

Biodegradable Packaging For Horticulture – Factsheet



*Conducted by Ecostudio on behalf of
Horticulture Wales*



Cronfa Amaethyddol Ewrop ar gyfer Datblygu
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1. About this factsheet

Horticulture Wales commissioned in-depth research with Welsh horticulture businesses and the packaging sector that led to the publication of *Packaging for Horticulture, a practical guide for small business* in September 2013.

Among the findings this work revealed an appetite by horticulture businesses to find out more about environmentally sustainable packaging options.

This factsheet provides practical information about biodegradable packaging. Its intention is to enable small horticulture businesses to decide if this type of packaging is suitable for their needs.

Published in June 2015 it should be read in conjunction with *Packaging for Horticulture*: www.horticulturewales.co.uk/Library/Packaging.aspx

2. What is biodegradable packaging?

When packaging is described as biodegradable it refers to material that is made from rapidly renewable sources and can quickly cycle back into nature.

For this reason biodegradable materials are often seen as environmentally superior when compared with packaging materials that are made from non-renewable fossil fuels such as peat, oil and minerals.

Biodegradable packaging materials fall into 2 categories:

- those that are **compostable**, either at home with other garden waste, or through industrial composting with food and other organic waste, and;
- those that are **degradable** and not compostable. These materials mainly consist of plastic blended with an additive, commonly starch, which accelerates the material to break down when exposed to sunlight, oxygen or water.

Degradable packaging breaks down into fine plastic particles that are too small to see but can contaminate soil and water, therefore its suitability for recycling and composting is not ideal. It is mainly derived from fossil fuels so it is not an environmentally sustainable option.

3. Benefits and limitations for business

There is significant potential for biodegradable materials that *are* compostable to provide long-term environmentally friendly packaging alternatives. For horticulture



businesses this can bring **commercial benefits** because sustainable packaging can be a visual symbol of a responsible and innovative company.

Below are some examples of how businesses use simple messages to communicate ethical brand values to their customers.



Example 1: If You Care



Example 2: Dorset Cereals





Example 3: Abel & Cole

In a competitive marketplace, where consumers are actively seeking out ethical brands, using biodegradable packaging can help businesses to **differentiate** their products and this can **boost sales**.

However businesses need to be aware of the functional and environmental limitations in order to maximise potential commercial gains.

Different limitations exist for each type of biodegradable packaging material, these are described in the Materials Directory section of this factsheet. Broadly they include the following:

- Biodegradable packaging is made from crops and this requires **land and water** that may otherwise be used for producing food.
- Chemicals and genetic engineering are often used in their production.
- They require **specific disposal methods** either through home composting or industrial composting such as **anaerobic digestion**.
- Bio-plastics look and feel like conventional plastics but often lack the moisture barrier properties of their counterparts, and they can compromise recycling if mixed with conventional plastics.



- If sent to landfill they will emit harmful greenhouse gases such as methane meaning they are as polluting as other packaging materials if not disposed of correctly.

Anaerobic digestion (AD)

Bacteria are used to breakdown biodegradable materials and convert them into liquid fertilizer and biogas, a renewable form of energy. This is done in the absence of oxygen and in enclosed tanks.

The AD Centre in Wales is a useful source of information:

www.walesadcentre.org.uk



4. Standards and symbols

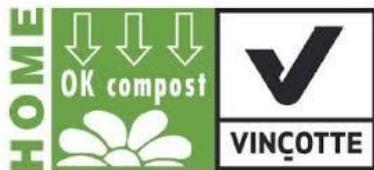
By law all packaging must meet specific requirements that exist to limit the amount of packaging waste that is generated, whilst food packaging is subject to more specific requirements to ensure it can pose no risk to human health. More information about this can be found in *Packaging for Horticulture* by following the weblink provided earlier in this factsheet.

The following packaging symbols are used to certify that biodegradable packaging meets legal requirements. If biodegradable packaging doesn't carry one or more of these symbols it is not compostable.



Part of the **On-Pack Recycling Label** scheme this is used by retailers and brand owners on packs in the UK that are home compostable.

<http://www.oprl.org.uk>



OK compost HOME guarantees complete biodegradability in home and garden compost heaps.

<http://www.okcompost.be/en/recognising-ok-environment-logos/ok-compost-amp-ok-compost-home/>



The Seedling Trademark, European Bioplastics is used for materials that are certified industrially compostable according to the European Standard EN 13432, <http://en.european-bioplastics.org/standards/labelling/compostability-label/>



The **OK compost** label guarantees materials are biodegradable in an industrial composting plant.

<http://www.okcompost.be/en/recognising-ok-environment-logos/ok-compost-amp-ok-compost-home/>



5. Biodegradable materials directory

This table contains summary information about some common biodegradable packaging materials used in horticulture.

Biodegradable packaging material	Typical uses	Key environmental and functional benefits & limitations
Paper and card	<ul style="list-style-type: none"> Boxes Bags Labels 	<ul style="list-style-type: none"> ✓ derived from natural fibre ! can be composted but often has additional moisture barriers that prevents this
Paper pulp	<ul style="list-style-type: none"> fruit trays transit packaging spacers 	<ul style="list-style-type: none"> ✓ derived from natural fibre ! absorbs moisture ✓ can be composted with garden waste
Palm leaf, palm fibre pulp & raffia	<ul style="list-style-type: none"> trays pots plates and cups string, ribbon, rope 	<ul style="list-style-type: none"> ✓ natural product ✓ fair resistance to moisture ✓ can be composted with garden waste ! palm oil production can be linked to deforestation – always check the source
Coconut fibre	<ul style="list-style-type: none"> pots void filler 	<ul style="list-style-type: none"> ✓ natural product ✓ can be composted with garden waste ! absorbs moisture ! coconut production can be linked to deforestation– always check the source
Bamboo pulp	<ul style="list-style-type: none"> trays plates boxes 	<ul style="list-style-type: none"> ✓ natural product ✓ can be composted with garden waste ✓ good moisture resistance



		! bamboo plantations can be linked to deforestation– always check the source
Starch	<ul style="list-style-type: none"> • loose foam chips • base material for bioplastics 	<ul style="list-style-type: none"> ✓ breaks down on contact with water ! not moisture resistant ✓ can be composted with gardening waste
PLA (polylactic acid)	<ul style="list-style-type: none"> • punnets • films • carrier bags 	<ul style="list-style-type: none"> ✓ derived from starch ! requires specialised industrial composting that is not widely available ! looks like plastic but has inferior moisture resistance ! not ideal for recycling with plastic
Cellulose-based films	<ul style="list-style-type: none"> • clear film wraps • carrier bags 	<ul style="list-style-type: none"> ✓ derived from natural fibre ! can be composted but often additional coatings prevents this.
Wood & wood wool	<ul style="list-style-type: none"> • crates • void filler • base material for paper, card and cellulose based films 	<ul style="list-style-type: none"> ✓ natural product ! sustainable only if from approved source such as www.fsc-uk.org ✓ wood wool and chippings can be composted with garden waste ! strips and planks can take too long to break down to be considered compostable
Wool	<ul style="list-style-type: none"> • insulator • void filler 	<ul style="list-style-type: none"> ✓ natural product ✓ can be composted with gardening waste ! additional barriers and additives are often used that can prevent composting



6. Checklist

This checklist is a quick reminder of the key issues described in this factsheet. It is not a 'must-do' list but is intended to be used, alongside the links and references provided, to inform your own research when considering biodegradable packaging.

- Does it contain the correct packaging symbols?** These should be printed or embedded in the packaging.
- Does it require specific storage?** For example should the biodegradable packaging be kept away from light, heat, air or water?
- Does it work as well as conventional materials?** Particularly when using alternatives to plastic such as bio-plastics.
- How much fossil fuel is used in its production?** The packaging material may be environmentally friendly but what about the production process?
- Is it made from crops that are genetically engineered?** GM remains a controversial issue among many consumers.
- Where was it produced?** Is it from further afield to where you normally get your packaging?
- How easily does it compost?** Does it require industrial composting and do adequate AD facilities exist in the areas you sell to?
- Will it provide adequate moisture barrier properties?** Materials that break down in water may not always be suitable for your products.
- Will it seal effectively?** Particularly when using as food packaging.
- Will it require additional layers of packaging?** For example in mail order or retail environments if extra protective packaging is needed, or when it may come into contact with food.



7. Acknowledgements & References

Every effort has been taken to ensure the information contained within this factsheet is accurate and current at time of writing. Inevitably things do change - technology advances, new innovations happen, suppliers come and go. Businesses face unique challenges and many have individual packaging needs so we hope that this factsheet can be used alongside your own research to help you decide what works best for you.

Along with the useful weblinks provided within this factsheet, we would like to specifically acknowledge the following publications as valuable sources of reference:

- Packaging for horticulture: a practical guide for small enterprises, 2013, Iain Cox, Ecostudio and Horticulture Wales
- Sustainable food packaging: biodegradable and compostable options, 2007, Catherine Creaney, Campden and Chorleywood Food Research Group
- Why Shrink-wrap a cucumber? The Complete Guide to Environmental Packaging, 2012, Laurel Miller and Stephen Aldridge

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