaging, cost and labour although specific weights and numbers have not been assessed as part of this project.

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12 Sales units are taken from WRAP’s packaging benchmark data for 2008 for whole fresh chickens. This groups sales & weights as follows: birds up to 1.4kg as small, birds 1.5-1.9kg as medium, birds over 2kg as large.

13 Some retailers have their own specific gas mix, and new trials will be required for each new variant.
4.0 Consumer reaction tests

4.1 Objective

The specific objectives of the consumer reaction tests, carried out by MSS Research were:

- To review consumers’ current attitudes and buying behaviour with regard to whole, fresh chicken.
- To evaluate initial, and considered, reactions to the proposed new packaging.

4.2 Methodology

Two focus groups were used lasting around 90 minutes. Each group was made up of between 8-10 consumers. In each group was a mix in terms of demographics and other recruitment criteria, including:

- All Somerfield main or top-up shoppers.
- Mainly or jointly responsible for their household’s grocery shopping.
- 22-44 (1 group) and 45-65 (1 group) age groups.
- Males and (mainly) females.
- Purchasers of whole fresh uncooked chicken from Somerfield at least once every 2-3 weeks.
- C1C2D social classes.

The groups were asked to discuss:

- Existing Somerfield whole fresh chicken packs.
- Photos of new whole bird packs in-store.
- New Somerfield whole fresh chicken packs.
- Pack labels.
- Any other relevant materials.

The detailed discussion questions are given in Appendix 1.

The research has covered two groups (older and younger C1C2D females and males) of Somerfield shoppers who regularly buy own label whole, fresh chicken. It is therefore important that the findings are viewed in this context.

4.3 Results

4.3.1 Whole fresh chicken choice and purchase behaviour

- In relation to choice and purchase behaviour, consumers were buying whole, fresh chicken products regularly (in some cases weekly) and from major supermarkets.
- Things they looked for at point of purchase were: good value, versatile, easy to cook, liked by the family.
- Ability to freeze it from purchase was considered important. Brand tends not to be that important (own label generally seen to be ok).
- Price is a key factor for many (special offer can trigger purchase/multi-purchase, and in the case of multi-purchase they would usually freeze the extra pack).
- Other important factors were:
  - damage, plumpness, colour and appearance;
  - weight/size;
  - display until/use-by, dates;
  - origin (many prefer British);
  - free range, organic, etc.; and
  - other factors such as: nutrition value, no giblets, water content.
- A few respondents said they picked up the whole chicken and handled it before buying, to look closer at the chicken (particularly the breast), check that it is sealed well or read specific information.

4.3.2 Reaction to the packs

The Somerfield current pack was shown before any new pack designs:

- Positives that were picked up immediately: price (3 for £10 offer) and origin (British).
- They were pleased that they could see the product and thought it looked ‘appealing’.
- There was some concern that the plastic film could puncture in handling and/or leak.
- It was also noted that it was a nuisance to dispose of the tray. Some asked if the tray was recyclable. Some remove the tray to store/freeeze the product.
Respondents were next shown photos of the new packs in store at Somerfield (Figures 9 and 10), alongside conventional packs; however, respondents were not specifically alerted to the new pack format. Having viewed the photo, it was not evident to respondents that the middle packs were of a different format and that the tray was removed. Some commented that products should be merchandised laid flat, rather than stacked upright (as shown in Figure 9). It was therefore not disclosed at this stage that these photos were of new packaging.

**Figure 9** Photos of the new packs in store at Somerfield shown to focus groups.

A new pack photo was next shown (Figure 11), but still with no explanation given about new packs. However, it was now quickly noticed by most that these packs had no trays. The ‘reduced packaging’ label was also picked up quite quickly. Several respondents mentioned ‘vacuum pack’ spontaneously.

**Figure 10** Photos of the new packs in store at Somerfield shown to focus groups.

A new pack photo was next shown (Figure 11), but still with no explanation given about new packs. However, it was now quickly noticed by most that these packs had no trays. The ‘reduced packaging’ label was also picked up quite quickly. Several respondents mentioned ‘vacuum pack’ spontaneously.
There was generally a positive reaction to this new packaging:
- No tray = less packaging = more environmentally friendly. Some thought the new packaging would be recyclable, when told that it would not be, this did not seem to affect their likelihood to buy.
- No tray = more room to store the product at home (fridge/freezer).
- Vacuum pack = longer shelf life = greater flexibility for the consumer.
- Tighter and stronger film = less chance of leakage or puncturing during handling.

Figure 11 Photos of the new packs shown to focus groups.
Next, the groups were asked to discuss the labelling (Figures 10, 11 and 12). Some wanted more detail to give the specific farm or place of origin and it became apparent that not everyone recognised/understood the ‘tractor’ logo/standard. In relation to the ‘reduced packaging’ label specifically, this was felt to be an important, impactful message at point of sale. There were some who made the connection between the ‘reduced packaging’ label and ‘recycle now’ logo (because of the colour similarity). A few expected that there might be a reduction in price as a result of less packaging; however, respondents were happy to pay the same price as the current pack.

When considering the reverse labelling, this was felt to contain useful information and the respondents liked the white background and ability to see the underside of the chicken. It was felt that more of the information on the front label could be moved to the reverse label e.g. ‘oven cook’.

**Figure 12** Image of labelling shown to the focus group.

The final element was to reveal the actual pack. Reactions were just as positive as when viewing the photos:

- Almost all respondents said they would be likely to buy the new style packs if launched by Somerfield.
- No particular handling or portability problems were identified and no-one felt the absence of the tray was a negative.
- No-one felt that having the main labels printed as part of the packaging film would be a problem.
- Similarly, no-one felt there was an issue relating to the product being ‘loose in the bag’ or being able to see the juices.
5.0  **Store trials**

Following the successful packing trials and positive feedback through the focus group research, limited in-store trials were carried out to ensure that the new packaging format performed through the supply chain and was accepted by consumers, with no loss of sales.

The in-store trial of the new format was carried out for medium, fresh, whole chicken only, to limit costs and make it easier to measure the effect on sales. It was carried out through the standard Somerfield supply chain, including a regional distribution centre (RDC) and two stores, Corsham and Malmesbury. During the in-store trials, personnel from Adare and Somerfield were present to access store staff reactions to the new packaging and gain a general overview on the trials.

Existing label design was used for the new format due to the trial chickens being merchandised alongside existing tray packs of the small and large fresh whole chickens, but the label was adapted to allow for a ‘less packaging’ flash to the top left hand side. The base of the pack was printed a solid opaque white, which reduced the chance that consumers would see any juices from the product and also simulated a tray when seen on shelf.

The initial plan was for a trial over a four week period, so that sales could be measured against the previous four week period. However, during the trial period, Somerfield ran promotional activity on their own-label, fresh, whole chicken range, so it was decided to extend the trial so that reliable data could be obtained on which to base comparisons. Figure 13 shows the value sales of medium chicken across the trial period for stores involved in the trial and for the whole estate. This graph shows that:

- Over the period, medium chicken sales for the stores involved in the trial remained in line with the whole estate indicating that the new trial packaging has not been detrimental to sales.
- Over the period, medium chicken sales declined across the whole estate due to promotions in other chicken lines.

**Figure 13** Value sales of medium fresh chicken (incl VAT) by promotional period

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_Note: Data excludes promo period 5 due to erroneous data._
6.0 Conclusion

- The potential weight saving on Somerfield medium, fresh chicken identified by the project is 15.5g per pack. This equates to a 76% weight saving, estimated at ca. 342 tonnes per annum across the UK market. This rises to ca. 1,700 tonnes per annum if all fresh whole chicken follow this change of format.
- Shelf life for fresh, whole chicken could be extended by up to two days through the use of high-barrier film in conjunction with gas-flushing, which may help reduce consumer food waste by giving people longer to eat the product.
- As the trayless format has a reduced size footprint, there is also potential for further cost savings throughout the supply chain by being able to increase the number of packs per crate. The trayless pack also allows for more birds on shelf for the retailer, and better fridge/freezer storage for the consumer.
- Consumer reaction tests, using a focus group approach has indicated that there is unlikely to be any adverse consumer reaction to the new trayless format. The new pack was received very positively and there are no adverse reactions to the removal of the tray. Almost all the respondents would buy the new pack (assuming no price difference).
- The main improvement suggested by the focus groups was to reduce the footprint of the front label to show more of the product (particularly the breasts) without compromising clear communication of key information. Possible negatives (but not thought to be significant barriers to purchase) were that it could be more difficult to open. Consumers also picked up on the fact that the reduction in packaging doesn't lead to a reduction in retail price. Preference for increasing the recyclability of meat packs in general was also noted.
- Trials in two Somerfield stores validated this research by demonstrating that consumers will fully accept the new format, with no loss of sales volume.
- The Somerfield store trials also proved that the new pack will perform adequately through all stages of the entire retailer supply chain, from packing to home use.

Having taken over this project with the Somerfield acquisition, The Co-operative is currently investigating this new trayless format for the Co-op brand. Other major retailers are showing strong interest in the format (which is not exclusive to 2 Sisters or The Co-operative). It is hoped that this project will lead to other retailers and processors evaluating and implementing this and similar technology, to deliver real consumer and business benefits.
Appendix 1 Consumer research: Discussion process

The discussion process | 90 minutes

Setting the scene | 10 minutes

- MSS introduces moderator/client observers and audio-taping and reassures of confidentiality
- Explanation of the purpose of the research, that it is to help our client with some new ideas regarding chicken and poultry in the supermarket
- Respondents outline their background (where live, family size and working status, etc.)

Buying chicken from the supermarket and Somerfield’s existing whole fresh chicken packs | 30 minutes

- How often do you buy whole fresh (uncooked) chicken?
- Where do you tend to buy it?
- How ‘planned’ or ‘habitual/regular’ a purchase is this?
- Do you always buy the same type/brand of whole fresh chicken?
- How long after you have bought a whole fresh uncooked chicken would you tend to cook it?
- Just imagine you are at the supermarket and about to buy a whole fresh uncooked chicken – what factors do you think about in deciding what to buy?
- How important are the following factors in your decision about what whole fresh chicken to buy … brand (or own label), organic/free range/corn fed (or fishmeal or soya fed), barn reared or extensive indoor reared, price, weight, size, cooking time, appearance, colour, additives (e.g. salt, sodium), the packaging, the label and other information on the pack, sell by and use by dates, British or other origin ....?
- Do you handle the product when you are choosing it?

SHOW EXISTING SOMERFIELD WHOLE FRESH CHICKEN PACKS

- What is your reaction to these current Somerfield packs?
- What would you like to change, if anything, about the way in which whole fresh chicken is packaged or presented?
- What concerns or questions would you have about what is shown here?

Somerfield’s new whole fresh chicken packs | 40 minutes

SHOW PHOTOS OF NEW PACKS IN-STORE

- Please look at these photos of some chickens in the chiller in a supermarket – what are your reactions?
- What are you noticing?
- How appealing are these chickens to you?
- Why or why not, appealing?

MODERATOR NOW SHOWS AND HANDS ROUND NEW WHOLE CHICKEN PACKS

- Please look at these actual chickens - what is your reaction to these?
- What are you noticing?
- How appealing are these chickens to you?
- Why or why not, appealing?
- Did you notice the new style of packaging?
- What is your reaction to this?
- Is this a positive or negative thing – or does it not have much effect on you?
- What do you think would be the main advantages of this new style of packaging?
- And what, if any, would be the disadvantages of this new style of packaging?
- Do you think it is robust enough?
- Do you think it is easy to handle?
- Can you see the product sufficiently well?
- Is the product attractive within the packaging (e.g. any discomfort with seeing juices)?
- What does the term ‘reduced packaging’ mean to you?
- Do you think that this new packaging needs any explanation at all?
- If so, where would this explanation be?
- The main advantages of the new packaging are
- Less packaging (so more environmentally friendly)
- Extended shelf life (gas-flushed)
- How strongly do these advantages appeal to you?
- Would you expect the wrapping to be recyclable?
- What would your opinion be if it were not able to be recycled?

**FOCUS ON PACK LABEL**
- How do you rate the various elements of the pack labelling in terms of ...
  - Impact and attractiveness (including colours)
  - Telling you the key things that you need to know about the product e.g. main and secondary product descriptors, price, weight, etc.
  - Information content overall
  - Nutrition information
  - Cooking guidelines
  - Food handling and storage information
  - Environmentally friendly messages
  - Quality ‘stamps’ e.g. Assured Food Standards
- Is there any information which you would add or change?

**Attitudes to the environment | 5 minutes**
- How do you feel about environmental issues generally?
- What issues are particularly important to you?
- How would you describe your and your family’s behaviour in terms of being environmentally-friendly?
- What steps, if any, do you take to recycle any household waste, for example, do you home compost?
- What are your general attitudes to the packaging of everyday food items?
- How does food packaging affect what particular brands you buy?
- What would you change about food packaging?

**Overview and closing comments | 10 minutes**
- Comparing these new packs that you have seen tonight, to the existing whole chicken packs from Somerfield, are these new packs better or worse?
- Why do you say that?
- How likely would you be to buy a chicken if it were packaged in this way?
- Why or why not, likely?
- What are the key messages that we should take back to Somerfield from our discussion?
- If Somerfield was to launch this new style of packaging, in what way (if at all) would this affect your opinion of (and shopping at), Somerfield?

**Client questions if time**

**Thank and close session**