



Summary of the Horti-BlueC full scale greenhouse trials for tomato and strawberry

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Innovative growing media blends

Peat-reduced organic growing media for strawberry



Peat-free, 100% organic growing media for tomato



Peat-reduced blends for strawberry

Test whether the blends developed by the Horti-blueC project could offer comparable if not greater performance than current industry standards in full scale trials

Tested blends:

- Horti-BlueC **peat-reduced** blend with wood fiber, coir and compost
- Horti-BlueC **peat-reduced** blend + 2 g/L chitin amendment
- Horti-BlueC **peat-reduced** blend + 3 vol% or 10vol% biochar as bulk replacement

Reference:

- Control blend: conventional **peat/coco/perlite** mix

Performance blend characterized by parameters e.g.

- Yield
- Fruit quality (grading)
- Post harvest characteristics (brix, firmness, shelf-life)
- Plant resilience against pests and diseases



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Peat-reduced blends for strawberry

Reference 'control blend' (peat/coco/perlite)	Year - location	Yield	Fruit quality	Post harvest charact.
Horti-BlueC peat-reduced blend with wood fiber, coir and compost	2020-2021 Trial 2 Research Center Hoogstraten	=	=	=
Horti-BlueC peat-reduced blend + 2 g/L chitin		=	=	=
Horti-BlueC peat-reduced blend + 2.84 vol% biochar		=	=	=

Reference 'control blend' (peat/coco/perlite)	Year - location	Yield	Fruit quality
Horti-BlueC peat-reduced blend with wood fiber, coir and compost	2021 Trial 1 Research Center Hoogstraten	=	=
Horti-BlueC peat-reduced blend + 2 g/L chitin		=	=
Horti-BlueC peat-reduced blend + 10 vol% biochar		=	=



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Peat-reduced blends for strawberry

Qualify the benefit of substrate **amendment** with either biochar or chitin or **bulk replacement** with biochar in comparison with an unamended peat reduced substrate control in **full scale trials**

Tested blends:

- Horti-BlueC **peat-reduced** blend + amendment 2 g/L chitin
- Horti-BlueC **peat-reduced** blend + amendment 2 g/L biochar
- Horti-BlueC **peat-reduced** blend + **bulk replacement** biochar

Reference:

- Horti-BlueC **peat-reduced** blend with wood fiber, coir and compost

Performance blend characterized by parameters e.g.

- Yield (kg, fruit number)
- Fruit quality (grading, fruit sugars)
- Post harvest characteristics (brix, firmness, shelf-life, fruit rot, bruising sensitivity)
- Plant resilience to pests and diseases



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Peat-reduced blends for strawberry

Reference Horti-BlueC peat reduced	Year - location	Yield	Fruit quality	Plant resilience
Horti-BlueC peat-reduced blend + 2 g/L chitin	2019 trial 1 Research Center Hoogstraten	=	=	=
Horti-BlueC peat-reduced blend + 2 g/L biochar		=	=	=
Reference Horti-BlueC peat reduced	Year - location	Post harvest charact.		
Horti-BlueC peat-reduced blend + 2 g/L chitin	2019-2020 trial 2 Research Center Hoogstraten	=		
Horti-BlueC peat-reduced blend + 2 g/L biochar		=		
Horti-BlueC peat-reduced blend + 10 vol% biochar		=		
Reference Horti-BlueC peat reduced	Year - location	Yield	Fruit quality	Plant resilience
Horti-BlueC peat-reduced blend + 2 g/L chitin	2020 trial 1 Research Center Hoogstraten	=	=	=
Horti-BlueC peat-reduced blend + 2 g/L biochar		=	=	=
Reference Horti-BlueC peat reduced	Year - location	Yield	Fruit quality	Post harvest charact.
Horti-BlueC peat-reduced blend + 2 g/L chitin	2020-2021 trial 2 Research Center Hoogstraten	=	=	=
Horti-BlueC peat-reduced blend + 2.84 vol% biochar		=	=	=
Reference Horti-BlueC peat reduced	Year - location	Yield	Fruit quality	
Horti-BlueC peat-reduced blend + 2 g/L chitin	2021 trial 1 Research Center Hoogstraten	=	=	
Horti-BlueC peat-reduced blend + 10 vol% biochar		=	=	



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Peat-reduced blends for strawberry

Reference Horti-BlueC peat reduced	Year - location	Nutrient input	Marketabl e yield	Fruit number	Total fruit sugar cnt
Horti-BlueC peat- reduced blend + 2 g/L chitin	2020 - conventional grower 1	Full strength	-	=	=
		Reduced strength	=	=	=
Horti-BlueC peat- reduced blend + 2 g/L biochar		Full strength	-	=	=
		Reduced strength	+	+	=



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General observations

Greenhouse trials for strawberry

- The sustainable new growing media blends perform well in the greenhouse (for optimisation some technical and management adaptations may be required)
- Biochar can be used for bulk replacement, without great implications
- Fertigation/watering schemes don't need to be adapted
- When nutrient inputs are reduced, biochar and chitin may improve the nutrient balance, helping to mitigate the impact of reduced inputs.

100% organic blends for tomato

Tested blends in full scale trials:

- Horti-BlueC 100% organic blend with wood fiber, coir and compost (peat-free!)
- Horti-BlueC 100% organic blend + chitin (2 g/l) amendment
- Horti-BlueC 100% organic blend + biochar (2 g/l) amendment
- Horti-BlueC 100% organic blend + biochar (4 g/l) amendment
- Horti-BlueC 100% organic blend + chitin (2 g/l) + biochar (2 g/l) amendment
- Horti-BlueC 100% organic blend + bulk replacement with biochar (10 vol%)

Reference:

- Conventional Peat/coir
- Conventional Rockwool

Performance blend characterized by parameters e.g.

- Yield (kg, fruit number)
- Fruit quality (sorting, fruit weight)
- Plant parameters (plant length, stem thickness, truss height/setting, leaf length)
- Post harvest characteristics (brix, firmness)
- Resilience to pests and diseases



100% organic blends for tomato

Reference Peat/coco growbag	Year-location	Yield	Fruit quality	Vegetative responses	Plant resilience
Horti-BlueC peat-free blend	Short 2019 Research Center Hoogstraten	-	=	=	=
Peat-free blend + 2 g/L chitin		=	=	=	=
Peat-free blend + 2 g/L biochar		=	=	=	=
Peat-free blend + 10 vol% biochar		=	=	=	=
Reference Rockwool	Year-location	Yield	Fruit quality	Vegetative responses	Plant resilience
Horti-BlueC peat-free blend	Short 2019 Research Center Hoogstraten	-	=	=	=
Peat-free blend + 2 g/L chitin		=	=	=	=
Peat-free blend + 2 g/L biochar		=	=	=	=
Peat-free blend + 10 vol% biochar		=	=	=	=



100% organic blends for tomato

Reference Peat/coco growbag	Year- location	Yield	Fruit quality	Vegetative responses	Post harvest charact.	Plant resilience
Horti-BlueC Peat-free blend	2019-2020 Research Center Hoogstraten	- (fruit number)	=	=	- (firmness)	=
Peat-free blend + 2 g/L chitin		=	-	=	- (firmness)	=
Peat-free blend + 2 g/L biochar		=	=	=	- (firmness)	=
Peat-free blend + chitin + biochar		=	=	=	- (firmness)	=
Peat-free blend + 4 g/L biochar		=	=	=	- (firmness)	=
Reference Rockwool	Year- location	Yield	Fruit quality	Vegetative responses	Post harvest charact.	Plant resilience
Horti-BlueC Peat-free blend	2019-2020 Research Center Hoogstraten	- (fruit number)	=	=	- (firmness)	=
Peat-free blend + 2 g/L chitin		=	-	=	- (firmness)	=
Peat-free blend + 2 g/L biochar		=	=	=	- (firmness)	=
Peat-free blend + chitin + biochar		=	=	=	- (firmness)	=
Peat-free blend + 4 g/L biochar		=	=	=	- (firmness)	=



100% organic blends for tomato

Reference Rockwool	Year-location	Yield	Vegetative responses	Post harvest charact.
Peat-free blend + 2 g/L chitin + 2g/L biochar	2020-2021 Research Center Hoogstraten	=	=	=
Peat-free blend + 4 g/L biochar		=	=	=
Peatfree + biochar 4g/L + 2 vol% Trichoderma prepareate		=	=	=



100% organic blends for tomato

Reference Commercial standard coir	Year - location	Yield
Horti-BlueC peat-free blend + 2 g/L biochar	Season 2020 conventional grower A	=

Reference Commercial standard rockwool	Year - location	Yield
Horti-BlueC peat-free blend + 2 g/L biochar	Season 2020 conventional grower B	-



100% organic blends for tomato

Reference Commercial standard coir	Year - location	Yield	Post harvest charact.	Root Mat Disease Development
Horti-BlueC peat-free blend + 2 g/L biochar	Season 2021 conventional grower A	+	=	-



General observations

Greenhouse trials for tomato

- The sustainable new growing media blends perform well in the greenhouse (for optimisation some technical and management adaptations may be required)
- Biochar can be used for bulk replacement, without great implications
- The fertigation in the trials was adapted to conventional cultivation on rockwool (different treatments in one greenhouse)
 - Further research: blend-specific adaptation of fertigation scheme