

## Practice BBF n° 12

# THE USE OF BIOCHAR IN GROWING MEDIA FOR SOILLESS CULTIVATION IN HORTICULTURE

## Introduction

Category: Research Innovation (RI)

### Practice identity card

*#Bio-based fertilizers, food, GP, Belgium, biochar, growing media*

*#In horticulture growing media are often used, which can contribute from organic additions*

*Biochar can be added to growing media as a sustainable alternative to peat, improving plant growth, disease suppression, and nutrient availability*

*Produced via pyrolysis of biomass, biochar contains nutrients and can adjust the pH of the growing media to enhance nutrient mobility*



### Short description

- Growing media include any materials other than soil used as a horticultural substrate for plant rooting and cultivation in a confined volume, as part of controlled environment agriculture. These growing media are used for growing vegetables, fruits and ornamentals in a range of hydroponic systems in greenhouses. Peat is widely used as major constituent in growing media but is controversial due to damage to peatlands and greenhouse gas emissions at harvesting.
- Biochar can be used in growing media blends as fertilizer or for improving plant growth, disease suppression, and as a sustainable (partial) replacement of peat. Biochar is one of the products of pyrolysis, i.e., heating of biomass with no or limited presence of air. It can be produced from a wide

variety of feedstocks, ranging from lignocellulosic materials (as wood, reed, and grass) to nutrient rich waste streams as manure.

- Biochar contains nutrients originating from the feedstock, which can potentially be released by use in growing media. Next to that, biochar addition can alter the pH of the growing media, which influences nutrient mobility and availability.

## Implementation process

**Which fertiliser type is considered as the standard in this region?** In general, peat-based growing media are used.

**What was the on-farm issue/challenge/opportunity that led to the implementation of the practice?** The use of peat in growing media is getting more and more controversial due to the high environmental impact of peat harvesting from wetlands.

## Application process/mode

- **In which form is the BBF applied?** solid
- **How is the BBF applied on the field?** band placement

## Logistics

- **Storage safety risk:** low
- **Logistic aspects to consider:** no logistic aspects
- **Skill/education level required for safe and effective application of the BBF?** rather low
- **Availability of the BBF in this region:** sufficiently available
- **Availability of the BBF in the wider EU:** sufficiently available

## Agronomical traits

- **Is it a 'slow-release' fertiliser?** yes
- **N-P-K composition of the BBF:** Nutrient properties of the biochar are largely determined by the nutrients present in the feedstock. A large variation can be observed.
- **C:N ratio of the BBF:** Broad range depending on feedstock
- **Expected availability of nitrogen (N) in the BBF:** lower
- **All materials present in the BBF:** agricultural residues, animal manure, biochar
- **Can the BBF be applied to a multitude of cultivation techniques, or is the use limited to one or a few techniques?** The BBF focusses on the use of biochar as a replacement of peat in growing media for horticultural crops, e.g. tomato and strawberry.
- **Targeted crop categories:** food
- **Influence on soil quality:** Yes, replacing the peat (partially) by biochar will not give a one-on-one replacement.
- **Soil types suitable for the BBF:** growing media
- **Expected effect on crop yield:** similar
- **Expected effect on crop yield variation:** similar
- **Expected effect on crop quality:** increase
- **Expected effect on crop quality variation:** similar
- **Which costs may decrease upon using the BBF?** mineral or other types of fertilisers; pesticides

- **Expected long-term/indirect benefits of using the BBF:** High potential in terms of circular use of materials and nutrients (use of renewable biomass).
- **Is the use as fertiliser the most valuable application of the material at hand?** yes

## Administrative context

- **Does the use of the BBF qualify for subsidies?** no
- **Are there any policy barriers complicating the use of the BBF?** no
- **Does the BBF contain any hazardous substances, and if this is the case, which one(s)?** no
- **Is the use of the BBF compliant with EU organic farming practices?** yes
- **Is the use of the BBF supported by Eco-schemes?** No
- **Expected effect on the leaching of nutrients?**

no effect. The BBF is concerning the use of soilless cultivation in greenhouses, which is a closed system.

- **Greenhouse gas (GHG) reduction potential of the BBF:** substantial
- **Effects expected on the time occupation of the farmer upon using the BBF?** none
- **May the use of the BBF contribute to a better public image of agriculture?** Yes, due to a higher sustainability of the horticultural production.

## Contact

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**Eu member state:** Belgium

## Find out more

**Source of information:** Interreg 2 Seas project Horti-BlueC and Basta project

**Additional info/links:**

<https://www.horti-bluec.eu/en>

<https://www.youtube.com/watch?v=R9kB-F54Tow>