> “Technical innovation is a key driver of horticultural business performance, enabling businesses to respond to changing circumstances and demand.”

AHDB Horticulture

Horticulture occupies less than four per cent of British arable land, produces a vast diversity of fruit, vegetable, salad and ornamental crops and employs the full-time equivalent of 50,000 people.

The sector has an estimated farm-gate value of over £3.1 billion, of which 60% is derived from edible crops and 40% from ornamentals, and an estimated gross value of £9 billion according to official statistics.

Eighty per cent of produce grown in Britain is sold to the multiple retailers and the rest to food manufacturers or direct to consumers through local or online outlets. Demand for most crops is fairly static, but the markets for berry fruits, bagged leafy salads and tomatoes are exceptional in having each doubled or more in volume over the last decade or so. Approximately 40% of vegetables, 90% of fruit (including exotics) and over 90% of ornamentals bought in the UK are imported. Little produce grown in the UK is exported.

Fierce competition in the grocery market is driving down margins and forcing supply chain consolidation. Ninety per cent of the produce sold to retailers is now produced by roughly 10% of growers. Seasonal weather conditions can have a major disruptive impact on production and demand and many larger UK growers grow crops overseas to provide the continuity of supply needed to maintain market access.

British growers receive relatively little in the way of Government support except through the EU Producer Organisation (PO) scheme, Rural Development Programme (RDP) and structural programmes in economically disadvantaged parts of the country.

Challenges faced by the horticulture sector include regulatory and commercial constraints on the availability of pesticides for minor uses and the associated need to improve the resilience and sustainability of crop protection systems.

The increasing cost and potentially decreasing availability of skilled labour, the long-term fragmentation of the applied research and KE landscape and the long term erosion of industry expertise are also longer term challenges for the sector.

The potential impact of Brexit, and the public perception of health and well-being associated with edible and ornamental produce also need to be assessed.

Key Priorities

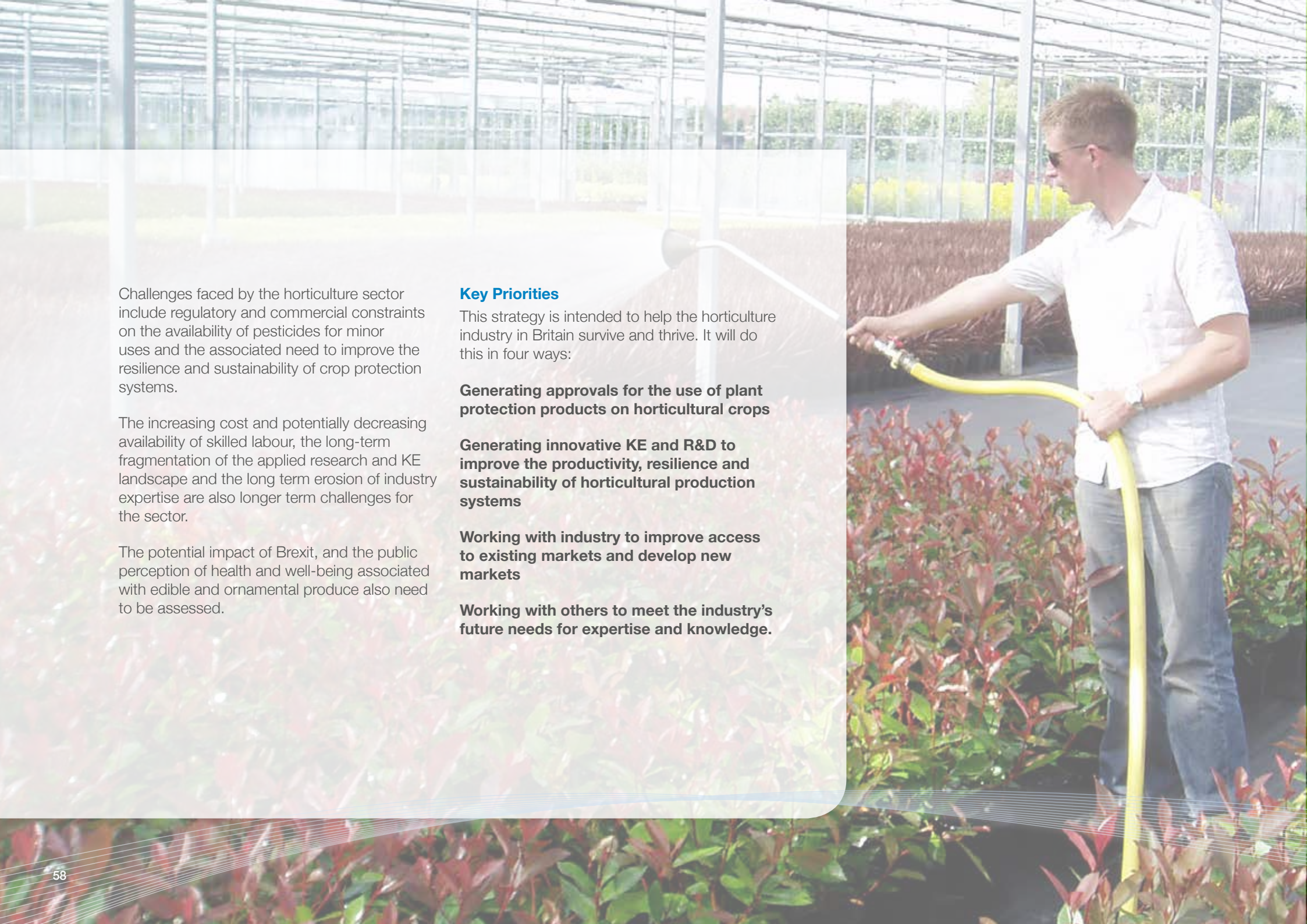
This strategy is intended to help the horticulture industry in Britain survive and thrive. It will do this in four ways:

Generating approvals for the use of plant protection products on horticultural crops

Generating innovative KE and R&D to improve the productivity, resilience and sustainability of horticultural production systems

Working with industry to improve access to existing markets and develop new markets

Working with others to meet the industry's future needs for expertise and knowledge.



AHDB Strategic Priority 1: Inspiring British farming and growing to be more competitive and resilient

AHDB Horticulture's objective is to underpin the competitiveness of horticulture in Britain by maintaining the resilience of crop production.

The resilience of horticultural crop production depends largely on maintaining access to effective plant protection products. As existing approvals are lost for commercial or regulatory reasons, replacements are needed.

Target: To generate new Extensions of Authorisations for Minor Uses (EAMUs) of plant protection products (PPPs) to enable effective management of diseases, pests and weeds of horticultural crops.

Activity 1.1: Generate EAMU applications and supporting data

EU regulatory and commercial pressures on manufacturers mean many currently available PPPs will be withdrawn over the coming decade. As new products of potential value to horticulture become available, EAMUs will be needed to enable their use on horticultural crops.

We will track the loss of actives and approvals, assess potential impact and agree priorities for EAMUs in consultation with grower associations and sector panels. Whenever possible co-funding will be secured from manufacturers. EAMUs approved by the Chemicals Regulation Directorate together with associated efficacy, exposure and crop safety data, will be held by AHDB in a secure database.

AHDB Strategic Priority 2: Accelerating innovation and productivity growth through coordinated R&D and knowledge exchange

AHDB Horticulture's objective is to optimise the productivity, resilience and sustainability of outdoor and protected horticultural crop production systems through innovative KE and R&D.

Technical innovation is a key driver of horticultural business performance, which enables businesses to adapt to changing circumstances and meet changing demand. Fragmentation of the innovation landscape makes it difficult for growers to recognise and capitalise on the potential created by R&D.

Effective integrated crop management (ICM) is fundamental to the production of marketable produce and underpins business profitability. The phased imposition of the National Living Wage (NLW) poses a major threat to the viability and profitability of horticultural production.

The Agri-Tech Innovation Centres offer an exciting opportunity to share costs with others and create new synergies.

Target: Enable growers to increase the productivity, resilience and sustainability of their businesses and achieve a positive return on AHDB's investment in horticultural R&D & KE activities

To maximise the returns on future investment we will review the value of past work when shaping and setting targets for future programmes.

***Activity 2.1:** Exploiting best practice, new knowledge and technology from all parts of the world*

Previous concentration by AHDB Horticulture on tactical problem-solving has meant potentially valuable new knowledge and technological innovation has sometimes not been fully recognised or exploited and past research has sometimes been overlooked. To minimise this risk, we will make horizon scanning and data mining standard practice before research is commissioned.

We will refresh our approach to KE by making more innovative use of digital media and existing industry networks to maximise industry awareness and accelerate the uptake of new knowledge and technology by growers.

We will consolidate R&D into thematic programmes to improve quality and minimise project administration costs. We will strengthen the role of industry coordinators to ensure the relevance and practicability of our work.

***Activity 2.2:** Developing integrated crop management (ICM) systems to minimise the losses due to diseases, pests and weeds and the environmental impact of crop protection interventions*

Cost-effective, resilient, sustainable ICM systems that minimise both the likelihood of pesticide resistance development and possible adverse environmental impacts are essential to the long-term viability of horticultural production systems.

We will focus our KE and R&D work on the development of resilient and sustainable ICM systems using a range of agronomic, behavioural, biological, chemical and genetic control agents, supported by precision diagnostics and decision support tools.

We will seek ways of sharing costs and creating new synergies by working closely with the Crop Health and Protection (CHaP) Innovation Centre and other global centres of excellence in crop protection.

Activity 2.3: *Getting the best and most out of the industry's workforce and operational management processes*

Human labour accounts for between 30% and 70% of total variable production costs. The NLW is driving labour costs up substantially at a time when margins are under strong downward pressure from retailers. Brexit may also alter the future availability of migrant workers.

We will strategically benchmark production systems to determine the scope to improve the use of labour and we will use existing KE networks to cascade awareness of new automation and robotics opportunities to industry.

We will seek ways of sharing costs and creating new synergies by working closely with the Agri-Epi Innovation Centre and other global centres of excellence in automation and robotics technologies.

Activity 2.4: *Building soil health and fertility in horticultural rotations*

Intensive production of field crops has progressively eroded the health and fertility of many soils used for horticultural crop production. We will continue to drive improvements in soil management practice through cross sector KE and R&D programmes including Great Soils.

To enable industry to comply with Government policy on the use of peat in horticulture, we will continue to work with industry on the use of responsibly sourced growing media in protected crop production.

Activity 2.5: *Making efficient use of energy, nutrients and water and securing control of supplies*

Increasing pressure on the availability and cost of resources means growers need secure autonomous capture, storage and recycling facilities and precision control to maximise resource use efficiency. We will continue to develop GrowSave and AHDB's Crop Nutrient Management Guide (RB209) as our primary platforms for disseminating best practice guidelines on energy use and nutrition of horticultural crops. We will collaborate with other AHDB sectors to develop best practice approaches for water management.

Activity 2.6: *Optimising the genetic potential of horticultural crops*

Plant breeding determines and shapes all aspects of crop performance. We will continue to work with industry to ensure the future trait complexes being developed by commercial plant breeders fully reflect the demands of the market, modern production systems and changing environmental conditions.

Activity 2.7: *Understanding microbial contamination of edible produce*

As production, storage, processing and distribution systems evolve, the risk of microbial contamination will change. Working with industry, we will review and periodically update contamination risk mitigation strategies and best practice guidelines.

Activity 2.7: *Improving production systems*

Innovation in production, harvesting, processing and storage systems and associated precision management tools will remain vital to the future security of fresh produce supplies. We will work closely with the Agri-Epi Innovation Centre and other global centres of excellence to evaluate novel production systems and technologies and facilitate their uptake by industry.

Activity 2.8: *Building industry capacity*

The shortage of specialised knowledge in all sectors has become critical. Horticulture offers many fulfilling and rewarding career opportunities which are largely unrecognised by young people. In partnership with the National Land-Based College and others, we will engage with careers advisors and teachers in further and higher education to strengthen careers advice and educational provision.

AHDB Strategic Priority 3: Helping the industry understand and deliver what consumers will trust and buy

AHDB Horticulture's objective is to build the reputation of horticultural produce grown in Great Britain and assess the scope to displace imported produce and generate overseas sales.

A diet rich in fruit and vegetables is highly beneficial for human health. Current Government guidelines state adults should consume five 35g portions of fresh fruit and vegetables a day. Greened environments also have a highly beneficial impact on mental health and emotional well-being. Over 40% of the vegetables and 90% of the fruit and ornamental plants consumed in the UK are imported. Increasing the demand for edible and ornamental crops was a core strategic priority of the Horticulture Innovation Partnership which is now subsumed within AHDB Horticulture's strategy.

Target: To improve consumer understanding of the health and well-being benefits of horticultural produce, and facilitate industry exploitation of existing and new market opportunities.

Activity 3.1: Stimulating demand for edible produce grown in Great Britain

Lasting increases of 50% or more in the consumption of fruit and vegetables have been achieved by The Feel Good Family (formerly Food Dudes) behaviour change programme in primary schools. Educational programmes such as Food For Life and quality assurance schemes such as Red Tractor offer effective ways of promoting quality produce.

We will work collaboratively with these and other bodies to explore, and help industry exploit opportunities to stimulate consumption and demand for edible fresh produce.

Activity 3.2: Identifying and accessing domestic and overseas market opportunities

The UK imports large quantities of edible and ornamental produce and exports relatively little. Faced with declining margins in most markets, the industry requires a better understanding of potential market development opportunities and associated technical and commercial barriers. We will work with industry to identify and develop champion products and exploit promising market development opportunities.

AHDB Strategic Priority 4: Delivering thought leadership and horizon scanning

AHDB Horticulture's objective is to assess the potential impact of external changes on horticulture in Great Britain and inform the thinking of industry and others.

The industry needs a full understanding of the many complex challenges it faces and their implications so that businesses can respond proactively in the most effective ways possible. To achieve this, evidence from different sources must be combined, shared and expertly interpreted. Our planning activities need to engage all key stakeholders.

Target: Annually update risk analyses and mitigation plans and position AHDB Horticulture as a key influencer of horticulture industry thinking and planning.

Activity 4.1: Risk assessment

We will continue to monitor and assess potential challenges to horticulture in Great Britain. We will explore opportunities to exploit horticultural metadata in collaboration with the Agrimetrics Innovation Centre and other centres of excellence. We will work with grower associations, trade associations, leading suppliers and other bodies to develop risk mitigation strategies.

Activity 4.2: Industry skills development

Long-term underinvestment in the diverse expertise and knowledge required by the horticulture industry has eroded capacity. We will work collaboratively to facilitate sharing of expertise and knowledge and will continue to support student bursaries, fellowships, Nuffield Scholarships, PhD studentships and professional and technical training programmes for the industry.

Activity to phase out, divest or reduce investment in for 2017 - 2020

Activity: Integration of R&D and KE programmes

Commissioning exclusively in responsive mode through sector panels has generated many small single-contractor projects of variable quality and an unwieldy burden of management and administration of projects and contracts.

We will adopt a more balanced programme development model with proactive commissioning of larger consolidated programmes by balanced consortia. This will encourage research of higher quality and minimise administrative workload, while fully retaining our capacity to react to industry needs as and when these arise.

Activity: Commercialisation of diagnostics and decision-support systems

Various research partners have contributed to the development of AHDB Horticulture's existing suite of diagnostics and decision support tools, but none has proved consistently capable of delivering these tools cost-effectively to the market.

We will seek and work with new commercial partners whose track record demonstrates their ability to achieve this, to whom future work of this kind will be transferred.

Activity: Strengthening alignment with grower associations, trade associations and sector panels

AHDB will consult with growers of all major crops and grower associations to generate an annually updated list of crop needs. AHDB sector panels will turn these into annual sector priorities aligned with AHDB Horticulture's strategic priorities. Functional teams will plan, manage and deliver the necessary work programmes.

How AHDB Horticulture will invest

The proposed budget comprises the allocation of AHDB Horticulture levy income across the AHDB delivery functions.

These charts are indicative and show how expenditure will change over the next three years. Levy rates will stay the same for 17/18 and there is no intention for levy rates to change in the final two years of the strategy.

Any changes to levy rates would be subject to industry consultation. Current levy rates can be found on page 88.

The main change to the horticulture budget between 2016-17 and 2019-20 is a progressive increase in KE and corresponding reduction in R&D expenditure. There will also be some new expenditure on KE hub development and capacity building activities.