



Position Statement



Background

Horticultural crops (vegetables, fruit, potatoes) are major components of a healthy diet and the provision and consumption of a diet rich in these provides benefits to human health. The availability of a wide range of high-quality horticultural crops that have a high concentration of beneficial nutrients, flavour characteristics and extended shelf life are welcomed by consumers.

In turn, the UK economy benefits from the £4 Billion contribution of horticultural crops (including flowers) annually, a more valuable contribution than cereal crops such as wheat, barley and oats (worth > £3 Billion; DEFRA, 2019). A diet rich in fruit and vegetables also contributes to the prevention of non-communicable diseases, thus reducing the cost-burden on the NHS, lost days at work and poor school attendance. Land used for horticultural production can bring environmental benefits, including increased biodiversity and habitats for pollinators.

It is estimated that one third of food produced globally is wasted before it is consumed. In the UK, this equates to >15 million tonnes of food and drink annually; valued at over £20 billion. More than 50% of this is wasted in the supply chain before it reaches the consumer's home, because the products do not meet quality expectations. There are benefits to the economy and environment from reducing food loss along the supply chain, particularly when standard practices for extending shelf-life, such as the use of plastic packaging, are being discouraged and the consumption of UK grown crops is being encouraged. The UK Horticulture food crop sector therefore faces many technical challenges in ensuring that sufficient and high-quality UK grown crops are available to consumers. Meeting these challenges will require crops that reach optimal harvest stage over a wider and more predictable seasonal window, that are of consistent and uniform quality, resilient to bacteria, fungi and biochemical processes that could cause spoilage and crops that have extended storage life when they reach the customer. An additional challenge will be to react to the demand for less plastic packaging. There is an immediate need to reduce food loss and develop solutions that enable more sustainable production and food system practices to evolve. These will lower the environmental footprint, benefit planetary and human health and allow more of the food harvested to reach the consumer.

The **Horticultural Quality and Food Loss Network**, funded by BBSRC for three years initially, will provide a focal point for the UK horticulture food sector by bringing together industrial and academic practitioners to develop new scientific and technological solutions to improve horticultural crop quality attributes including shelf-life, flavour and nutrition and reduce postharvest food losses. This helps to address the BBSRC Strategic Priorities for Agriculture and Food Security, together with the UN's Sustainable Development Goal 12.3 "Sustainable Consumption" with reducing waste being a key metric of monitoring achievement of this goal. There is a need to reduce food loss during production in order to feed the global population and a commitment in the UK to reduce food losses and waste by half by 2030. UKRI-BBSRC have identified significant opportunities for science to reduce food losses in horticultural crops through novel and enhanced connection between multi-disciplinary researchers and research end-users such as industry and policy makers.



Aim and Key Performance Indicators

The Aim of the Network is to

Act as the leading collective voice for the UK horticultural and postharvest community.

The Network will consolidate and extend the work started by BBSRC HAPI projects but with a defined post-farm gate focus that addresses the specific need for waste and food loss reduction and improved quality traits in horticultural crops. The Network will encourage partnerships between researchers and industry from a wide range of disciplines by allocating funding for joint short term projects which will facilitate the awarding of high value funding that will make a 'step change' difference to the sector. Half of the funding will be ring-fenced for early career researchers. This will help to ensure that the development of the next generation of researchers and 'experts for the future' is a legacy of the Network. A proposed reinvigoration of interest in tackling food loss through research and promoting improved horticultural crop quality will help to achieve the key KPIs of the Network which are:

- i. Coordinate, widen and inform community interactions across academic, business and other stakeholders by signing up 300+ active members over the lifetime of the network, with sub-targets of 100 members within 12 months of first call deadline, 200 members within 24 months of the first call deadline.
- ii. Demonstrate year-on-year growth in the engagement of early career researchers (ECR) within the Network through tracking membership data, participation in meetings and application for different types of funding offered by the Network.
- iii. Demonstrate community engagement with seed-corn research projects and other dissemination and knowledge exchange activities through measuring the (a) number and diversity of participants in sandpits (or numbers of applications where a selection process is applied), (b) applications for different funding types over the lifetime of network.
- iv. Demonstrate that HortQFLNet funding has led to follow on applications (e.g. other types of Network funding, fellowships, PhD studentship applications, UKRI funding applications) and/or business impact (qualitative case studies).
- v. Provide examples where HortQFLNet funding has been used to match funding from other national bodies and networks to deliver research projects or events.
- vi. Demonstrate, through reporting on completed projects, that HortQFLNet funding has been used to develop new collaborations that did not previously exist.

An Early Career Researcher (ECR) is defined as anyone within 10 years of gaining a PhD and/or anyone appointed to their first academic post on or after 1 August 2016.

Network Engagement / Support Activities

Membership to the Network is free and open to all, accessible via the Network's website. Information will be shared with members via the website and regular newsletters. Network Membership provides opportunities for academic participants to engage with industry partners for development of potential collaborations.

The Network will host events and provide a forum for discussion opportunities to facilitate these industry-academic partnerships. These will include





- Official Launch and Industry Workshop [virtual due to COVID restrictions]
- A virtual meeting room facility
- An annual sandpit event focussed on developing partnerships and networks (in Year 2) replacing the proposed Community creative sandpit event (Year 1) and ECR specific sandpit event in (Year 2). This replacement was necessitated due to the COVID pandemic and UK Government restrictions imposed in March 2021 (Year 1)
- Final Research Symposium – linked to ISHS International Congress (in Angers, France, 14-20 August 2022)

Global Impact

The aim of the Network is to support UK Horticultural science but whilst this is the focus, confirmed interest has been shown from universities and research institutes across all global continents (Figure 1). The Co-Directors of the Network aim to leverage expertise within the global postharvest community using their personal scientific networks and encourage cross national collaborations.

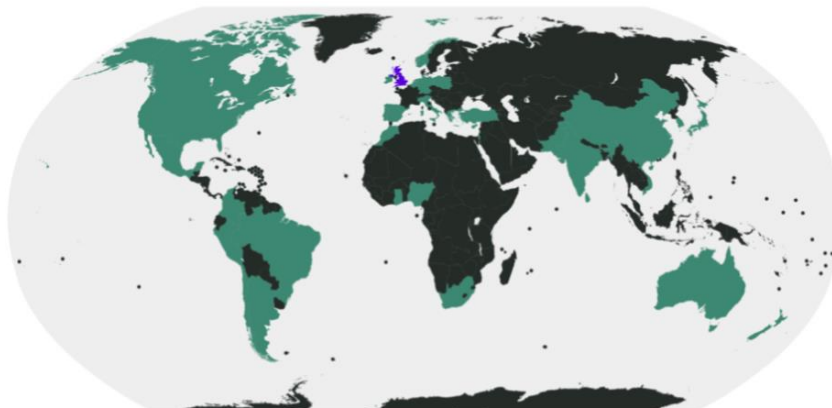


Figure 1. Countries where confirmed interest has been shown in the network from universities and research institutes – shown in light green. The United Kingdom is shown in purple.

Management and Governance - Structure – Leadership

The network is jointly led by Professor Carol Wagstaff (University of Reading) and Professor Leon Terry (Cranfield University), both internationally recognised research leaders in quality and postharvest preservation of horticultural products. They have overall responsibility for network leadership, operations, risk assessment and finances. They are supported by Dr Sofia Kourmpetli (Network Liaison Manager – Cranfield University) and Jane Bradbeer (Network Manager – University of Reading) to form the Network Leadership Team.

The Network is also supported by the Network Management and Advisory Boards (Figure 2).

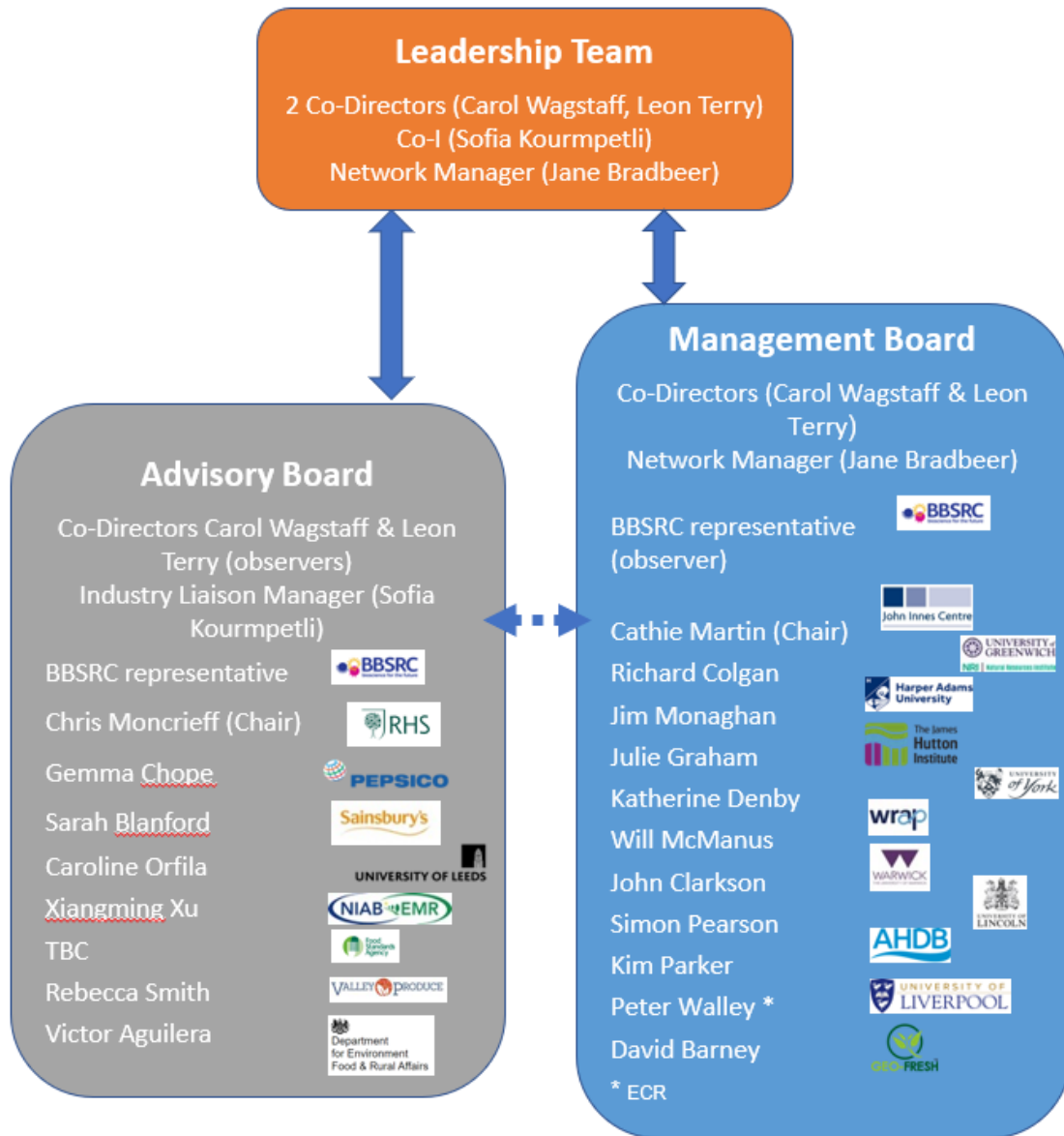


Figure 2. Relationship between Network Boards. Dotted line indicates communication rather than chain of command.

The **Management Board** comprises scientists who have worked in the postharvest arena, horticulture, institutions involved in fundamental plant science research, and representatives from industry and other networks.



Terms of Reference for the Management Board are:

Purpose

- To provide support for the Co-Directors in the delivery of the Network vision and objectives.
- To ensure that operational and community building activities steer the Network towards meeting its objectives.

Outline of Functions

- To be responsible for managing pump-priming project evaluations and ensuring that the breadth of relevant themes in the Agriculture and Food Security Strategy are adequately met.
- To promote collaborations and interactions with other institutions, networks and business who work with horticultural crops or in fundamental plant sciences.
- To provide advice, information and other support, e.g. promotion of activity to personal contacts, to the Network Advisory Board

The terms are reviewed every 18 months to ensure continuing relevance and ongoing development of the Network strategy.

The term of office for the Management Board is 18 months with opportunity for members to stand for a second term. At this time the Board can consider if any new expertise on the Board is required.

Meetings take place twice a year, usually in Q1 and Q3. For the meetings to be quorate and actions agreed, the minimum number of people attending should be at least seven and represented by

- Chair of the Management Board (or his/her representative)
- Five additional members
- Either Co-Director (Prof Terry or Prof Wagstaff)

Secretariat is provided by the Network Manager.

The Management Board will report into the Advisory Board via minuted meeting reports and to the Leadership Team via the Co-Directors who represent both Management board and Leadership Team.

The **Advisory Board** comprises of representatives from government, 3rd sector and industry with passion for improving horticultural quality and reducing food loss and waste. Their remit is to provide direction and strategic advice for network activities and monitor the activity and performance of the Leadership Team.



Terms of Reference for the Network Advisory Board are:

Purpose

- To provide advice to the Leadership Team and Management Board to maximise opportunities for the additional leverage of resources to support horticulture.
- To ensure that the Network themes and priorities are developed from an evidence base and consider existing and future industry needs.
- To inform the position statement and KPIs, and review progress towards them.

Outline of Functions

- To provide strategic guidance on the development, implementation and evaluation of the Network, reflecting the changing needs within the horticulture industry to ensure its long-term sustainability.
- To provide overall monitoring and evaluation of the Network, including the review of diversity and inclusion of Network membership.
- To support the dissemination of good practice and learning across the Network and to the wider horticultural sector.
- To share information regarding national and international strategies, policies and funding opportunities relevant to the Network.

The terms are reviewed every 18 months to ensure continuing relevance and ongoing development of the Network strategy.

The term of office for the Advisory Board is 18 months with opportunity for members to stand for a second term. At this time the Board can consider if any new expertise on the Board is required.

Meetings take place twice a year, usually in Q2 and Q4. For the meetings to be quorate and actions agreed, the minimum number of people attending should be at least seven and represented by

- Chair of the Management Board (or his/her representative)
- Two additional members
- Either Co-Director (Prof Terry or Prof Wagstaff)
- Network Liaison Manager

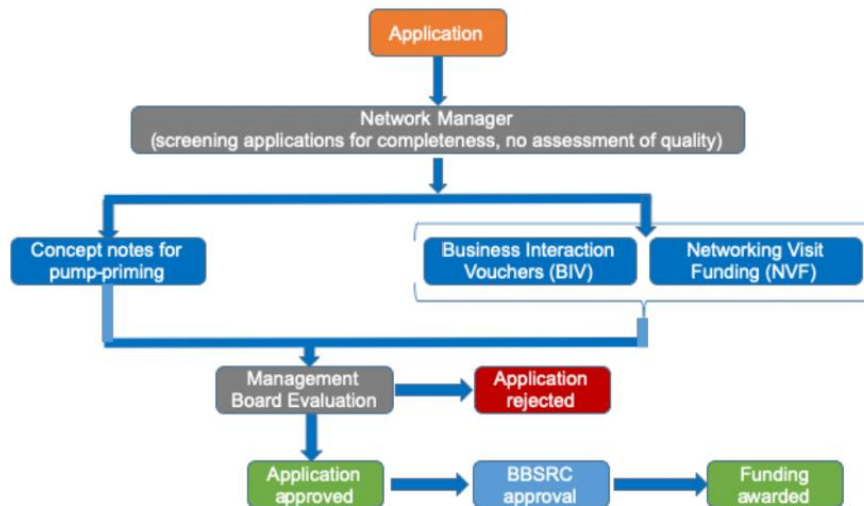
Secretariat is provided by the Network Manager.

The Advisory Board will report into the Management Board via minuted meeting reports and via the Co-Directors, who represent both Management Board and Leadership Team, in an observer capacity.

The Management Board who sit in the quarter ahead of Advisory Board meetings ensure that their reports and funding decisions are available for the Advisory Board to review.

Types of funding

Three types of funding are available during the project, pump priming, business interaction vouchers and network visit funding. All funding routes are evaluated and approved by the Management Board and only awarded following BBSRC approval.



Pump priming Funds

The Network has pump-priming funding available to finance short term collaborations between businesses and academics. The aim is to use pump-priming to map out and develop ideas and research plans that would enable a project to be developed beyond the pump-priming phase. The Network encourages industry to underpin potential academia-industry partnerships through pump-priming which could facilitate collaborative research applications for more substantive UKRI funding beyond this phase.

Concept note proposals can range from feasibility studies and acquisition of preliminary data to desk-based studies and visits to learn new techniques. These will be wide-reaching and ideally multi-disciplinary demonstrating the diversity of the remit and potential for collaborations.

The key strategic priorities to be addressed from funding projects are guided by the [BBSRC Agriculture and Food Strategy document](#) as follows:

- i. Enabling more effective prediction and better control of harvesting windows by understanding the underpinning developmental biology of crops
- ii. Optimising uniformity and physical traits by exploiting crop genetics
- iii. Reducing the risks of spoilage by understanding and managing the relevant biological processes
- iv. Minimising losses within the food system by understanding and controlling the fundamental biology that influences food storage and shelf-life

A fifth priority will also be included the scope of this project –

- v. Increasing resilience of the fresh produce supply chain by understanding the impact of adverse factors (such as Covid-19 pandemic) on food security



Examples of project titles for the key priorities are:

- I. "Regulation and manipulation of genes which influence flowering time in order to extend the harvest window of horticultural crops"
- II. "The use of improved crop genetics to enhance and optimise tomato fruit quality and longevity"
- III. "Development of alternative sprout suppressant technology to minimise potato crop quality loss and extend dormancy"
- IV. "The use of bioplastics to enhance fresh produce shelf life"

For information about the allocation, value and criteria weighting of pump-priming funds, please refer to the call guidance documentation.

Applications will be evaluated using the following criteria:

- Scope/Relevance to improving horticultural crop quality and reducing food loss; relevance to UK food system security and ability of the work to enhance food supply chain resilience (20 %)
- Scientific excellence and novelty (40 %)
- Stakeholder engagement (including industry) and value for money (5 %)
- Inclusion of appropriate disciplines (5 %) *
- Potential of the project and associated follow-on activity to deliver impact at scale, including clarity of the legacy plan for progression of work post pump-priming (20 %)
- Opportunities for research staff and ECR involvement and career development (10 %)

*Proposals should be able to demonstrate that they have brought together all the relevant disciplines in order to maximise its chances of success. For some projects this will require an inter/multi/transdisciplinary approach, but for others a single disciplinary approach may be adequate.

Applications will be initially assessed for scope-fit by the Network Manager with support from the HortQFLNet Leadership Team. Each application/concept note will then be reviewed by at least two Network Management Board members. Proposals will be ranked and discussed at a Management Board (MB) meeting where preliminary decisions on the award will be made. The Management Board members represent a mix of academic and industry facing representatives, providing expertise to assess projects for both scientific excellence and industry relevance.

Handling conflicts of interest

During the application review meeting, any member of the MB who has a conflict of interest will not be involved in the assessment or ranking of those individual project proposals and will be asked to leave the review meeting as per standard practice. If there is disagreement amongst the Board members, the Chair will have the deciding vote. Each successful project will go through institutional ethics, data management and health and safety committees in accordance with local management structures and shall be the responsibility of the host University.



The Leadership Team will put forward their proposals for the successful pump priming projects to UKRI-BBSRC who retain the right for final sign off on funding decisions.

Business Interaction Vouchers

BIVs enable researchers to meet with industry partners to develop project ideas and conduct feasibility trials of new processes. The data may support pump priming funds or go directly to alternative funding instruments such as Innovate. Three rounds of funding take place, one per year; £5K is available per round.

Network Visit Funding

NVF funds enable business and academic partners or academics from different institutions to meet with the aim of co-developing project ideas. The funds primarily cover travel expenses and limited experimental work. Three rounds of funding take place, one per year; £5K is available per round.

The BIVs and NVFs are facilitated and administered by the Network Liaison Manager in consultation with the Leadership Team and BBSRC.

Restriction on co-directors in terms of applying for funding

Co-Directors cannot apply for funding as PIs. In compliance with the governance of the Management Board, if the Co-Directors as members of the MB have a conflict of interest with an application, they will be asked to leave the room when that application is discussed and scored – see 'Handling conflicts of interest' section above.



Version Control

Version Number	Version Date	Reasons for issuing new version
1	July 2020	
2	October 2020	Management Structure updated – Victor Aguilera replaced Heather Alford on Advisory Board
3	May 2021	Network activities updated to reflect single Yr 2 sandpit event replacing events planned for Yr 1 and 2 [changed due to COVID-19 pandemic]. Management Structure updated – Kim Parker replaced Nikki Harrison on Management Board representing AHDB. Evaluation criteria updated. Conflict of interest updated to reflect processes in 2020 Funding Call – MB members not involved in assessment or ranking process; Chair will have deciding vote if there is disagreement amongst MB members.
4	August 2021	Management Structure updated. Liz Goodwin and Rick Mumford (Advisory Board) decided not to continue their Term of Office. Chris Moncrieff replaced Liz Goodwin as Advisory Board Chair. A replacement for Rick Mumford is currently being sought at FSA