



RESOURCE EFFICIENCY

INTRODUCTION:

Using resources wisely is an essential part of managing the smooth operation of a business because it reduces costs.

As businesses, we all rely on resources such as energy and fuel to do what we do. This generates greenhouse gas emissions. As we grow so does our consumption of these resources, so we need to carefully manage this and keep our emissions down.

For horticulture businesses, the challenges are perhaps more acute and some key focus areas are with peat, plastic, fertiliser and pesticides. Removing peat from its natural habitat emits carbon. Discarding single use plastic creates waste that pollutes the atmosphere as it breaks down. Whereas chemicals can lead to pollution from run-off and affect biodiversity.

Perhaps more fundamentally, with the current and significant price hikes in energy, fuel and other inputs, it makes sense for commercial horticulture businesses to take steps to become as efficient as possible in their use of these vital resources.

Of course, being more efficient when using resources also improves your businesses environmental performance, reducing emissions and lowering your carbon footprint. Doing this helps you meet environmental legislation and global reduction targets for Net Zero.

In this section find out how to:

- Identify where you can make cost savings in your process
- Take practical steps to manage your resources more efficiently
- Improve your environmental performance.

The following resources from Tyfu Cymru are recommended:

- [Horticulture Professional Development Programme Taster: Doing more with less](#)

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

CONTENTS

This section breaks down the horticulture process into stages. These are suggested to help you consider the resources you use at each stage and then begin to identify and prioritise where improvements can be made.

1. Harvesting
2. Storage
3. Packaging and delivery
4. Measuring impacts
5. Renewables and efficiency
6. Case studies



1. HARVESTING

Horticultural crops are commonly propagated by seed. Some crops are produced in trays and mats until the plant germinates. These can then either be raised in a greenhouse or transplanted into a field where the crop grows.

Along with soil and water that are detailed in other sections of the Knowledge Hub, the resources used at this stage are broadly energy for heat and light, fuel for machinery, nutrients and fertilizer, composts and peat.

Some useful questions to consider include:

1. Do you know how much energy, fuel and peat you use and when you use it? Keeping a regular record of this can be a first step to understanding where you can make savings.
2. Do you have greenhouses or polytunnels that are heated? Are they adequately sealed to prevent heat loss and ventilated to ensure plant health is optimised?
3. Do you collect and recycle rainwater for watering? Thereby reducing your need for mains water.
4. Do you routinely undertake maintenance of machinery? Ensuring energy using equipment is working efficiently can be simple and effective way to keep costs down.
5. Do you target applications for nutrients and chemicals? Managing these inputs can reduce emissions as well as costs.

Useful webinars and resources provided by Tyfu Cymru can be found here:

- [Ben Hartman webinar: using the lean system to earn a comfortable living on a farm](#)
- [Ben Hartman webinar: small farm composting and no-till soil building](#)
- [Technical advice sheet: peat-free horticulture – how and why?](#)

2. STORAGE

Once produce has been harvested it often needs to be stored. Keeping produce stored at the right temperature and humidity can be vital to maintain quality. Whereas heating and cooling at the wrong temperature can be costly in wasted energy and losses.

Some useful questions to consider include:

1. Do you have control devices installed in your storage areas?
2. Are your storage areas adequately insulated, sealed and ventilated? This will help maintain temperatures and reduce energy bills.
3. Do you regularly perform checks to ensure temperature and humidity is maintained?
4. Do you routinely check for damage to insulation and maintain seals around doors and windows, for example?
5. Do you minimise the time that storage doors are open for? When doors need to be kept open during daily operations consider using door strips or automatic doors to prevent energy loss.

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

- [Seed cleaning and storage – toolkit](#)



3. PACKAGING AND DELIVERY

Getting produce to customers is one of the key challenges commercial growers face, particularly when they are based in rural areas that can be some distance away from urban hubs.

Clearly a fully loaded van is a lot more fuel efficient than a half full one. So, planning deliveries effectively can be an effective way to save fuel and avoid unnecessary delivery runs.

Whereas, the focus on plastic waste has led to alternative packaging materials being developed. However, sometimes these are expensive and not always better for the environment - particularly if they are single use.

Some useful questions to consider include:

1. Can you share deliveries with other businesses? Is back hauling viable?
2. If you deliver direct to customers, this may be a considerable fuel cost – can you arrange drop offs in a central point for customers to collect?
3. What about EVs? The costs are currently beyond the reach of most small businesses but this technology is fast developing. With a ban on selling diesel, petrol and hybrid engines by 2035 this is one area to watch.
4. Is the packaging you use single use and is it left with your customer to dispose of at a cost to you (and a burden to them) or can you offer a re-usable packaging system that you can collect or that they can return after use?

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

- [Should we say no to floral foam?](#)

4. MEASURING IMPACTS

By thinking about your horticulture process in stages you can start to chart the resources you use at each stage and then set priorities for where you have biggest environmental impacts and potential cost savings.

A carbon footprint is a measure of the greenhouse gas emissions produced by a particular product or activity. The carbon footprint of a horticulture enterprise would account for all emissions occurring within the farm boundary from activities such as energy and fertiliser use.

Carbon calculators are available online and vary in their application. A useful resource from the UK Government is here, it provides greenhouse gas conversion data. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021>

Undertaking a full carbon footprint can be a dedicated task and an alternative maybe to consider an energy audit. Energy companies can give expert advice on how to save electricity and can conduct an energy audit to identify areas for improvement.

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

- [Horticulture Leaders Forum – Sustainable Business Masterclass](#)



5. RENEWABLES AND EFFICIENCY

Generating renewable energy is often a good option for commercial growers and will continue to gain popularity as energy prices rise. Roofs of sheds and outbuildings often provide a useful space for solar panels to be mounted. Whereas switching to energy supplied from renewable and sometimes local sources is also a positive choice that some businesses are taking.

However, being efficient in the use of energy and other resources remains critical to making cost savings and improve environmental performance. Some considerations include:

1. Large amounts of fossil fuel are needed to manufacture nitrogen fertilisers. Only use fertilisers at the rates suitable for the crop and situation.
2. Some growers and processors have large amounts of organic waste (or by-product), such as cores, skins, peels, outer leaves, tops, seeds, stems, shells, husks and other plant parts, and are looking at ways that the waste can be composted, or to produce bio-fuel.
3. Use less packaging make sure it is recyclable and made from recycled materials.
4. Source products from companies that are taking steps to cut their emissions and lower the carbon impact on their goods and services.
5. Consider ways to minimise the time produce is stored post-harvest to reduce energy requirements.

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

- [Horticulture Leaders Forum: Expert panel debate 2 \(Innovation in commercial horticulture\)](#)



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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