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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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CONTENTS

	Page
Improving right first time in soft fruit	1
A case study of Angus Soft Fruits Ltd	1
Analysing the supply chain	2
Pack house issues – UK	5
Pack house issues – Spain	6
Potential Improvements	7

Improving right first time in soft fruit

A case study of Angus Soft Fruits Ltd

'On time in full' is a key measure of pack house performance in the fresh produce industry. But obtaining a realistic estimate is a challenge, particularly where all year round supply is critical for customer satisfaction. But without such a measure the performance of different suppliers cannot be compared and the root causes of differences identified and improvements conducted.

Angus Soft Fruits provide all year round availability of raspberries to their retail customers sourcing from the UK during the season and from North Africa and Spain when UK produce has finished. Using a method known as 'lean thinking' we followed raspberries from farms in the UK and Spain to the pack-house at East Seaton (near Arbroath, Scotland) in order to identify improvement opportunities in the chain.

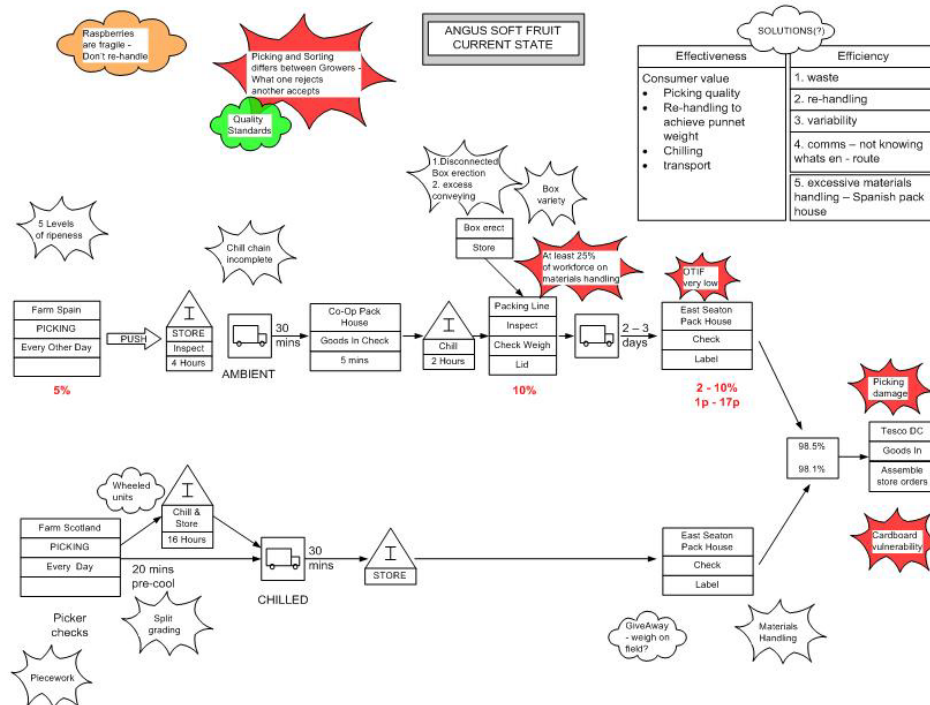
'This project was a transparent way of raising issues that we were not aware of and we are now looking seriously at the recommendations.'



Angela Rodgers
Assistant Commercial Manger

Analysing the supply chain

A chart of the current Angus Soft Fruit supply chain is shown below.



UK and Spanish sourced raspberries enter the East Seaton pack-house to become a common stream into various retail customers including Tesco.

The pack-house identified the need to develop a robust measure of 'on time in full' to help communications and improve performance. Key data that were available are shown below.

	UK	Spain
'On time' delivery	High %	Low
Delivery variation notice	Low %	Not notified
Delivery note match rate	High	Low
Processing complexity (Cost per punnet dependent on incoming fruit quality and	Consistent	Inconsistent

service)		
'Right first time'	Near 100%	40% to 95%

There were three classifications of UK fruit entering the system in terms of quality and delivery adherence: best, typical and poor. The difference between typical and poor adherence has a major impact on pack-house costs. Poor adherence, which only occurred for imported product, cost over twice as much as the typical costs.

The potential root causes of these differences include:

- Picking frequency – more frequent picking prevents over-ripe fruit on canes
- Split grading – different ripeness can be used for different value streams
- Transportation delays – minimising delays and providing information on unavoidable delays is critical to the smooth operation of the UK packing house and quality to the customer

An illustration of the variability in on farm production is shown below contrasting Spanish product (left) with UK product (right).



'The mapping process showed the potential of farm league tables' to improve consistency for the UK operation.'



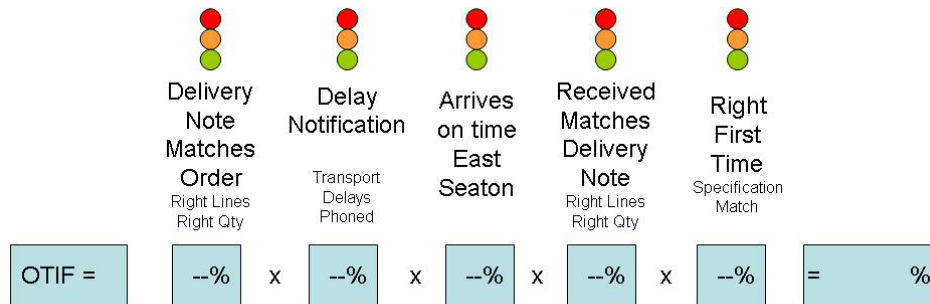
Aileen McDonald, QA Manager

A complete analysis of the availability issues faced at East Seaton identified the following key issues affecting performance:

<p>Communication</p> <ul style="list-style-type: none">• Communication of information that impacts on packing (other than advance delivery)• Advance communication of delivery timing• Different varieties to those ordered on a pallet
<p>Product</p> <ul style="list-style-type: none">• Wrong product• Product out of specification• Variable quality in a box (punnet by punnet)• Overweight punnets
<p>Packaging</p> <ul style="list-style-type: none">• Wrong packaging• Punnets without bubbles
<p>Delivery</p> <ul style="list-style-type: none">• Wrong quantities• Late deliveries• Wrong number of trucks

Our team focused on the key losses at East Seaton and combined these into a single measure of 'on time in full' to be communicated on a regular basis. This is shown in the following diagram.

On Time in Full Concept



For development...

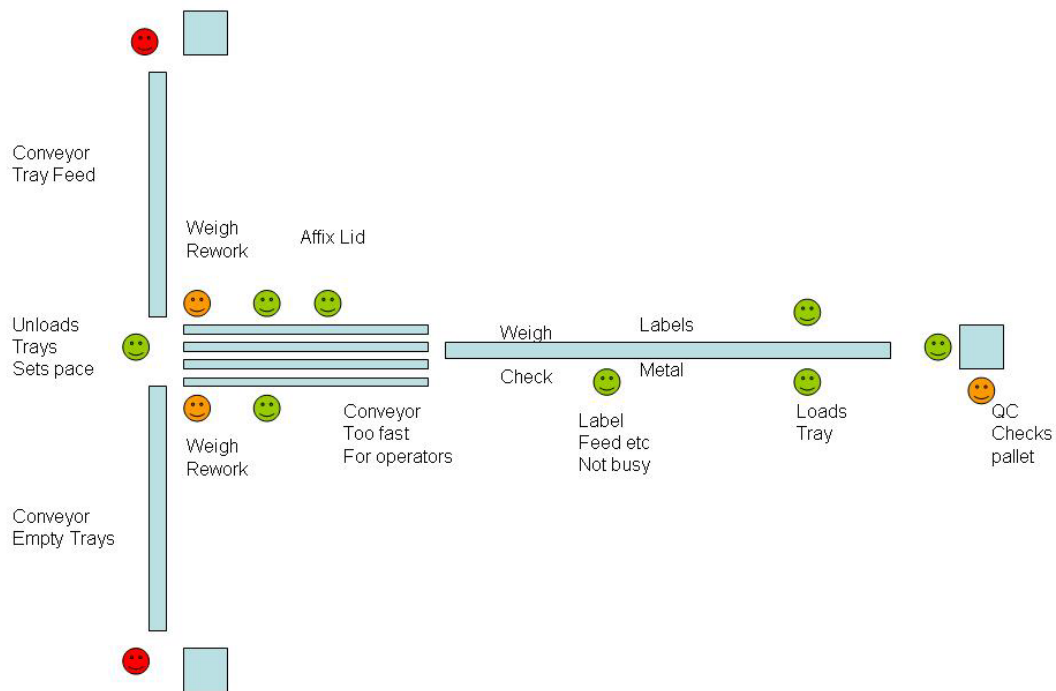
With regard to the 'On time in full' concept, the following guiding principles were identified:

- A named individual should be responsible for compiling and communicating the measure
- Targets with clear financial implications should be agreed and set with UK and Spanish producers and consistently monitored
- Rules relating to transport delays should be identified and communicated
- The measure should be product line specific

Pack-house issues - UK

During the UK season process mapping of the packing line suggested that most operators were spending a majority of their time on value adding activities.

The following diagram illustrates the current operation at East Seaton.



Two issues were identified by our team.

- Operators were double handling trays on and off conveyors (red faces)
- Weighing operations (orange faces) may be less necessary if it were possible to weigh more accurately in the farm picking process (a right first time approach rather than inspection/quality control)

During the Spanish season East Seaton operates with much more volatile inputs. Vehicles due at the start of shifts might not arrive. Sometimes there was no notification of a revised delivery time with the result that a full shift of operators could be kept on standby for many hours, leading to staff under-utilisation and rescheduling of packing as well as less efficient packing (for example changing boxes to meet customer deliveries).

Pack-house issues - Spain

In Spain the packing plant was on a larger scale. It was supplied by 70 farms and quality inspection was either 'accept' or 'reject'. Our process maps showed large amounts of material handling equipment, including overhead conveyors and palletisers. There were 60 operators on the packing line, some 46 engaged in handling fruit and the remainder handling materials. Considerably more time was spent on non-value adding activity in comparison with East Seaton.

One particular issue was poor ergonomics as illustrated below.



The picture shows operators stretching and standing on boxes to carry out tasks. The box making machines could be used to feed production lines directly but instead are used to build boxes in advance of usage leading to excessive handling and storage.

Potential improvements

This exercise revealed significant opportunities to improve performance that will enhance the competitiveness of Angus Soft Fruit. The key areas for development were identified as:

- Harness the co-op ethos in Spain to incentivise good practice and penalise non-conforming product. Enforce exacting specifications with strict quality assurance in the field
- Introduce customer focussed product streams so the best performing growers, approved for specific customers, can earn more revenue
- Introduce split grading on farms in Spain and educate growers to recognise different levels of ripeness
- Encourage the spread of BRC pack-house accreditation in Spain
- Develop and communicate the 'on time in full' measure of performance
- Make improvements to introduce process control into inbound transport from Spain
- Use tracking information on inbound vehicles in order to specify delivery arrival times at East Seaton

To bring about these improvements for their UK operation Angus Soft Fruits developed a business case for establishing an 'implant' (Angus employee(s)

with expertise in technical and commercial supplier development) in Spain who would work on the key issues identified above. The outline business case developed by our team is shown in the following table.

Case for implants

Issue	Business Case to be developed (£ x 1000)	Supply chain implant in Spain	Technical implant in Spain
Communication of information that impacts packing (other than advance delivery timing)		YES	YES
Wrong number of trucks - extra vehicles	10	YES	
Advance communication of delivery timing (as vehicle enters tunnel)	10	YES	
Late deliveries to East Seaton	50	YES	
Wrong quantities	10	YES	
Wrong product	10		YES
Different varieties to those ordered on a pallet	10		YES
Product out of specification	10		YES
Variable quality in box (punnet by punnet selection)			YES
Punnets without bubbles			YES
Overweights			YES
Wrong packaging at East Seaton	10		YES

The initial financial benefit estimates produced by our team indicated that the implants would be viable.

Project team

The project was conducted by a team drawn from the supply chain with facilitators from Cardiff Business School. Our team included:

John Gray	Commercial Manager	Angus Soft Fruits
Angela Rodgers	Asst Commercial Manager	Angus Soft Fruits
Anne Grant	Technical Manager	Angus Soft Fruits
Aileen McDonald	QA Manager	Angus Soft Fruits
Doreen Hunt	Packhouse Manager	Angus Soft Fruit
Harvey Sansome	Senior Technical Manager	Angus Soft Fruits
Rowan Marshall	Farmer	Angus Soft Fruits
Mr McLaren	Farmer	Angus Soft Fruits

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