



Grower Summary

CP 131

Sources of Innovation in the
Fresh Produce Industry

Final 2017

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AHDB Horticulture,
AHDB
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

AHDB Horticulture is a Division of the Agriculture and Horticulture Development Board.

Project title: Sources of Innovation in the Fresh Produce Industry

Project number: CP 131

Project leader: Rosemary Collier, Warwick Crop Centre, School of Life Sciences, University of Warwick

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Key staff: Jonathan Menary (PhD student)

Location of project: Warwick Crop Centre, School of Life Sciences, University of Warwick

Industry Representative: Jon Knight, AHDB Horticulture

Date project commenced: May 2014

Date project completed (or expected completion date): June 2017

GROWER SUMMARY

Headline

A range of mechanisms are proposed to bring down barriers to innovation in the fresh produce industry.

Background

The UK Fresh Produce Industry faces a number of challenges: exotic pests and diseases, input prices for oil, foreign competition, limitations in water abstraction, and restrictions on seasonal labour from overseas (National Horticultural Forum, 2011). Innovation, technological and non-technological change, has been promoted to help meet these challenges. However, there are barriers to innovation across the fresh produce value chain that slow or prevent new knowledge and innovations from making impact.

Summary

This project aims to identify the sources of innovation in the UK fresh produce industry, determine which factors contribute or impede successful innovation and identify how we might build innovative capacity in the industry. To do this, 35 industry experts were recruited from across the industry to take part in interviews. At the close of the project, a number of evidence-based recommendations have been made to help to remove these barriers to innovation.

Methods

Initially, an extensive literature review was undertaken to scope the wide range of topics relevant to the project. In addition to consulting published literature, horticultural data was compiled using Defra's Horticultural Statistics publications from 1945/6 to 2011, taking account of area under cultivation, gross output and subsequent productivity.

Following the initial literature review, a further review was conducted examining the comparability of agricultural research and medical research, with specific focus on translational research and implementation. The conclusions of this work were presented at the *Innovation Through Knowledge Transfer* conference in Staffordshire in 2015.

The first stage of primary data collection involved a series of semi-structured interviews with industry experts. Interviewees were selected based on purposive sampling and co-nomination sampling (asking interviewees who else should be interviewed in their opinion, also called 'snowballing'). In general, the interviews were conducted at the interviewee's place of work, though several were conducted at Warwick Crop Centre.

The interviews were recorded via Dictaphone, transcribed and 'coded' through *Framework Analysis*, a qualitative research methodology increasingly used in medical and health research. Computer Assisted Qualitative Data Analysis Software (CAQDAS) *Nvivo* was used

to organise the data for analysis. Questions concerned five topics, each with a set of sub questions:

1. *Innovation in the FPI*
2. *Barriers and Facilitation of innovation in the FPI*
3. *Contribution to innovation in the FPI*
4. *Representation in the FPI*
5. *Challenges for the FPI*

Interviews were carried out across England, Wales and Scotland. A range of voices was heard from most sectors of the fresh produce industry, including ornamentals, potatoes and protected edibles.

Findings

A number of themes emerged relating to different aspects of the workings of the industry, which can be organised as follows:

1. *Norms & institutions*
2. *Innovation in fresh produce*
3. *Drivers of change*
4. *Sources of innovation*
5. *Communication in the industry*
6. *Industry bottlenecks*
7. *Enabling factors*
8. *Comparisons with the past*
9. *Challenges*

These are explained in more detail below:

1. Norms & Intuitions

Many observations were made by interviewees concerning the *nature* of the fresh produce industry and the actors within it: it was not always made explicit how these observations affect innovation, but it is clear that the nature of the industry determines its institutional landscape, innovation needs and outcomes. A strong vein of entrepreneurialism appears to define the industry, and so new ideas are given a high priority amongst businesses that can mobilise knowledge effectively. However, the power and influence of retailers was also noted and the relationships between supplier and customer can vary substantially across the industry.

2. Innovation in fresh produce

A number of observations were made with regards to how those who engage with innovation define and measure it. This theme also explored more general observations about innovation processes, including the notion of unpredictability.

3. Drivers of change

The drivers of change in the industry, here defined as phenomena that encourage or force actors to innovate, were, perhaps predictably, strongly economic; many interviewees cited 'necessity' or 'need' as factors prompting innovation, due to the rigours of an intensely competitive marketplace both at the production and retail ends of the supply chain. *Regulation* was also seen as a driver of innovation, although this was often an area of considerable disagreement.

4. Sources of innovation

While it is not possible to *rank* the contribution of different actors to innovation in the fresh produce industry, we can begin to examine the role of different organisations and sectors in pushing the industry forward, and also how the approach to research and development is changing. An 'internationalisation' of innovation appears to be underway, with organisations actively collaborating in multi-stakeholder 'innovation networks' operating in globalised contexts, helping such organisations meet the needs of their 'innovation agendas'.

5. Communication in the industry

How actors go about communicating with one another is important, and this theme focuses specifically on positive interfaces – including personal and professional networks, agronomists and producer organisations – and barriers to effective communication, such as the high level of competitiveness found in the industry preventing the sharing of otherwise useful knowledge.

6. Industry bottlenecks

This theme explores the barriers to innovation in the fresh produce industry by separating them into two groups: systemic barriers and personal barriers. Systemic barriers to innovation include fragmentation – or lack of vertical and horizontal coordination – and decreased funding for horticultural research, differing research agendas and difficulties in both demand articulation, from the industry, and understanding of industry constraints by researchers. Other systemic barriers include economic factors such as the size of the UK produce market that serves to deter significant investment and negative commercial relationships between suppliers and retailers, as well as an unfavourable regulatory environment and "defensive" innovation culture. In contrast, personal barriers to innovation hinge on risk, uncertainty and the fear of failure.

7. Enabling factors

This theme examined what can be done to facilitate innovation at the systemic and personal levels, but also in ways that transcend this dichotomy. Systemic support for innovation relies

on fostering that interactivity and those networks shown to be vital to innovation in preceding sections; however, unlike the barriers to innovation, of which most were systemic in nature, personal enabling factors rest primarily at the level of the individual or organisation. “Getting involved” in projects or with specific institutions for example, provides a direct interface with peers. However, it is human and material resources that best determine the ability of an individual or firm to innovate. Trust is an important factor for innovation, as are champions, influential pioneers of innovation. Lastly, an appreciation for the “fit” of a given innovation is paramount, and understanding its context. Likewise, extension practices are context-dependent, requiring different approaches not only for different people but also for different “types” of innovation.

8. Comparisons with the past

The ways in which present circumstances are contrasted with, and linked to, decisions made in the past, was a common topic of discussion. The privatisation of formerly public extension services was understood to be a decision that is still being felt, ultimately responsible for the fragmentation of the industry today.

9. Challenges

Finally, this theme investigated the challenges faced by the industry today, focussing on the idea of sustainability, both economic and environmental. Ensuring that new pest control products or practices remain a priority, as well as improving the return to producers to bolster re-investment. Changing consumer behaviour will also be a challenge in the foreseeable future.

Discussion

By comparing the situation in the UK with that of other countries’ ‘innovation systems’, such as New Zealand and the Netherlands, several ‘systemic’ instruments are recommended for *solving particular problems, including:*

- New forms of supply chain governance to prevent uneven levels of knowledge and power between customers and suppliers
- Pooled, cross-sector projects and improved dialogue to take account of long-term, common-to-all problems
- Cooperative research programmes to ensure dialogue between people of different professions
- Modified incentive structure to promote translational science between fresh produce sectors and basic & applied research
- Advocacy groups to ensure favourable policy regime for crop protection products moving forward

Financial Benefits

The value of improving the innovative capacity of UK fresh produce stands to be large, but remains difficult to quantify.