

PLANNING AND PRIORITISING FUTURE SKILLS, TRAINING AND BUSINESS SUPPORT NEEDS FOR RURAL BUSINESSES ACROSS THE SELEP REGION

Talent is evenly spread – opportunity is not. Creating more opportunities relies on the ambitions and skills of all ages. Success requires close collaboration.

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A3 Horticulture

Horticulture general

The UK horticultural sector is significant:

- Fruit and vegetables (both protected and field scale)
- Ornamental and amenity flower and plant production
- Grass maintenance – public amenity areas, pitches and courses
- Tree and hedge planting and maintenance, especially in urban and peri urban areas
- Design, planning, project management of new plantings eg motorway enhancement zones
- Business management, advisory and legal services

For example, fruit and vegetable use in the UK substantial and increasing as a result of government drive to increase healthy eating and lifestyle (Hort Statistics DEFRA 2017). However:

- 45% of UK demand for vegetables is met through imports (some 2.1million tonnes)

- 85% of UK demand for fruit is imported (some 3.8million tonnes)
- The value of imported fruit and vegetables is £6.3bn (veg £2.4bn, fruit £3.9bn)
- Exported fruit and vegetables is only 4% of the volume imported into the UK

To increase productivity and efficiency of business operation, all sectors of the horticultural professions rely on an increasing supply of staff to meet the growth requirements of the sector to cater for more amenity based, outdoor, healthy lifestyle options and to reduce reliance on imported foodstuffs. This requires opportunities for:

- New young people who are innovative and technologically aware who are academically able and attracted to horticultural profession early in their lives through a well-planned and coherent careers pathway
- Mid-life career changing adults who can bring a range of generic but transferable skills in business and operational logistics to the horticultural sectors
- Employee up skilling whilst within the horticultural professions, especially to develop the more advanced technologically demanding new job roles

Attracting new entrants to the horticultural profession has always been a challenge because 72% of surveyed horticultural businesses cannot fill vacancies, 70% of 18-year olds perceive horticulture as non-academic, and 50% of under 25 year olds perceive horticulture as unskilled (RHS survey 2014).

In response, the National Careers Service was set up to advise young people regarding their future careers, and to link people's skills to potential vocations across the whole of the UK employment market. The service provides information about sector jobs, matches people's skill sets to jobs, links people to relevant educational courses and provides industry expert advisors to work with schools to inform young people's career choices.

Responding specifically to the horticulture skills shortage, initiatives over the past five years to raise the profile of horticulture as a profession, and to encourage people into the positions available have included:

- RHS 'Horticulture Matters' paper and strategy, which highlighted negative perceptions of the industry.
- the 'Young Horts' movement to act as school ambassadors where ambassadors raise awareness of fulfilling careers in horticulture.
- The Chartered Institute of Horticulture developed the 'Grow Careers' programme. This initiative profiles those already working within the industry to inspire and excite new entrants through their sharing of advice and guidance.
- The British Association of Landscape Industries (BALI) have also set up the 'Go Landscape' initiative, which uses ambassadors, who are often landscaping students, or young landscapers starting out in their profession to inspire entrants into the landscape and design arena.

Despite these initiatives, it is difficult to measure the impacts these have had on recruitment into the industry to date. Perception of horticulture by schools' careers advisers anecdotally does not appear to have significantly changed. Further, there is

no centralised evidence that more people have entered the industry due to these specific initiatives.

The consequence of failing to attract more young people into the horticultural professions has directly led to an over reliance, especially in fruit and vegetable production, on widespread use of migrant EU labour. In some businesses, this can represent as much as 90% of the seasonal and permanent workforce and creates a vulnerability for long term business function.

A recent House of Commons briefing paper of labour force analysis in 2016 showed that 27,000 EU workers were employed in UK agriculture (McGuinness & Garton-Grimwood, 2017). Of these workers, it showed that the specialist horticulture sector is the most reliant with an average of 10 workers per farm, compared with the average employment within broader agriculture of 5 workers per farm (AHDB, 2016). These positions currently filled are described by AHDB as the posts that are most difficult to fill.

The crux of the issue is that the skills pipeline for horticultural professions consists of a series of 'ad hoc' initiatives not well coordinated at local, regional nor national level. The timing to review and revitalise the skills pipeline is now urgent. The potential 'Post Brexit' workforce has already started to dwindle because current EU migrants are experiencing uncertainty of future employment with the UK and increasing opportunities from better fiscal environments in their home countries where they can better exploit the skills they have developed within the UK.

The features of a more dynamic skills pipeline for horticultural progressions would include:

- A scale which can operate at local, regional and national scales
- A finesse which provides a connectivity of information on careers and prospects which better link and inform
 - School teachers (of the National Curriculum) and school careers teachers
 - Young people directly
 - Parents and guardians of the young people, especially those not from a horticultural profession
 - Employers who are trained to be better to entice the best young people into those most attractive and rewarding high level careers
 - Mid-life career changers who can more clearly see their generic and transferable business skills being used in a new sector
- A consistent 'glue' to make sure the elements of the pipeline are well connected and regularly refreshed
- An opportunity for training and retraining which is flexible, available and inspiring

The 'glue' for the skills pipeline can be developed through strategic investment in the land based educators (colleges and Universities and private training providers) who operate at local and regional scales and most link to national associations – eg LANDEX.

In a recent (2019) All Party parliamentary Group Round Table, an ask of Government was made and included the 6 points below all linked to the future skills supply.

The ask of Government in the APPRTG was:

1. Does Government have the appetite and foresight to invest to develop a strategic skills pipeline for the horticultural professions, creating a well-managed and coherent chain from employer to schools and from schools to employer?
2. Can consideration be given to a centralised careers information strategy for specific sector areas with high skills shortages that brings together national careers initiatives, with NGOs, such as the RHS, CIOH, BALI, etc?
3. Can Government undertake to explore the benefits analysis arising from reintroduction of horticultural science and technology within the National Curriculum?
4. Can Government exploit the investment it is making in promotion of healthy living (diet and outdoor exercise) to reference the horticultural professions which underpin this drive?
5. Does government have the appetite to create greater flexibility of use of existing funding for educators to create more appropriate and flexibly accessed training packages, including education for the under 16s?
6. Does Government have the appetite to create a consistent 'glue' in the horticultural professions skills pipeline by making strategic investments in horticultural educators to develop the capacity and infrastructure at local, regional and national levels?

Fruit sector

Introduction

The UK horticulture sectors (fruit, vegetable, ornamental and landscaping) are an important contributor to national food supplies, an employer of 43,000 people¹ and in 2018 (most recent data) contributed £3.5 billion to the national economy². For 2020 the value of the fruit market is quoted as £807M³. However, these data are pre-Covid-19 and the situation is developing differently as we move out of the current pandemic and there are other pressures affecting this industry, especially current access to labour and post-Brexit, efforts to automate and reduce this dependency, other new technologies such as precision management of big data and ongoing issues with climate change.

¹ Pye Tait (2019). 2019 Horticulture Sector Skills Survey. Pye Tait consulting. 93pp.

² Defra (2019). Horticulture Statistics 2018. Defra:London. 11pp.

³ IBIS World <https://www.ibisworld.com/united-kingdom/market-research-reports/fruit-growing-industry/>

This section seeks to clarify the skills gaps in the **UK fruit sector**, the upskilling challenges and future recommendations. One key case study is presented here and this and other sources are combined to clarify a range of skills required for key workers. This leads to a focus on the factors (enablers) that can facilitate upskilling, as well as the delivery mechanisms to achieve that. Finally, the means of assessing the effectiveness of such delivery (ground truthing) is scoped.

Some terms used in this document are defined in a Glossary (Appendix 1).

Upskilling challenges and future recommendations

For many years it has been acknowledged that the Agri-Food, horticulture industry needs to roll out an ambitious programme of enhanced productivity linked to new competitive trade agreements. To achieve this, there is an urgent need to recruit and upskill people across that sector. This is of overriding importance now as we approach a potential no-deal exit from the European Union and have to manage post-Covid-19 re-development. There have been calls for new bodies to help achieve this,⁴ leading to the formation of the Agricultural Productivity Working Group (APWG), established by the Food and Drink Sector Council in 2020.⁵ However, the APWG was formed before the Covid-19 pandemic and the future suddenly poses many additional and critically urgent challenges.

This report has studied the new and emerging scenarios detailed above and our recommendations for the horticulture fruit sector are as follows:

- Employers tell us that they believe the apprenticeship scheme has outlived its usefulness. Post Covid, we challenge SELEP to divert the levy towards other subsidised, work-based training which better fits the needs of employers in the horticulture sector. Due to the current state of urgency, it will be quicker to utilise tried-and-tested courses, which must be configured for distance learning provision and combined with on-site training using post-Covid approved practices. An example is the Level 2, 'training for food industry skills (VRQ)'⁶. The Department for Education (DfE) and specifically the Education and Skills Funding Agency (ESFA)⁷ must be tasked with this funding as an immediate priority so that employers receive subsidised funding of places for their staff.
- New courses should also be scoped as part of a survey consultation exercise and virtual workshops facilitated with employers and other stakeholders (see below). This will give employers in the horticulture sector a chance to influence the development of training which better fits the challenges they face post-Covid.

⁴ Such as a proposed 'Institute for the Agriculture and Horticulture Industry (IAHI)' – see Swadling ,J. (2018). Agri-Food Industry Workforce. The Agricultural & Horticultural Development Board. 37pp. [web site]:

<https://projectblue.blob.core.windows.net/media/Default/What%20we%20do/Skills%20and%20training/Skills%20Strategy%20Full.pdf> [Accessed 29.05.20].

⁵ Agricultural Productivity Working Group (2020). Report to the Food and Drink Sector Council February 2020. 53pp. [web site]: <https://www.fdf.org.uk/publicgeneral/APWG-report-feb20.pdf> [Accessed 29.05.20].

⁶ Food industry skills (VRQ) See [web site]: <http://www.fdq.org.uk/our-qualifications/introductory-food-skills/developing-food-industry-skills/> [Accessed 29.05.20].

⁷ <https://www.gov.uk/government/organisations/education-and-skills-funding-agency>

- Coronavirus has adversely affected the availability of seasonal labour for horticulture⁸ and though the Government has launched a 'Pick for Britain' appeal,⁹ some employers have already experienced occasional British applicants not turning up to interviews or work shifts. UK horticulture urgently needs 70,000 permanent and seasonal workers, about 60% of whom have traditionally come from Europe.¹⁰ The Seasonal Workers Pilot, which has recently been expanded fourfold from 2,500 to 10,000¹¹ is argued to still be insufficient to meet this labour shortfall. There needs to be a further push to expand this scheme, and offer applicants fast-track approval support.
- We recommend that training also needs to be extended to seasonal workers on a progressively increasing scale, though this may take longer than the current season. Government needs to form new partnerships with industry to offer jointly funded training programmes, ranging from short courses to part time degrees delivered in blended, burst mode formats (Appendix 2).
- To achieve these aims we suggest that a new consortium body be formed comprising SELEP-Landex-Lantra-AHDB and relevant land-based Colleges and Universities organised around independent, regional clusters across the UK. Funding can be sought from a range of sources from Government and industry such as banks (e.g. Barclays and Clydesdale) and commercial interests (such as larger companies but also SMEs). This will include a national training reference site, where people can find the relevant training for their needs in each area. It is envisaged that this training will be jointly funded by Government (about one third) and other stakeholders as above (about two thirds).

Horticulture fruit sector case study.

The company in this case study is not named. However, it is a large family enterprise, renowned for producing high quality berry fruits: strawberries, raspberries and blackberries.

On 17.02.20 the Managing Director of this enterprise was interviewed to explore recruitment and upskilling options. For future recruitment, the key skills gaps that were identified for this sector included a practical knowledge of growing plants, pest and disease management, irrigation, an in-depth appreciation of plant growth and propagation and expertise in the phenology of flowering, pruning and plant growth habits. Highlighted was growing in protected environments – tunnels and under glass requires skills in working with controlled environments where the development and deployment of sensors and analysis and interpretation of data are vital. However, a wider range of skills to support production were discussed: machinery operation, materials handling and a working knowledge of the logistics of moving

⁸ See <https://ahdb.org.uk/news/grow-your-own-workforce> [Accessed 09.06.20]

⁹ <https://www.feedthenation.co.uk/pickforbritain/> [Accessed 09.06.20]

¹⁰ Belger, T. (2020). Coronavirus: Furloughed staff urged to harvest fruit and veg to fill migrant labour gap. Yahoo Finance UK. See https://uk.finance.yahoo.com/news/coronavirus-pick-for-britain-jobs-agriculture-fruit-veg-farms-uk-furloughed-workers-075634726.html?guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlMmNvbS8&guce_referrer_sig=AQAAAJtJsF2SxSzDBsjmW0fB1Nn5mgTi8SHQMpStA8XS-oy7rPo7tr9B0JR50NJP-KtfJPiX4A2hEmrjomaiPKkDUoPJHM13ol0jm1iu1FF69fmYzVg-SP2OchYh1fdhD3a2emKwI3WbdWb4BrCLK-FaGSZZnnt0sylvCVF5r02yKLNaa&guccounter=2 [Accessed 09.06.20]

¹¹ https://www.farminguk.com/news/seasonal-workers-pilot-expanded-fourfold-following-labour-concerns_55016.html [Accessed 09.06.20]

commodities. It was made clear that team leaders were needed who could work with machinery and people and interface with newer technologies such as robotics in the drive towards automation. Communication skills were seen as vital – to inspire other workers, link effectively with external agents and advisers and showcase to customers that this food is of the highest quality and sustainability.

Other sources for skills gaps

The most relevant reports that considered the requirements for skills can be seen in Table 1. A much wider range of skills can also be seen in Appendix 2 which are specifically relevant to various workers in the horticulture fruit sector. The outcome is an appreciation of the breadth of skills needed for workers in this sector. In a quoted statement from a relevant commercial web site: “a farmer is first and foremost a grower, but also a leader and motivator of people, an innovator, a green scientist, a handy mechanic, a financial wizard, and an entrepreneur.” This gives an insight into the impressive range of skills that staff in this sector need to have. What is also apparent is that many of these skills are lacking in potential industry recruits.

Enablers to facilitate upskilling and delivery mechanisms

As defined in the Glossary (Appendix 1) the enablers for upskilling cover social, emotional and financial factors. In essence, potential recruits need to be powerfully motivated to join such a challenging sector, though as case study web site indicates, it is: “hard work, but totally worth it.” Thus, social and emotional enablers are needed to support and motivate recruits in order to appreciate the wider career opportunities. As the case study Managing Director confirmed, their staff are not just hired hands but are skilled workers, who appreciate the value of the crops they are harvesting and have a wide understanding of the entire production system.

The delivery mechanisms to address skills gaps

The case study indicated that on-site training of staff was vital, so that the best times could be chosen (important for seasonal crops) and on-site equipment used, with maximum relevance to operational priorities. It was made clear that finding the right courses has been difficult and that apprenticeships have had minimal impact, with many participants dropping out.

Another recent survey of horticulture training (Pye Tait, 2019¹) indicated similarly, that nearly 90% of the industry preferred training on-site or combined with additional external training, usually from a nearby college. A discussion with Hope West at Hadlow College¹² indicated that a very useful subsidized Level 2 course in Food Industry Skills¹³ had previously been run successfully as an apprenticeship course, on-site for industry partners. Unfortunately, funding had now ceased. The Education and Skills Funding Agency (ESFA) could widen its adult education delivery budget to facilitate such training. Additionally, the ISO 9001 Competence and Awareness Procedure¹⁴ which ensures: “...that the competencies needed to meet customer and other external or internal requirements, applicable to the business,” could be expanded. Horticulture enterprises could be encouraged to co-deliver courses for ISO 9001, and be paid as such.

¹² Interview with Hope West, Group Head of Apprenticeships, Hadlow College, 19.12.19

¹³ <http://www.fdg.org.uk/our-qualifications/introductory-food-skills/developing-food-industry-skills/>

¹⁴ <https://www.iso-9001-checklist.co.uk/ISO-9001-competence-and-awareness-what-is-it-gbp.htm>

Table 1. Skills required for workers in – horticulture, fruit present and future

source	skills														
	technical							environmental		social					
	growing/ pests/diseases	robotics/A.I.	science	irrigation /fertilizer	tunnel/glass environments	machinery /logistics	precision/ drones/G.I.S.	biodiversity	landscaping	health /safety	legislation	management/ leadership	finance	communication /languages	marketing
Case study	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Swadling (2018) ¹⁵	✓	✓	✓			✓	✓	✓	✓			✓		✓	✓
PyeTait (2019) ¹⁶	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lantra (2009) ¹⁷	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Composite list of skills specified by online recruitment sites	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

¹⁵ Swadling (2018). Agri-Food Industry Workforce Skills and Development Strategy.

¹⁶ Pye Tait (2019). Horticulture Sector Skills Survey. A report for the Ornamental Horticulture Roundtable Group.

¹⁷ Lantra (2009). Research factsheet for production horticulture.

The technology of online delivery also needs enhancement across rural areas to facilitate this upskilling and the activities of supporting social networks, many of which struggle due to poor connections. Delivery mechanisms must therefore be relevant to new training needs. There has been some research on skills needs forecasting such as that by Wilson (2008)¹⁸, who reviews the UK situation and reports on the development of Sector Skills Agreements and activities as shown in Figure 1. He notes that successive UK Governments have had an ongoing policy of developing 'Working Futures Projections,' by commissioning external agencies and Universities to develop labour market projections.



This is true for the horticulture sector and there are some recent reports which have attempted to identify the ongoing and likely future skills gaps (for example, see Pye Tait, 2019).¹ Such reports have been supplemented by some interviews of key stakeholders in the industry to seek key outcomes. Many are already listed above but there is also a focus on familiarity with new technologies, such as:

- robotics/artificial intelligence;
- precision data management and;
- others less considered such as synthetic / 3D printing of technical components and even of food itself.

The delivery of new technologies will, of course, require distance learning but in a new and much more flexible format such a 'burst mode' delivery. This term: "...denotes the practice of 'bursting' open a series of...modules, normally taught sequentially or in parallel... to a part-time mode where the modules are spread across a longer period. The...[horticulture worker and their employer] can choose to

¹⁸ Wilson, R. (2008). UK approaches to skills needs analysis and forecasting: Lessons for the Czech Republic. Warwick Institute for Employment Research. [Web report] – [\[https://warwick.ac.uk/fac/soc/ier/publications/2008/wilson_2008_czechrep.pdf\]](https://warwick.ac.uk/fac/soc/ier/publications/2008/wilson_2008_czechrep.pdf) - accessed 08.03.20. 53pp.

study individual modules or a sequence of them...but on a timescale and in an order that suits their learning [and commercial operational] needs.” (Lee, 2015¹⁹, p. 337).

The delivery of new technologies will also need better networking. Examples from the Netherlands can be seen for agriculture and horticulture (e.g. Klerkx & Leeuwis, 2009²⁰) involving: “...facilitation of linkages between relevant actors (scanning, scoping, filtering, and matchmaking of possible cooperation partners).” (p. 850).

Research has shown that poor training opportunities in some remoter rural areas can lead to reduced productivity – what has been referred to as “low skills equilibrium” (LSEq) “...in which employers demand relatively low skill levels from their workforce while there is little incentive for workers to improve their skills.” (Owen *et al.*, 2012, p. 80)²¹. Breaking out of that impasse will clearly be a priority as we move onwards from the Covid-19 pandemic.

Assessing the effectiveness of delivery (ground truthing)

The UK has a good record of assessing the effectiveness of its school, Further Education (FE) teaching (Ofsted²²) and also its Higher Education (HE) delivery (Teaching Excellence Framework²³). The new training being suggested here for the horticulture workplace also needs quality assessment.

A useful review of the quality assessment of e-learning courses (Kidney *et al.*, 2007²⁴) determined a list of eight important criteria: reviews of instructional design, web development, editing, usability and accessibility, maintainability, copyright, infrastructure impact, and content and rigour. These would need to be adapted towards assessing horticulture training courses, to run as soon as new delivery begins.

Appendix 1. Glossary of terms, in alphabetical order

Basic skills or **Foundation skills** relevant to the workplace have been described as the ability to read, write and use numeracy, to handle information, to express ideas and opinions, to make decisions and solve problems, as family members, workers, citizens and lifelong learners.²⁵

¹⁹ Lee, H. (2015). Educating for food security in the UK: Planning for an uncertain future. *Local Economy* **30**(3), 330–341.

²⁰ Klerkx, L., Leeuwis, C. (2009). Establishment and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological Forecasting & Social Change* **76**, 849–860.

²¹ Owen, D., Hogarth, T., Green, A.E. (2012). Skills, transport and economic development: evidence from a rural area in England. *Journal of Transport Geography* **21**, 80–92.

²² <https://www.gov.uk/government/publications/further-education-and-skills-inspections-and-outcomes-as-at-28-february-2019/further-education-and-skills-inspections-and-outcomes-as-at-28-february-2019-main-findings>

²³ <https://www.ucas.com/undergraduate/what-and-where-study/choosing-course/teaching-excellence-framework-tef-what-you-need-know>

²⁴ Kidney, G., Cummings, L., Boehm, A. (2007). Toward a Quality Assurance Approach to E-Learning Courses. *International Journal on E-Learning* **6**(1), 17-30.

²⁵ Gray, A. (2006). Upskilling through foundation skills. A literature review. A report prepared for the Department of Labour. [Web site]:

Delivery mechanisms

Training can be delivered:

- One-to-one for personal, fast and focused learning;
- Group learning, sharing experiences with a number of people;
- Location: at the trainee's place of work, or at a trainer's facility, or at a neutral location;
- Online: webinar remote training or *via* a learning platform such as Moodle or Blackboard;
- Method: classroom learning, or 'floorwalking' *i.e.* supervising the implementation of training in a live environment.²⁶

Generally, computer-based delivery is a commonly reported medium – e.g. Wallace (2007)²⁷

Enablers involve social and emotional factors which help in the development of new skills, such as peer support, family encouragement, mentoring, coaching but also financial opportunities.²⁸

Ground truthing refers to information provided by direct observation (*i.e.* empirical evidence) as opposed to information provided by inference.²⁹

Rural can be defined as areas comprising population concentrations of less than 10,000 – *i.e.* in rural towns and fringes, villages or hamlets and populations dispersed between these.³⁰

Rural skills comprise people of all ages living in rural areas, who can develop new abilities. The skills acquired can range from those which are basic and practical but also includes cross-cutting, digital, scientific, and higher-level leadership and management skills. Traditional sectors are still important, including farming, horticulture, forestry and fishing but other activities have rapidly become important too, such as rural tourism, creative industries, energy and manufacturing, and are often facilitated by entrepreneurship, social intelligence and innovation.³¹

<https://thehub.swa.govt.nz/assets/documents/Upskilling%20through%20foundation%20skills%20-%20A%20literature%20review.pdf> [Accessed 18.05.20] p. 43

²⁶ Adapted from Prosperity 24/7 (2020). Training Delivery Options. [Web site]:

<https://prosperity247.com/strategy-and-change/training-delivery-mechanisms/> [Accessed 18.05.20]

²⁷ Wallace, V. (2007). Information Literacy and IT Skills Delivery: the ICT Skills Project at the University of Birmingham. *Journal of Information Literacy*, 1 (2) [Web site]:

<https://ojs.lboro.ac.uk/JIL/article/view/17> [Accessed 12.05.20].

²⁸ Adapted from Christenson, L., Anderson, A.R. (2002). Commentary: The Centrality of the Learning Context for Students' Academic Enabler Skills. *School Psychology Review* 31 (3), 378-393.

²⁹ Ground truth. (2020). Wikipedia. [Web site]: https://en.wikipedia.org/wiki/Ground_truth [Accessed 18.05.20]

³⁰ Adapted from The National Institute of Adult Continuing Education, England and Wales (NIACE) (2012). Community Learning in Rural Areas. A report by NIACE for the Department for Business, Innovation and Skills and the Department for Environment, Food and Rural Affairs. [Web site]: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/80796/bis-13-623-community-learning-in-rural-areas.pdf [Accessed 18.05.20] p. 11

³¹ Adapted from <https://www.skillsdevelopmentscotland.co.uk/media/45683/skills-action-plan-for-rural-scotland-summary-report.pdf>

Skills can be considered as an ability and capacity acquired through deliberate, systematic, and sustained effort to undertake complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills) to a high level of competency.³²

Horticulture – vegetable and ornamental sectors

Introduction

Horticulture accounts for nearly £3.5 billion (Defra: *Basic Horticultural Statistics* for 2018) or 25% of the total plant-based UK agriculture sector.

UK-grown vegetables (£1.419 billion in 2018) include £1.1 billion of field grown vegetables and a further £331 million of protected vegetables. These figures represent a 0.5% decrease on the 2017 values.

UK-grown fruit is valued (2018) at £769 million – a 2.2% increase in 2017 values. Whilst the output and value of the UK crop has steadily increased, it still represents only 15-18% of total supply (Note: this is due to the importation of tropical crops and as the UK can't grow many temperate or cool-climate fruit crops during the northern hemisphere winter).

UK-grown ornamental sector is worth £1.3 billion – a decrease of 1.8%. The slight decreases in 2018 values across much of the horticultural sector correlates with weather-related decreases in yields.

Value of imported crops

The UK produces approximately 60% of the vegetable crops it consumes, with £2.5 billion of imports relating to crops that we do grow in the UK. There are considerable opportunities for further import substitution – much of this would be based on the future development of so-called closed systems where sufficient heat/light can be provided for the annual cropping cycle of any type of crop. The future development of these systems is therefore very much dependent on the global cost of energy.

For the fruit industry, UK production is only 10-15% of total fruit retail. This is due to the inability of the UK to grow tropical crops, as well as the seasonal nature of fruiting. Despite these factors, the UK is still importing significant quantities of traditionally UK-grown fruits, with much important substitution possible. The future profitability on growth of the sector will be shaped by the future trade agreements that the UK Government establishes post Brexit.

³² Adapted from Skills Development Scotland (2019). Skills Action Plan for Rural Scotland: 2019–2021 Key issues and priority actions: June 2019. [Web site]: <http://www.businessdictionary.com/definition/skill.html> [Accessed 18.05.20]



Opportunities and threats

The UK horticultural sector has many opportunities and threats, with international trading of fertilisers, import/export tariffs, changing legislation and climate change, amongst many others.

Clearly climate change is going to drive many aspects of food production. New crops can be grown, though weather-related water shortages and potentially higher incidences of diseases will be challenging and require plant breeders to strive towards new resistant varieties.

Employment figures

Of all the different agriculture sub-sectors, commercial horticulture is the most labour intensive and employs the most seasonal, casual and gang workers.

Review of skills gaps

There have been many skills surveys of the various agricultural/horticultural industries. This report does not aim to repeat this exercise, but instead, is targeted towards addressing the skills/training threats and opportunities to the businesses involved.

Seasonal workers

The UK fruit and vegetable production businesses are dependent on seasonal workers for many aspects of their field-based operations – especially harvesting. An industry survey by the British Growers Association indicated that the requirement for seasonal labour within the horticultural sector was around 70,000 people per annum. Much of this is considered low-skilled (academically) labour with 99% of this workforce coming from the EU.

With increasing prices across the EU, the willingness of seasonal workers to come to the UK is changing with fewer Polish workers arriving. A higher percentage of seasonal workers now come from south-eastern European countries (Bulgaria, Romania, Hungary). This shifting geographical pull of workers has been concerning UK growers well before Brexit – the perception being that the UK is not as attractive as it was to earn decent incomes.

Under the new UK Immigration Rules, it is understood that just 10,000 permits to be issued in 2021 for seasonal agricultural workers. This will hit horticultural growers

hard as there is little historical evidence that UK citizens will take up much of the work – this is despite the UK unemployment figures rising during the current Covid-19 pandemic (and a national ‘Pick for Britain’ initiative).

Robotics and related technologies are often cited as a solution to the seasonal worker issue, especially for harvesting. This would be a misguided view as, currently, harvesting-related robotics are still very much in the infancy and although early prototypes are promising, they do not offer an immediate cost-effective replacement to the annual seasonal migrant labour force required by the horticultural industry.

The horticultural industry views the 2021 seasonal worker allocation (10,000) as an acute threat to future harvests. From an industry perspective, the only meaningful mitigation to this threat is to increase the numbers of low-skilled seasonal workers to the UK. Without enough low-skilled workers in place, both the harvesting and ultimately the profitability of many horticultural businesses will be threatened.

Recommendation: SELEP are encouraged to communicate, to central Government, the extreme challenge that the horticultural sector believes it will face if there are insufficient low-skilled workers available.

Recommendation: SELEP are encouraged to foster links between engineering universities and agribusinesses in the region to develop medium- to long-term robotics solutions to shortages in seasonal labour requirements.

Getting and keeping the correctly trained staff

Horticultural businesses require a wide range of crop-based technical skills together with wider generic business and management skills. The level of ‘speciality’ of an individual staff member will change depending on the size of the business, with larger businesses having greater resources and a greater need for a specialist in individual tasks (ie. Irrigation Manager, Pest and Disease Monitoring, etc).

The number of UK horticultural businesses is reducing as successful businesses get larger and the retail structure gets ever-more centralised. New businesses are more commonly found in the ornamental horticulture sector and within those businesses offering novel marketing angles (ie. Bespoke delivery options, organic produce, niche crops, etc).

With a reduction in the total number of colleges offering Level 2-3 qualifications in commercial horticulture (the SELEP region is very well catered for), there has been a reduction in the total number of new staff entrants. With salaries at this level being relatively modest, it is challenging for medium sized enterprises to attract new staff with all the pre-existing technical qualifications required. On-the-job training is proving to be a key way forward with growers having, and sometimes preferring, to hire an enthusiastic candidate ready to be shaped, rather than holding out for a candidate with all the required skills.

Basic tasks: Most growers provide basic task training in house. This is especially important as it demonstrates a particular skill as soon as a new staff member starts – it would be impractical to think that a college would be able to deliver a programme of courses to negate the need for in house training.

Some activities, including harvesting and crop walking, have been addressed by communication activities (publications, videos, etc) from the AHDB. With the horticultural levy up for a ballot in January, the threat to industry is very real on many fronts, including the provision of general training materials.

Whilst more detailed in-depth training is available to growers, few growers know all the potential training providers within the region. A centralised, regional, web-based portal, bringing together all training for the sector, would help in upskilling the region's horticultural work force.

Apprenticeships present a challenge for businesses – although financially 'supported', apprenticeship schemes require business commitment (time away) to train, whilst still requiring some on the job inputs.

Industry has a common perception that by training a staff member and having them gain qualifications, that member of staff is then more able and wanting to leave and gain promotion elsewhere.

During the course of the research for this project we considered whether a business-wide model of training, rather than being focussed on individual staff, could be appropriate. Under a continuous development/training programme, a business could train several staff members with different training skills (needed by the business) to gain a business qualification. This model needs further development and road-testing.

Recommendation: SELEP Rural Working Group to consider options for establishing a central horticultural/agricultural training portal – possibly with the AHDB.

Recommendation: SELEP Rural Working Group to consider funding a further investigation to explore the options for a business training qualification (rather than recognised qualifications for individual staff).

New skills needed for the high-tech industry

Horticulture is a 'high input – high output' sector within plant-based agriculture, with potentially greater profit margins to be attained. Horticulture is, therefore, an ideal launchpad for new technological advancements coming from the digital/imaging world. These advancements will require the future crop supervisors and managers to have new skills, including drone flying, modelling systems, electronic imaging capabilities. To ensure the continued future relevance of the established horticultural courses, the region's colleges should retain a watching brief to ensure they are capturing future technologies to upskill future students.

Recommendations: Land-based colleges in the SELEP region to form close relations with local research providers to help inspire future generations of students with new technological advances.

Business Skills

In addition to the technical skills required by horticultural businesses, so business skills are an essential part of a company's needs. These include marketing, finance, health and safety, auditing, computing, communications. Whilst these are included to some extent in the full-time courses offered by the region's training providers, there continues to be many instances of businesses taking on staff and then needing to further upskill them.

During the research for this project, the requirement for companies to access core business skills has been considered imperative.

Recommendation: A web-based portal of training providers for the horticultural sector, should include wider business management skills training.

Recommendation: Core business skills could form a strong basis for a wider business qualification, based on the wider skills needs of a company (see above).

In the discussion with growers and managers, we were told that the skills below were essential for the operation of the horticulture sectors.

Appendix 2. Horticulture industry knowledge, skills, behaviours qualifications and experience	Commercial Grower	Agronomist	Glasshouse manager	Farm manager	Scientist/plant breeder	Supervisor
Knowledge of						
environmental best practice such as the Defra ELM scheme	√	√	√	√	√	√
farm management plans - e.g. Gatekeeper (Farmplan)	√	√	√	√	√	√
project management	√	√	√	√	√	√
biodiversity	√	√	√	√	√	√
legislation in the fruit sector	√	√	√	√	√	
soft and top fruit harvesting	√	√	√	√		√
soft and top fruit pests and diseases	√	√	√	√	√	√
safety & environmental awareness	√	√	√	√	√	√
responses to emergencies	√	√	√	√	√	√
current horticulture, environmental, health and safety	√	√	√	√		√
plant health legislation	√	√	√	√	√	
codes of practice in horticulture work	√	√	√	√	√	√
soft and top fruit production	√	√	√	√	√	√
soft and top fruit quality	√	√	√	√	√	√
soft and top fruit post-harvest storage	√	√	√	√	√	√
threats, pests and diseases affecting soft and top fruit crops	√	√	√	√		√

Appendix 2. Horticulture industry knowledge, skills, behaviours qualifications and experience	Commercial Grower	Agronomist	Glasshouse manager	Farm manager	Scientist/plant breeder	Supervisor
soft and top fruit supply chains	√	√	√	√		√
roles of landowners, farm managers, contractors and agents	√	√	√	√		√
health & safety qualification like IOSH (Institution of Occupational Safety and Health)	√	√	√	√		√
tractor/sprayer driving, irrigation, picking, packing	√	√	√	√		√
languages - especially Romanian or Bulgarian or Spanish	√	√	√	√		√
BASIS Certificate in horticultural fruit crop protection	√	√	√	√		√
factors affecting fruit farm decision making processes	√	√	√	√		√
Skills to deliver						
environmental audits	√	√	√	√		
manage finances, establish budgets and plan ahead with financial scenarios	√	√	√	√		√
work skilfully with financial spreadsheets and towards profitability	√	√	√	√		
interpersonal and client service	√	√	√	√	√	√
use IT packages and mapping software	√	√	√	√	√	√
analyse problems, develop solutions and apply to fruit related situations	√	√	√	√	√	√
write clearly and logically in English	√	√	√	√	√	√
speak clearly and logically in English	√	√	√	√	√	√
work with drones	√	√	√	√	√	√
work with precision horticulture software packages - e.g. CropSAT	√	√	√	√	√	
work with robotic technology	√	√	√	√	√	√
manage big data	√	√			√	
work with the internet of things	√	√			√	
utilise Geographic Information Systems	√	√			√	
manage controlled atmosphere stores	√	√	√	√	√	√
work with vertical farming technologies	√	√	√	√	√	√
control weeds mechanically	√	√	√	√	√	√
control weeds chemically	√	√	√	√	√	√
precision cultivation systems for glasshouse production	√	√	√	√	√	

Appendix 2. Horticulture industry knowledge, skills, behaviours qualifications and experience	Commercial Grower	Agronomist	Glasshouse manager	Farm manager	Scientist/plant breeder	Supervisor
manage automated environment regulation systems in glasshouses	√	√	√	√	√	
maintain glasshouse structures	√	√	√	√	√	
use trimmers to control vegetation	√	√	√	√		√
use brush cutters to control vegetation	√	√	√	√		√
apply risk assessment requirements	√	√	√	√		√
conduct risk assessments	√	√	√	√		√
manage the health and safety of oneself and others	√	√	√	√		√
drive tractors with trailers, flails, swipes	√	√	√	√		√
operate a tractor mounted sprayer	√	√	√	√		√
inspect and maintain tools and machinery in good repair, order and condition	√	√	√	√		√
liaise confidently with the public and schoolchildren	√	√	√	√		√
maintain tractors and related machinery	√	√	√	√		√
maintain safe working practices	√	√	√	√		√
operate to maintain plant health and biosecurity	√	√	√	√		√
operate to avoid pollution	√	√	√	√		√
communicate effectively with supervisor, colleagues, public and others	√	√	√	√		√
maintain tools, machinery and equipment	√	√	√	√		√
manage horticulture soil structure and fertility, including minimising erosion risks	√	√	√	√		√
manage combined heat and power units	√	√	√	√		√
work with renewable energy such as PV panels	√	√	√	√		√
build, maintain and manage micro reservoirs	√	√	√	√		√
plan the control of pests, diseases	√	√	√	√		√
plan the control of unwanted vegetation	√	√	√	√		√
undertake irrigation schemes in the field and in glasshouses	√	√	√	√		√
understand and use mineral based and organic sourced crop nutrients	√	√	√	√		√

Appendix 2. Horticulture industry knowledge, skills, behaviours qualifications and experience	Commercial Grower	Agronomist	Glasshouse manager	Farm manager	Scientist/plant breeder	Supervisor
maintain worker health - physical (such as COVID) and mental (wellbeing)	√	√	√	√		√
work with remote and thermal imaging technologies	√	√	√	√		√
prepare sites for planting and/or natural regeneration	√	√	√	√		√
repair open drainage systems	√	√	√	√		√
maintain fencing and boundary features and infrastructure	√	√	√	√		√
maintain plant / materials handling and storage	√	√	√	√		√
plant trees	√	√	√	√		√
provide support and protection for trees	√	√	√	√		√
carry out chemical post planting protection and maintenance operations	√	√	√	√		√
carry out brashing	√	√	√	√		√
build and maintain raised beds and other field production systems	√	√	√	√		√
to follow both verbal and written/pictorial instructions (eg maps, planting plans)						
Behaviours underpinning						
accurate and timely organisation	√	√	√	√	√	√
attention to detail and accurate deployment of jobs	√	√	√	√	√	√
prioritisation to meet deadlines	√	√	√	√	√	√
effective team working	√	√	√	√	√	√
self-management on own initiative	√	√	√	√	√	√
logical and analytical approaches	√	√	√	√	√	√
self-motivation	√	√	√	√	√	√
working in an office environment.	√	√	√	√	√	√
proactively responding to unforeseen circumstances	√	√	√	√	√	√
acting as an ambassador for the Estate at all times and maintaining good relations	√	√	√	√	√	√
Flexibility in working procedures and practices	√	√	√	√	√	√
prompt timekeeping	√	√	√	√	√	√
pride in work	√	√	√	√	√	√
positive disposition	√	√	√	√	√	√
willingness to learn on the role	√	√	√	√	√	√

Appendix 2. Horticulture industry knowledge, skills, behaviours qualifications and experience	Commercial Grower	Agronomist	Glasshouse manager	Farm manager	Scientist/plant breeder	Supervisor
strong work ethic	√	√	√	√	√	√
continual professional development	√	√	√	√	√	√
adaptability to change	√	√	√	√	√	√
strict compliance with management procedures	√	√	√	√	√	√
Qualifications						
Full driving licence	√	√	√	√		√
First Aid Certificate	√	√	√	√		√
Level 3 award in emergency first aid at work	√	√	√	√		√
Level 2 Principles of Safe Handling and Application of Pesticides	√	√	√	√		√
Level 2 Award in the Safe Use of Pesticides	√	√	√	√		√
Level 2 English	√	√	√	√		√
Level 2 maths	√	√	√	√		√
Experience						
horticulture and estate management	√	√	√	√		√
land management with a range of machinery & equipment	√	√	√	√		√

Appendix 2. Blended, burst mode formats for training

The UK horticulture sector is facing a turbulent near future due to factors such as Brexit (no deal or otherwise), the emergence from the Covid-19 lockdown and the need to develop a more skilled labour force. Blended, burst mode formats for training are designed to provide workers with the skills set and confidence to take their place in this new future.

Defining terms

Blended learning "...combines elements of traditional pedagogy with ICT to allow for cost-efficiency and reach, opening...study to new markets."³³ (p. 23). In other words, blended learning encompasses a "...mix of traditional methods of teaching, such as face-to-face teaching, and on-line teaching."³⁴ (p. 233).

Burst mode learning involves adapting existing courses from any level (vocational and up to degree and post graduate degrees) by bursting open their timelines for delivery and allowing the learner (and employer) to choose when to study any chosen component. Each component would then be studied *via* a blended format as above. This approach is learner (and employer) focused and seeks to fit around their requirements.

Learners and employers would negotiate access to a specific course and study at a pace and time that suited them. Learners could be tutored in their own workplaces to gain practical skills and generate their portfolios and also have access to an electronic learning platform for distance learning at any time suitable for them.

Examples

FDQ Level 1 Certificate in Food Industry Skills³⁵

Prior knowledge: basic maths, English and horticulture skills. Suitable for new entrants to the industry. Assessment of this qualification is by learner portfolio of achievement. This may include learner observation of practical skills, questioning and assignments. The use of reasonable adjustments is permitted. FDQ externally quality assures all centre assessment and internal quality assurance quality and arrangements. Subject areas include food preparation and processing; food science and technology; food hygiene and safety.

University of Greenwich/Hadlow College Level 6 (30 credit) course in Sustainable Cropping Technology as a component of BSc (Hons) Horticulture Commercial³⁶

³³ Pollard, E., Hadjivassiliou, K., Swift, S., Green, M. (2017). Accelerated degrees in Higher Education Literature review. Institute for Employment Studies. Department for Education. 80pp.

³⁴ Ana-Maria Bliuc, A-M., Goodyear, P., Ellis, R.A. (2007). Research focus and methodological choices in studies into students' experiences of blended learning in higher education. *Internet and Higher Education* 10, 231–244.

³⁵ Food industry skills (VRQ) See [web site]: <http://www.fdq.org.uk/our-qualifications/introductory-food-skills/developing-food-industry-skills/> [Accessed 15.06.20].

³⁶ BSc (Hons) Horticulture Commercial. See [web site] <https://www.hadlow.ac.uk/courses/course/QHFHHOB-BSc-Hons-Horticulture-Commercial>

Prior knowledge: good understanding of biology and associated sciences at least to A level or National Diploma equivalent. Suitable for middle/senior managers with at least five years' experience in the industry.

Assessment of this qualification is by one, 3,000-word written assignment, a 30-minute assessed seminar (by Zoom) and an online examination. Tutorials can be given at the place of work but most learning is online *via* a Moodle platform containing uploaded lectures and supporting papers. However, other online support can be given as Zoom or MS Teams sessions for groups of learners. Subject areas include horticulture crop nutrition; soil management; crop, weed, pest and disease interactions; biological control; genetic engineering; precision management and big data.