

Increasing Profitability in the Potato Supply Chain: Key Opportunities for UK Potatoes

Findings from a farm-to-fork assessment with Co-operative Food & Farms, plus wider WRAP research



Introduction

This Guide summarises practical actions to improve resource efficiency and profitability in the fresh potato retail supply chain.

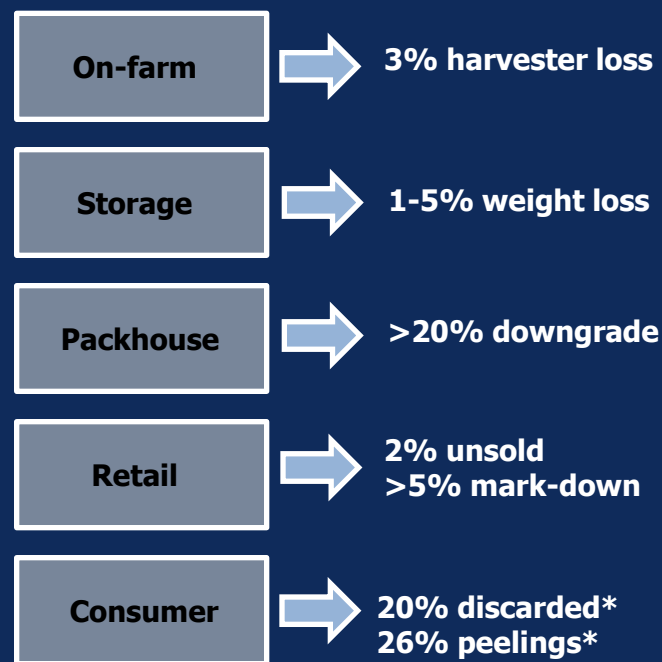
In 2013/14, WRAP worked with the Co-operative Food and its integrated potato growers and packers, Co-operative Farms, to undertake a 'whole chain pathfinder project' ([case study](#)). Key findings are incorporated into this Guide, alongside wider WRAP and Potato Council (PCL) research findings.

Use this Guide to:

- Identify **WHERE** actions can be taken in the supply chain to improve efficiency and maximise the £ value from the crop
- Consider **WHAT** improvement opportunities to focus on in discussions with suppliers or in specifying products
- Understand **HOW MUCH** you could save through actions taken

The example savings presented in this Guide are based on 50,000 tonnes pre-packed potatoes, with typical operational efficiencies. Use the accompanying tool to calculate potential savings for your category.

VALUE LOST IN THE POTATO SUPPLY CHAIN



* Source: WRAP (2014). Household food and drink waste: A product focus

Top Actions to Optimise Resource Use

- Consider how to produce more with less water resource. Trickle tape was found to be effective during the Co-operative study, with water use reduced by 30% in a dry season. This is significant given predictions regarding the increased future need for irrigation. The trickle tape system also showed evidence of increases in both yield & packable yield, plus fuel savings – offsetting outlay costs and suggesting positive margins even in non-irrigating years.
- Monitor fertiliser and pesticide usage in line with latest research.
- WRAP trials have demonstrated that annual compost applications at 50t/ha, or 100t/ha every other year, in conjunction with nitrogen fertiliser, could increase potato yields by 2 to 3t/ha.



Observed packable yield improvements through trickle tape irrigation could increase supply chain profitability by more than £100,000

Based on Co-operative Food case study

Top Actions to Maximise Value from the Crop

- Include quality aspects in field trials for new varieties (i.e. monitor packable yield not just harvested yield). Some varieties can be more susceptible to greens, damage, bruising, etc. and average faults can differ by >10% across varieties. This is significant when >20% of harvested product can be picked off at packhouse.
- Consider yield and quality traits, as well as pest and disease resistance (alongside taste, appearance characteristics) when selecting varieties.
- Monitor harvester operations to reduce mechanical damage.



Every 1% improvement in packed yield (e.g. through variety choice) can save >£100,000 in losses across the value chain

Based on 50,000t product retailed

On-farm

- >90% of water consumed this stage; other resources include diesel & chemicals to maximise yield
- On-farm actions & decisions around variety choice etc. also influence >50% of losses in the value chain

Sources: Co-operative Food Potato Pathfinder project, 2013
 PCL report: Climate change and potatoes. The risks, impacts and opportunities for UK potato production
<http://www.wrap.org.uk/content/potatoes>

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Top Actions to Optimise Resource Use

- Monitor energy usage in potato stores to identify poor performance and target improvements.
- A PCL survey of stores showed a 2-fold difference in energy consumption between best and worst performing. A further survey showed a 7-fold difference in air gaps between best and worst.



Energy savings of up to £40,000/year could be possible through improving poor performing stores

Based on 50,000t product retailed

Storage

- Significant energy consuming process within the value chain
- Fresh weight is lost through dehydration – up to 1% per month

Top Actions to Maximise Value from the Crop

- Consider the weight loss implications of storage when planning the timing of promotions. Promote high volume product in the winter and high value product in the summer.
- Consider PCL advice on store humidification. Evidence suggests that humidification could reduce weight loss by up to 20% - but there may be risks of condensation in warmer pre-pack stores.



Spring / Summer promotions of maincrop potatoes could cost an additional £30,000 or more in storage energy and product weight loss

Based on 2000t product retailed on promotion in October versus June

Sources: Co-operative Food Potato Pathfinder project, 2013
 PCL - Humidification in Potato Stores
 PCL – Reducing Energy in Stores

Top Actions to Optimise Resource Use

- Monitor water usage on-site (e.g. in washers). Evidence suggests that water use could be more than halved by changes in practices such as scheduling of product changeovers and staggering washer emptying to avoid overloading water recycling systems.
- Review secondary/tertiary packaging specifications to ensure not over-specified. For example paper layers instead of card can be sufficient to reduce greening
- Review case or tray packing density (no. units per case) to ensure optimised for transport – though balanced against store sales and potential waste. Evidence suggests significant transport savings are achievable with careful planning, particularly during promotional periods.



Saving in excess of £50,000/year through reviewing packaging systems and training

Based on Co-operative Food case study

Significant potential savings (>£100/tonne) achievable across some lines by improved efficiency of case packing (units per case)

Based on Co-operative Food case study

Packhouse

- *Most significant supply chain stage at which value losses occur (>20% downgrade)*

Top Actions to Maximise Value from the Crop

- Review size specification for maincrop varieties. Smalls are typically sold as stockfeed at >£100/tonne less than the rest of the crop. Reducing grader screen size by just 2mm (e.g. 45-43mm) can increase crop utilisation by 5% for some varieties (e.g. King Edward, Maris Piper).
- Conversely, allowing larger potatoes within 'baby' packs was found to increase utilisation by more than 10% for a 2mm change.
- Consider alternative range options for out of size product (e.g. 'baby roasters' for small grade).

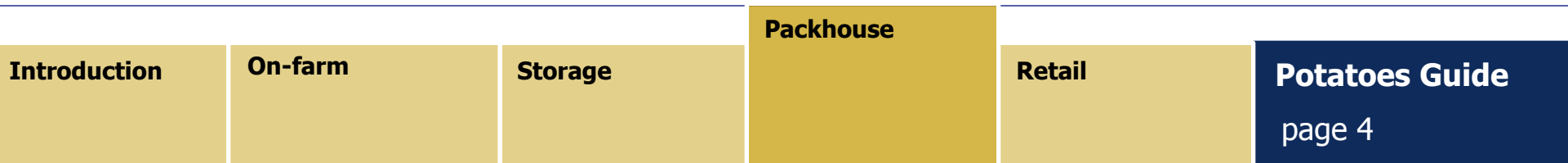


Developing a product range for 'smalls' could eliminate >£250,000 in lost value – as well as generating new value

Reducing allowable size for maincrop varieties by 2mm could improve supply chain profitability by £100,000

Based on 50,000t product retailed

Source: Co-operative Food Potato Pathfinder project, 2013



Top Actions to Optimise Resource Use

- Review product/packaging specifications and variety choices to realise the savings identified at earlier stages.
- Joint planning with supply chain partners – recognising that up to 3 years planning and production goes into producing each crop of potatoes and significant value can be lost when promotions or orders are changed.
- Provide single, morning forecasts to suppliers – reducing rip opens and product changeovers which can be costly in time and resources.



Significant potential for savings across the system – as identified at earlier supply chain stages. These are only achievable through good communications and joint planning

Retail

- *Information flow (through specifications, variety choice, ordering systems, etc.) is greatest point of influence*

Top Actions to Maximise Value from the Crop

- In-store training for fresh produce management is critical and has been found to be highly effective. Evidence suggests that poorly managed product can green, sprout or dull before the end of its shelf life.
- Consider latest packaging technologies to improve shelf-life in-store and for consumers – see WRAP’s [Resource Efficient Innovations Database](#). Consumer survey suggests most are stored in packaging.
- Review latest advice from WRAP on product labelling (date codes, storage advice etc.) to improve product life for consumers.
- Review other opportunities to improve product life for consumers - available from WRAP’s [Product Action Finder](#)



Retail value losses typically in excess of £100,000+ (discarded) and significantly more through mark-down, so small improvements can have clear bottom line benefits

Based on 50,000t product retailed

Sources: Co-operative Food Potato Pathfinder project, 2013
WRAP Reducing Supply Chain and Consumer Potato Waste, 2012

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