



Writtle COLLEGE
a partner institution of the University of Essex

Chelsea Flower Show Exhibit 2006

Turning Red Tomatoes **Green**

www.writtle.ac.uk/chelsea2006

Why Are We Turning Red Tomatoes Green?



Turning Red Tomatoes Green shows how products derived by composting from plant waste materials, can be used to make an excellent growth medium. The aim of Writtle College's exhibit is to demonstrate to gardeners how tomatoes can be produced in an environmentally friendly way without making life more difficult for the grower, or sacrificing either the yield or the quality of the fruit.

Why use plant waste materials?

Materials derived from plant waste are becoming more widely available. They are produced locally and the supply is fully sustainable – it is unlikely that we will run out of plant waste.

Does it work?

Horticulture staff and students at Writtle College think so. A team at the College has developed a growth medium, that in 2005 produced tomatoes in equivalent numbers, size, taste and appearance, to those grown under comparable conditions in commercial grow bags.

Why tomatoes?

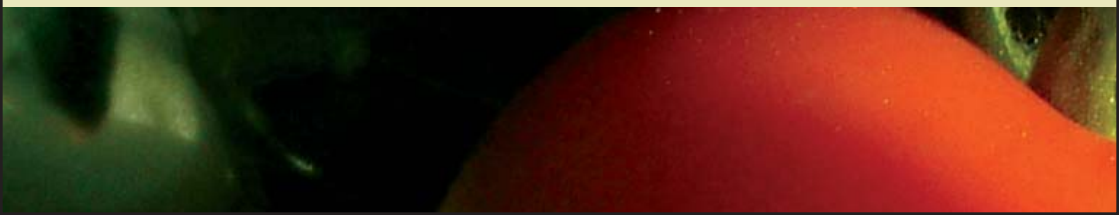
Tomatoes are one of the most popular and widely grown summer crops. They are usually grown in a container rather than in the soil, and because they have a long growing season and need frequent watering, the growth medium has to be of good quality.

What else in the exhibit is “green”?

All pots and containers used in the exhibit are made of recycled plastic. The material used for the pot toppers and the basket liners is made from hemp fibre, grown in the UK.

What about companion planting?

Companion plants can divert the attention of pests by masking the scent of the crop plant, or by being more attractive to the pest themselves. This technique is particularly useful with tomatoes and can reduce the use of chemical pesticides. It may be coincidence, but many suitable companion plants, such as basil, garlic and chives, also go well with tomatoes in the culinary sense.



Composts Derived From Waste

Composted woodchip

- Contains wood, bark and leafy material made from chipped tree prunings
- Composted, then aged for up to one year
- Particles sieved up to 10mm
- Will break down by further decomposition. The work at Writtle College indicates that this is a slow process and does not affect the physical properties of a growth medium
- Free draining - use up to 80% in blends if prepared to water frequently

Composted green waste

- Made from municipal green waste, mainly garden waste collected by local authorities separately from domestic waste
- Finished material is graded to 10mm particle size
- Good plant nutrient levels
- Alkaline pH
- Too dense to be used on its own, up to 20% blended with other ingredients

Composted stable manure

- Very heavy and water retentive
- Contains some weed seeds
- Up to 10% in a blend will increase water holding capacity of lighter, more freely draining ingredients

Composted garden waste

- Characteristics are variable, depending on the original material
- Writtle College's composted garden waste is mainly derived from leaf litter
- Leaf litter is free draining with a low nutrient content
- Weed seeds may be present depending on how the composting process was carried out
- Useful for blending with heavier ingredients - 20-50% in a blend

Worm worked compost

- Produced from a mixture of green garden waste and kitchen waste
- Physical characteristics similar to topsoil
- Very high in plant nutrients – suggest maximum 10% in a blend



What Makes A Good Growth Medium?

Physical aspects

- ♥ Good drainage is essential, but adequate water supplies must be retained
- ♥ After watering, surplus water must rapidly drain away
- ♥ Sufficient air must be present to meet the oxygen requirements of the plant roots
- ♥ 'Slumping', or consolidation, should not occur in use because the air/water balance will be disturbed
- ♥ A suitable air/water balance is achieved by mixing together a range of bulk ingredients

In practical terms it is safer to have a growth medium which is too free draining rather than too water retentive.

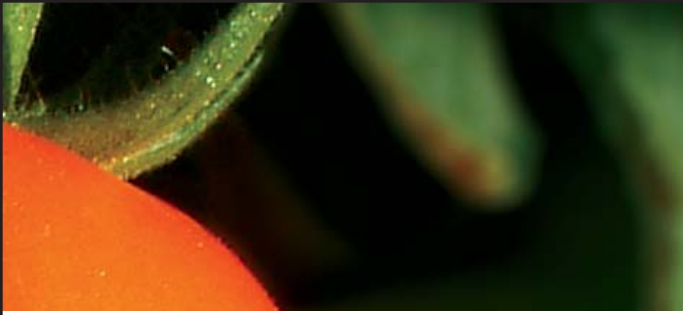


Nutritional aspects

- ♥ pH should be suitable for plant being grown
- ♥ Adequate supplies of plant nutrients must be present
- ♥ Green waste can have an alkaline pH and high levels of nitrogen
- ♥ Woodchip can be 'nitrogen hungry', micro-organisms take up much of the available nitrogen, causing nitrogen deficiency in plants

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Working With Your Growth Medium

Using a new growth medium may require alterations in management. For example, the Writtle College team have had to pay attention to the following when using their 'green' growth medium:

Water management

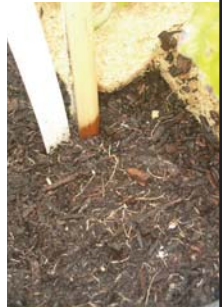
Watering may cause lightweight ingredients, e.g woodchip, to float.

A pot topper prevents this, and reduces the amount of water lost from the surface of the pot.

Natural fibre pot toppers are fully biodegradable.

Nutrition

In order to encourage the roots to explore fully, a limited amount of an organic fertiliser (derived from poultry manure) is used in the growth medium. Liquid feeding then starts at 4 weeks from potting.



WATER

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Composts And Composting Terminology

Confusion can sometimes arise with the word compost being used to describe the end products of a composting process and also a blend of materials used to grow plants. Here the Writtle College team have put together a short glossary of terms:

Compost

Material derived from the breakdown of plant material by microbial action. Most composting techniques rely on oxygen breathing micro-organisms, so it is more accurately described as aerobic composting.



Green waste

Describes a wide variety of plant based material, usually referring to a mixture of different sorts rather than specific products such as grass clippings or leaves.

Growing medium or growth medium

A blend of bulk ingredients, plant nutrients and other additives used for the production of plants.

Worm worked compost

The remains of plant wastes that have been digested by worms over several months. This can be easily made at home on a small scale, and a number of purpose built wormeries are available.



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About Companion Planting For Tomatoes

Examples of successful companion plants are:

Tagetes (*Tagetes* spp.)

All *Tagetes* are aromatic and can be used with success, but the Mexican marigold *Tagetes minuta* is particularly useful. Known affectionately as "Stinkweed", or "Stinking Roger" in the USA, this plant has a particularly powerful odour repellent to flying insects to such an extent that the dried leaves are also said to make an effective fly repellent. For crops grown in the soil, exudations from the roots are said to be effective against soil living nematodes (Eelworms).

Basil (*Ocimum basilicum*)

Basil is recommended for warding off Thrips, which are sometimes known as thunder flies and feed by sucking sap from leaves and flowers. The purple and ruffled leaf forms of basil are ornamental in their own right and go very well with tomatoes.

Chives (*Allium schoenoprasum*)

Like garlic, chives work well in warding off flying insects particularly aphids. Chives, which are small enough to include in planters such as hanging baskets, also have attractive purple flowers of their own.

Garlic (*Allium sativum*)

Garlic is good for warding off all flying insects. Whitefly in particular avoid the scent of garlic.

Nasturtium (*Tropaeolum majus*)

Nasturtium acts as a "trap plant". Aphids are attracted to this rather than the tomatoes. Having a large population of aphids on the plant will also encourage predatory insects such as lacewings into the area.

Parsley (*Petroselinium crispum* - curled parsley, and *P. hortense* - flat leaved parsley)

Parsley is known for its ability to overcome strong scents, and is particularly good at masking the smell of tomatoes from pests.

Do you use companion planting?

If so, then ask a member of the Writtle College team how to take part in our companion planting survey.

Turning Red Tomatoes Green has been sponsored by:

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Higher Education Open Days are held on the following dates:

Wednesday 7 June 2006

Wednesday 22 July 2006

Wednesday 18 October 2006

Wednesday 25 October 2006

Wednesday 15 November 2006

Wednesday 13 December 2006

Pre-event registration is required.

For details or to order a prospectus contact:

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