



FUTURE PROOFING

INTRODUCTION:

Being prepared for the future can help businesses to build their resilience to the challenges that lie ahead. This is often done by adapting their operations and by diversifying what they grow and where they sell.

Whilst all businesses are affected by rising costs from energy and other raw materials, and disruption to supply chains. Horticulture businesses are perhaps more directly exposed to issues such as changing weather patterns, outbreaks of pests and pathogens and labour shortages that can affect harvests and impact on growth.

Of course, not all circumstances can be predicted and not every business is the same. Small businesses typically have shorter or less complex supply chains than larger competitors and many are involved with importing and exporting plants and plant products.

Therefore, it is vital that each business does an assessment of the opportunities and risks that may be unique to them.

To help you, this section explores the key issues facing horticulture businesses. It contains links to others sections of the Knowledge Hub with practical steps to consider and links to other useful resources.

Use this section to find out how to:

- Identify areas where you can future proof your business
- Adapt to changing circumstances
- Build your business resilience for the long term

Other sections of the Knowledge Hub cover Water Use, Resource Efficiency, New Innovations, Plant health and will be useful to find out more about these areas.

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1. CLIMATE CHANGE

Our changing climate is predicted to affect growing conditions in Wales in a variety of different ways.

Weather patterns will be less predictable. Wales may become wetter but with more extreme events such as flooding, heat and drought that may disrupt cultivations and crop scheduling. Higher temperatures and CO₂ could mean higher yields of certain varieties.

Horticulture businesses should look at crops and varieties that are more drought or heat tolerant and include these in the crop schedules so that there is resilience to the supply of produce.

The range and severity of pests and pathogens that affect crops will change and horticulture may become more vulnerable to diseases. Crop protection regimes will be adapted with different species selected that are more resistant and varieties that don't need chilling.

Businesses will need to plan for extreme weather events by, for example building wind resistant structures, shading of glasshouses, planting trees to provide shade, having on-site reservoirs and good drainage channels around hard standing structures. More ground cover may better protect soil from leaching and erosion.

The most affected businesses are likely to be those that take a long time to change the crop, such as businesses that grow trees. This is particularly the case for visitor attractions such as parks and gardens that rely on trees. They have been hit by problems such as ash dieback and need to have programmes of continual planting and replacement with diverse mixtures.

Climate models will be useful in planning along with information on pest and disease resistance. By taking steps to improve efficient use of natural resources horticulture businesses can reduce their emissions and save costs.

The Climate Change Committee Independent Assessment of UK Climate Risk provides a detailed and useful source of further reading: <https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/#key-findings>

Other sections of the Knowledge Hub cover Resource Efficiency, Water Use and Plant Health are recommended for further reading.

Additional useful resources provided by Tyfu Cymru can be found here:

- [A Summary of the Key messages from the Plant Health in Horticulture Conference 2020](#)



2. NATURAL RESOURCE USE AND THE CIRCULAR ECONOMY

By taking steps to improve energy and water efficiency and preventing waste horticulture businesses can reduce emissions and save costs.

Energy: The rising costs and availability of fossil fuel derived energy will likely necessitate a switch towards renewables and away from diesel and petrol delivery transport costs towards electric vehicles. Businesses located rurally will be acutely affected due to the distance to market. The production of pesticides and fertilisers is energy intensive and oil derived so alternatives will be needed.

Water: Changing climatic conditions may mean periods of drought, and so plant stress, leading to loss in production and increased plant disease. Standing and stagnant water in hot weather will also lead to the build-up of pathogens and these will need to be monitored on horticultural holdings.

Alternatively, high levels of rainfall will lead to flooding and waterlogging. Nurseries will need to prepare for such conditions.

Peat and plastic: Legislation is changing the materials available to businesses whether this is plastic or peat. The circular economy is all about keeping resources in use for longer by sharing resources with nearby businesses, converting by-products and waste into useable resources and rethinking conventional business models where, for example, Christmas Trees are rented and returned to the nursery to continue to be replanted and to prevent waste.

Soil erosion and fertility: With climate change and more extreme weather events including heavy rainfall, soil erosion is likely to become an increasing problem. Growers should make sure that their land is protected through good drainage and keeping crop coverage for as long as possible throughout the seasons. Soil fertility relies heavily on the addition of chemical fertilisers derived from fossil fuels. Reliance on artificial fertilisers can be reduced by using new cultivation methods on smaller holdings such as no-dig cultivation.

The Welsh Government Strategy on the Circular Economy 2021 – Beyond recycling provides a detailed and useful source of further reading: <https://gov.wales/beyond-recycling-0>

Other sections of the Knowledge Hub cover Resource Efficiency, Water Use and Soil are recommended for further reading.

Additional useful resources provided by Tyfu Cymru can be found here:

- [Ben Hartman Webinar: Small Farm composting and no-till soil building](#)
- [Peat Free](#)
- [Niels Corfield – Soil Health for Commercial Growers](#)



3. SKILLS AND LABOUR

Horticultural businesses are dependent upon skilled labour, but a shortage of skilled workers means it is increasingly vital to attract talent to the industry. Ways this can be achieved include by promoting the benefits of working in horticulture and by providing secure and meaningful work.

Planning is needed to ensure appropriate education and training for the industry in Wales. Colleges and apprenticeships have a crucial role, but some salaries paid, as well as the seasonality of the work can make it difficult to recruit. Businesses can look at ways of encouraging recruitment into the industry, providing incentives, training, flexibility and a good working environment.

A useful webinar provided by Tyfu Cymru can be found here:

- [Diversifying into horticulture: Diversification business models and routes to market](#)

4. SUPPLY CHAIN MANAGEMENT

Good supply chain management is critical to running a successful horticulture business and whether you operate locally or internationally understanding how to make your supply chain work better will help prevent disruptions.

Import and Export: International trade has many regulations. Plant Passports or Phytosanitary Certificates are needed whereas some goods will require pre-notification before import and plant inspections can be required. This adds costs and administrative challenges.

Importing goods from areas that have pests or pathogens risks introducing problems to Wales and require additional biosecurity measures.

Businesses involved in import and export need to be aware of these procedures and regulations and stay up to date with the changes which have been rapid and complex over the past few years.

To find out more about import and export please refer to the Plant Health section of the Knowledge Hub.

Useful webinars provided by Tyfu Cymru can be found here:

- [Horticulture Leaders Forum: Supply Chain masterclass](#)
- [Horticulture Professional Development Programme Taster: Doing more with less](#)
- [Smart Utilisation of an Integrated Pest and Disease Management System](#)
- [Plant Biosecurity](#)



5. BUSINESS AND FINANCIAL PLANNING

Business planning helps you set out your objectives and supports financial planning. Many businesses fail because of poor management of cash flow. If your business spends more than it earns, you have a cash flow problem. Unforeseen changes, inflation, exchange rates, taxation changes and plant health incidents will all affect this. For most businesses, the most important aspect of cash flow management is avoiding extended cash shortages, caused by an overly large gap between cash inflows and outflows. You won't be able to stay in business if you can't pay your bills for an extended period of time. Financial planning will need to incorporate contingencies.

To find out more about Business and financial planning please refer to the Business Development section of the Knowledge Hub.

Useful resources provided by Tyfu Cymru can be found here:

- [Horticulture Leaders Forum: Business Development masterclass](#)
- [Horticulture Leaders' Forum – Expert Panel Debate](#)

6. MARKET TRENDS AND CUSTOMER DEMAND

Whilst there are many staple crops in horticulture, market demand for many, whether food or ornamental, are subject to trends that change over time.

By responding to these trends businesses can take advantage of new opportunities for diversification. There are many sources of market intelligence available to growers who should also keep track of trends in the media.

Food Security: With climate change and international relations under constant flux. Governments are looking towards more food security. This will rely on greater domestic production in terms of volume and variety of products including growing crops commercially that have traditionally relied on importation. This presents great opportunities to the adaptable businesses who make use of market intelligence.

Customer demand: consumer trends for horticulture produce change, and of particular importance is the health agenda. This agenda will lead to changes in demand for vegetables and fruit, and for recreation in terms of ornamental gardening, particularly urban gardening, and visits to parks and gardens.

The breeding of new varieties and their market promotion will give new opportunities, and these should be watched closely by growers.

Sustainability and environmental performance are increasingly important parts of the customer's decision in selecting a business or a product. Producers need to ensure that are environmentally aware and can communicate their performance.

Scaling-up a business may be planned in responding to customer demand or in actively developing new opportunities. Businesses need to be aware of the risks and challenges in scaling- up and need to be well-informed as to whether it will be right for them.



To find out more about market trends and customer demand please refer to the Knowledge of the Marketplace section of the Knowledge Hub.

Useful resources provided by Tyfu Cymru can be found here:

- [Diversifying into horticulture: diversification business models and routes to market](#)
- [The roles of trade associations in raising awareness and representing members](#)
- [Commercial Horticulture Plan 2020](#)

7. LEGISLATION AND INDUSTRY STANDARDS

Regulations exist to ensure safety and to meet trading and environmental standards. Whilst many standards are voluntary there are some that horticulture businesses are required to meet include in areas such as waste management, water management, biosecurity, pollution control, pesticide usage, taxation, plant variety rights and seed marketing, plant breeding and gene-edited varieties, import and export controls, land use and planning.

Additionally, businesses that meet higher standards can benefit from a growing demand consumer demand for sustainable produce.

Land use classification and planning permissions are used to help develop and protect communities and the environment. However, when new enterprises are being considered these may appear to be restrictive. It is essential that businesses understand planning regulations and work with planning officers to provide the best results.

Variety Registration and seed exchange regulations around which varieties may be planted and sold commercially and what seed and planting material may be sold is complex. It is important that producers understand these regulations and Plant Breeders' Rights.

This is difficult for small businesses to keep up with and so it is important that they develop networks with other businesses and make use of the professional advice. An official source of information on the regulatory environment is here: <https://www.gov.uk/>

Certification and accreditation are increasingly required by retailers. They demonstrate the environmental and quality standards that your produce meets and are useful in marketing. These certifications change and it is important that you choose one that is appropriate to your business.

National research agendas are put in place to solve problems. Since the changes to the availability of information from AHDB to horticultural growers it is essential that growers are actively engaged with government in setting the types of research projects that are carried out and ensuring they are relevant and practical. Producers also need to have access to advice on the latest technological and husbandry improvements.

Useful resources provided by Tyfu Cymru can be found here:

- [Introduction to agricultural standards for commercial horticulture production.](#)
- [What is certification and accreditation all about?](#)
- [What is Red Tractor Certification all about?](#)



8. TECHNOLOGY

Available technology for use in horticulture is developing rapidly. As these new technologies become more cost-effective they are being adopted commercial growers to improve productivity and yields, as well as reducing workloads.

It is important for horticultural businesses to be aware of these technologies and how they are used. Some examples of new technology includes:

Hydroponics and precision horticulture. This enables plants to be grown indoors and under lighting, with the exact water and nutrients required. Plants can also be propagated quickly and as uniform clones, through tissue culture in artificial conditions.

Pest and disease management. Due to environmental risks chemical controls are decreasing in their use in nurseries and being replaced by Integrated Pest and Disease Management using biocontrols. Advances are also being made in disease diagnostics which enable targeted control measures

DNA technologies. Gene sequencing and other DNA techniques are being applied to plants. Current techniques useful to horticulturists include gene detection where beneficial genes can be found early in the plant breeding cycle after hybridisation. It is possible that new plant varieties will become available that are produced using the gene-editing techniques.

Automation and increased mechanisation. Robotic planting and harvesting and the use of drone mounted cameras for crop monitoring will help fill gaps left by labour shortages. Their development is high on research agendas.

Lighting. Light affects plants productivity and seasonality. Advances in low energy lighting such as LED optimise the wavelength and duration of light for crops.

To find out more about technology please refer to the New Innovation and Techniques section of the Knowledge Hub.

Useful resources provided by Tyfu Cymru can be found here:

- [Horticulture Leaders' Forum – Expert Panel Debate 2](#)
- [Controlled Environment Agriculture Article and Vertikit Case Study](#)



9. FURTHER READING

Other useful information provided by Tyfu Cymru can be found here:

Webinars:

- [Tyfu Cymru and Charles Dowding Webinar Part 1: No dig methods and advantages for cropping](#)
- [Tyfu Cymru and Charles Dowding Q&A Part 2: No dig methods and advantages for cropping](#)
- [Integrating farm tourism into your horticulture business](#)
- [Diversifying into horticulture: Navigating the planning process](#)
- [Considerations for leasing land and creating contracts](#)
- [Vale Pick Your Own. Diversification Success Story](#)

Factsheets:

- [Starting a horticultural attraction](#)
- [Microbiological risk – what can we do?](#)
- [Food Safety: What are the risks from food](#)
- [Pick Your Own \(PYO\): What you need to know to get 5* rated. Part One](#)
- [Pick Your Own \(PYO\): What you need to know to get 5* rated. Part Two](#)

Notes

Every effort has been taken to ensure the information contained within this guide is accurate and current at the time of writing. We cannot take responsibility for links to external web-sites.

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