The Use of Synthetic Soil for The Vegetables Cultivation in Conditions of Limited Water Consumption

Cultivation of vegetable products in extreme environmental conditions

By nuova sardegna and wikipedia

The Use of Synthetic Soil for The Vegetables Cultivation in Conditions of Limited Water Consumption

- Where the problem of water scarcity will become fundamental in the next years
-

Is it possible to produce food with only organic waste material?

- From here

To here

To here

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Mean compost characteristics , allegato 2 D.L.21/06”

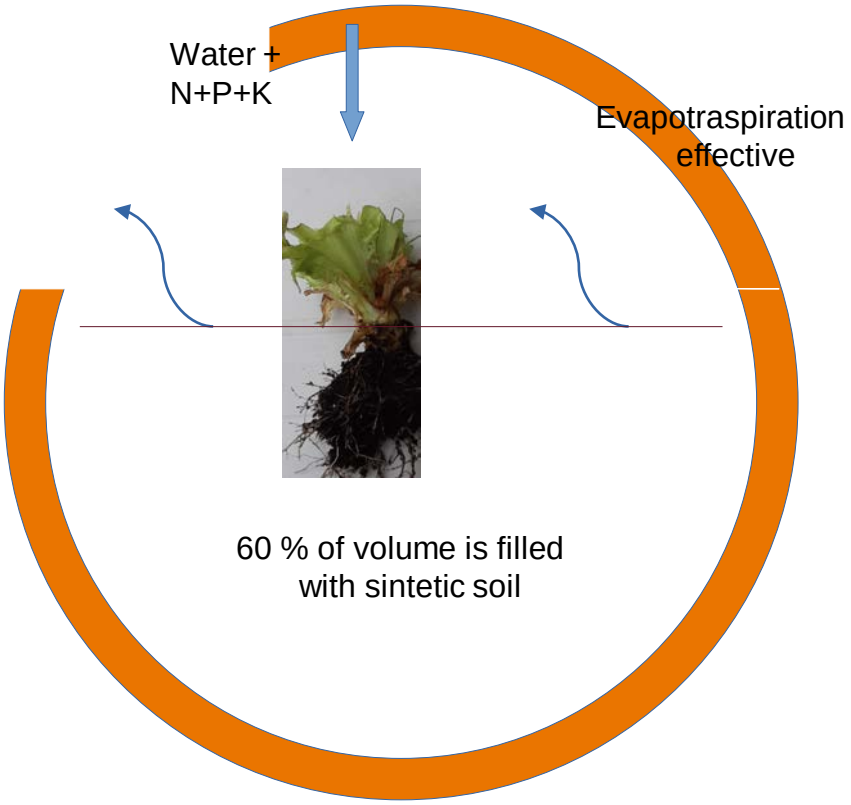
” Parameter	Requirements for compost mix from organic greenery and peat	Requirements required organic green compost
Humidity	min 30%	max 50%
pH	6 - 8,5	6 - 8,5
C organic on S.S.	min 30%	min 30%
C humic and fulvic on S.S.	min 7%	min 2,5%
N organic on S.S.	min 80% of the total N	min 80% of the total N
C/N	max 50%	max 50%
Cu total su S.S	max 150 mg/kg	max 150 mg/kg
Zn total su S.S.	max 500 mg/kg	max 500 mg/kg
Salinity	--	--

Soil classification based on substance content organic and nitrogen

Evaluation	Organic content %
Very poor	> 0,5
Poor	0,5 – 2
Medium	2,5
Good	5 -10
Rich	10 -15
Very rich	>15
	Total Nitrogen content %
Very poor	> 0,5
Poor	0,5 – 20,7
Medium	0,8- 1,2
Good	1,3 – 2,4
Rich	2,5 – 5,0
Very rich	>5,0

Circular economy

Cultivation in plastic tubes

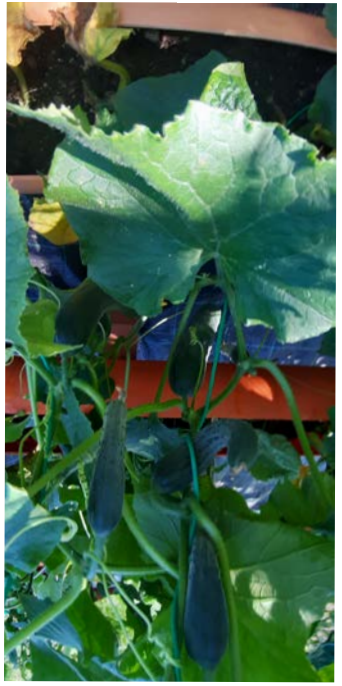


all the water is retained inside the tube and there are no percolations

Overview of some of the crops (cucumbers, courgettes, peppers, plum tomatoes)

Growing salads in overlapping pipes

Different types of cultivated vegetables



Feeding of nutrients from external sources

Weekly feeding of nutrients i for lettuce and other horticultural plants tested

Mass of nutrients feed weekly for pipe of 210 mm	Concentration of nutrients feed weekly for pipe of 210 mm
0,86 gr N/l x 15l = 12,64 gr	*12,64gr /36,74kg =0,344 mgkg N*
0,82 gr P_2O_5/l x15 l = 12,3 gr	*12,3 gr/36,7 kg =0,335 mg/kg P_2O_5*
0,82 gr K_2O /lx 15l =12,3 gr	*24, 6 gr/36,7 kg =0,335 mg/kg K_2O_5*

Weekly feeding of nutrients i for lettuce and other horticultural plants tested

Nutrients available weekly per plant of horticultural crops	*Nutrients available weekly per plant of lettuce crops*
0,0239 mg/ crops weekly as P_2O_5	0,0494 *mg/ crops weekly as N*
0,0239 mg/crops weekly as K_2O	0,0464 *mg/ crops weekly as K_2O*
0,0245 mg/ crops weekly as N	0,0464 *mg/ crops weekly as P_2O_5*

Completely biological production

- no pesticides was added
- very pour consume fo water
- without funghicides
- without herbicides
- no land consumption
- no water loss
- low energy consumption
- with the same synthetic soil it is possible to have productions for several years

- high production per square meter
- high organoleptic characteristics
- high availability of low cost materials
- very low maintenance cost
- possibility of cultivating different horticultural species
- possibility of in-door cultivation

Possibility of vertical farms construction

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- From Acea Energia

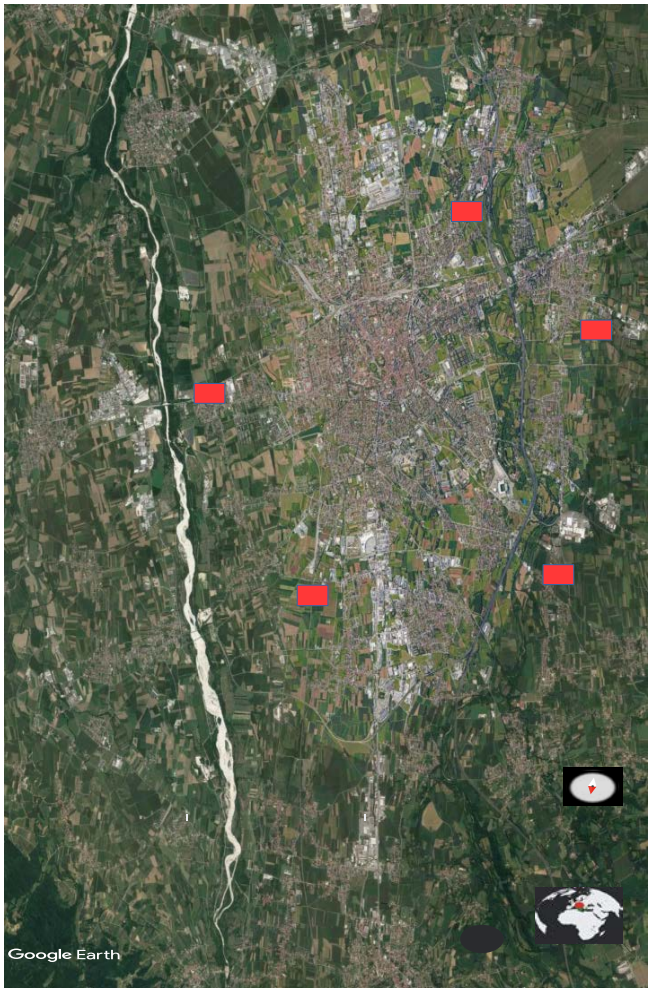
Hypothesis of intervention of medium-sized cities

production located in the adjacent suburbs

biological products production

low transport costs

low emissions



sale of fresh products with daily collection

low environmental impac

low water consumption with protection of the aquifers

recovery of production of organic waste with enhancement of the final product

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Tanks for your attention

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