

Cultivate in the vertical? Why?

Francesco F. Montesano (ISPA - CNR)

Pietro Santamaria (DiSAAT – UNIBA)

Using vertical space to produce fresh products in cities is an old practice.... the wisdom of the ancients!



Social benefits

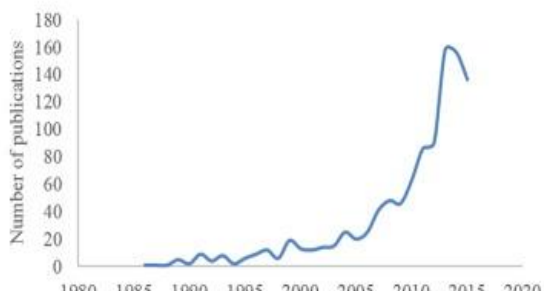


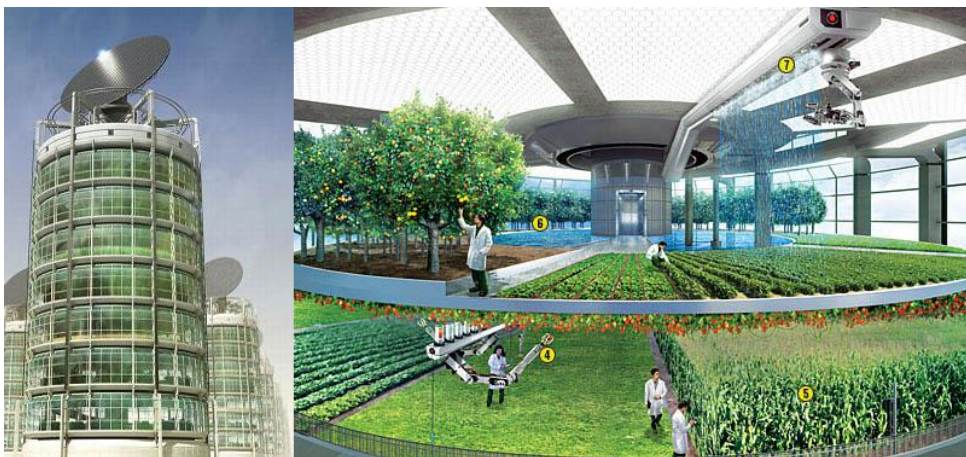
Urban horticulture

A new model of agriculture

- necessity to feed cities population
- Increasing trend of soil sealing and loss of agricultural land
- reduce losses, transportation and increase the quality of food

Vertical and Urban Farming Publications
 1975 - 2014





Soilless cultivation (hydroponics, aeroponics, aquaponics)

Artificial lighting (LED)

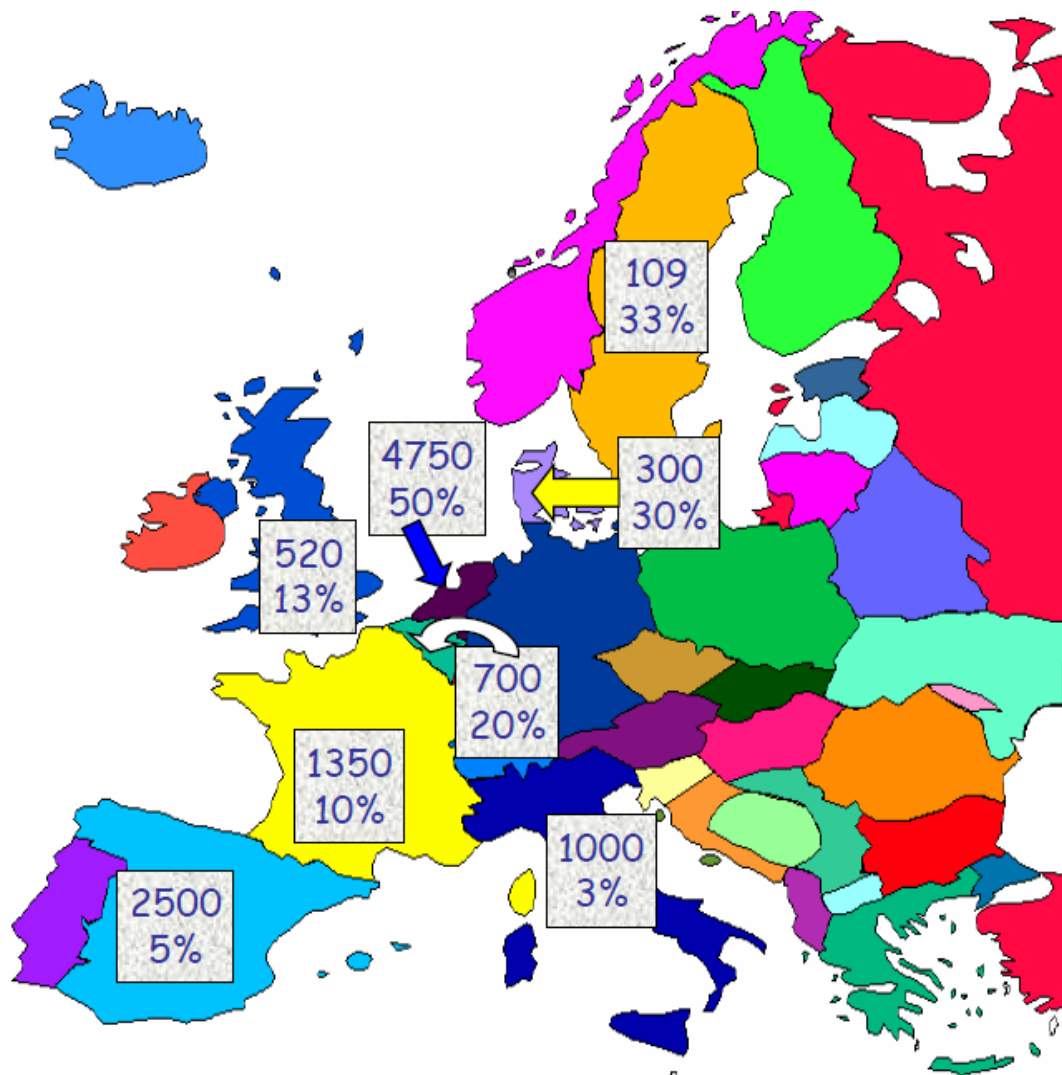
Total climatic control



High quality of products

High use efficiency of resources

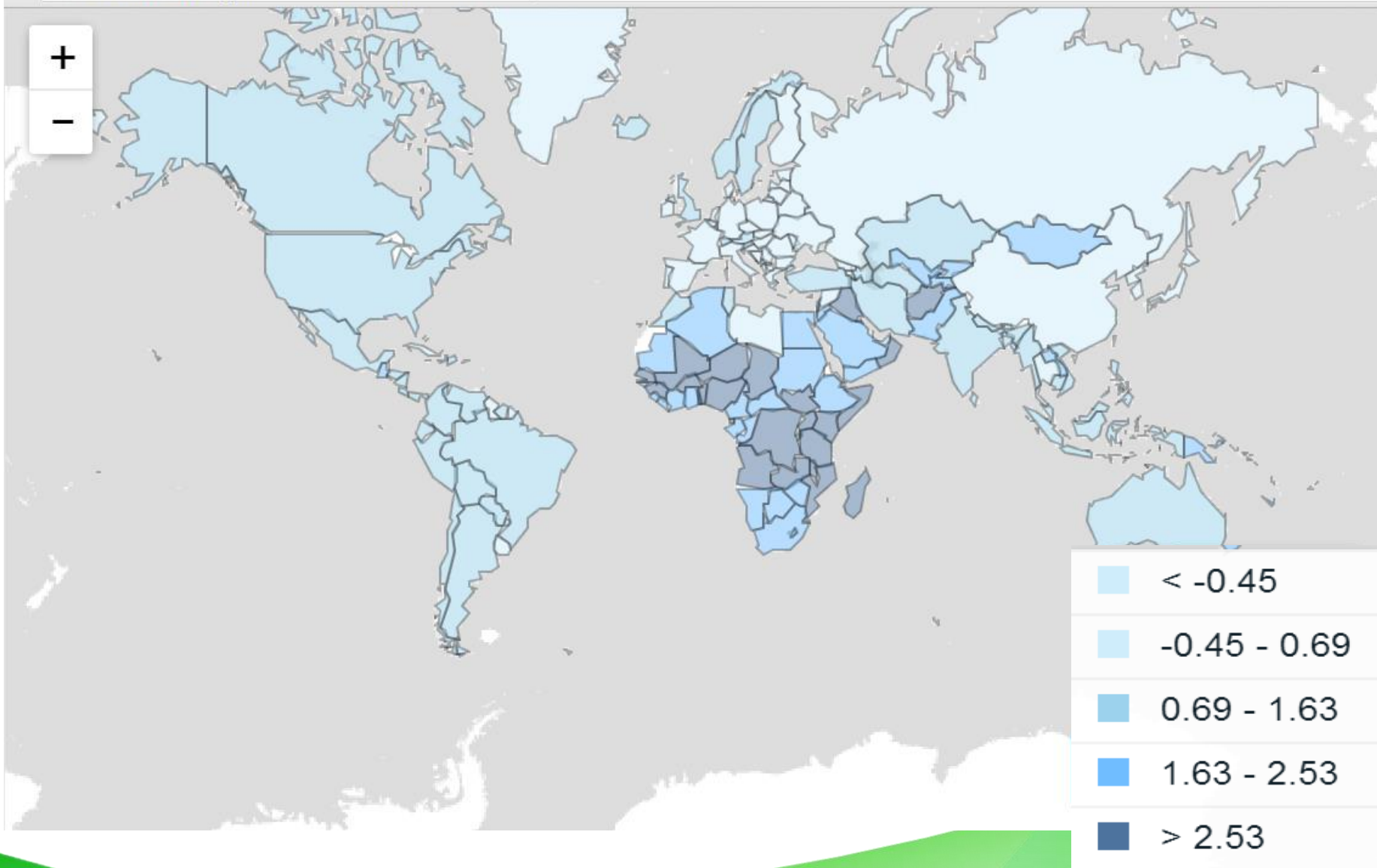
High yield



Northern European countries have a good percentage of soilless cultivation

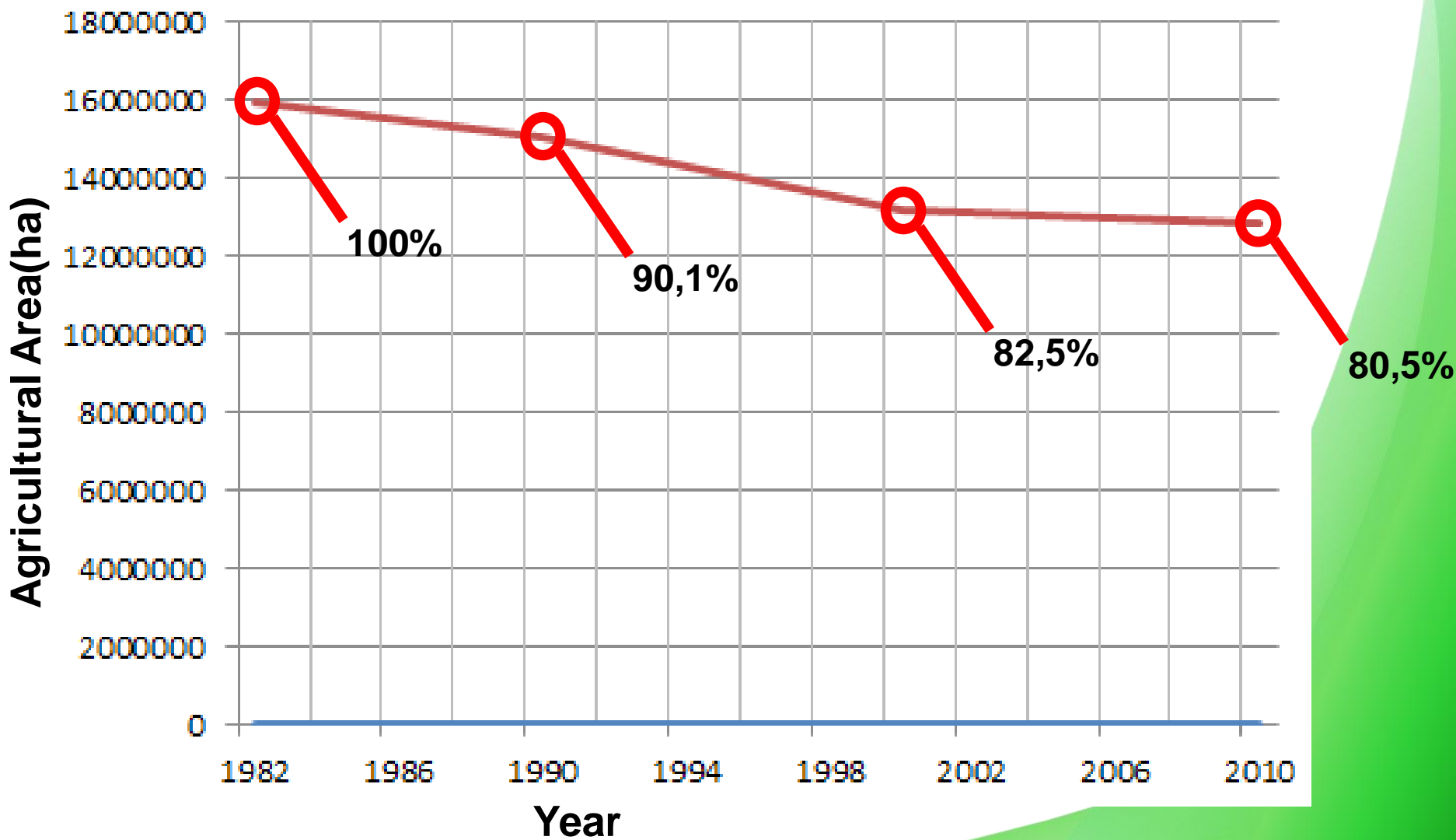
Very limited in Mediterranean countries

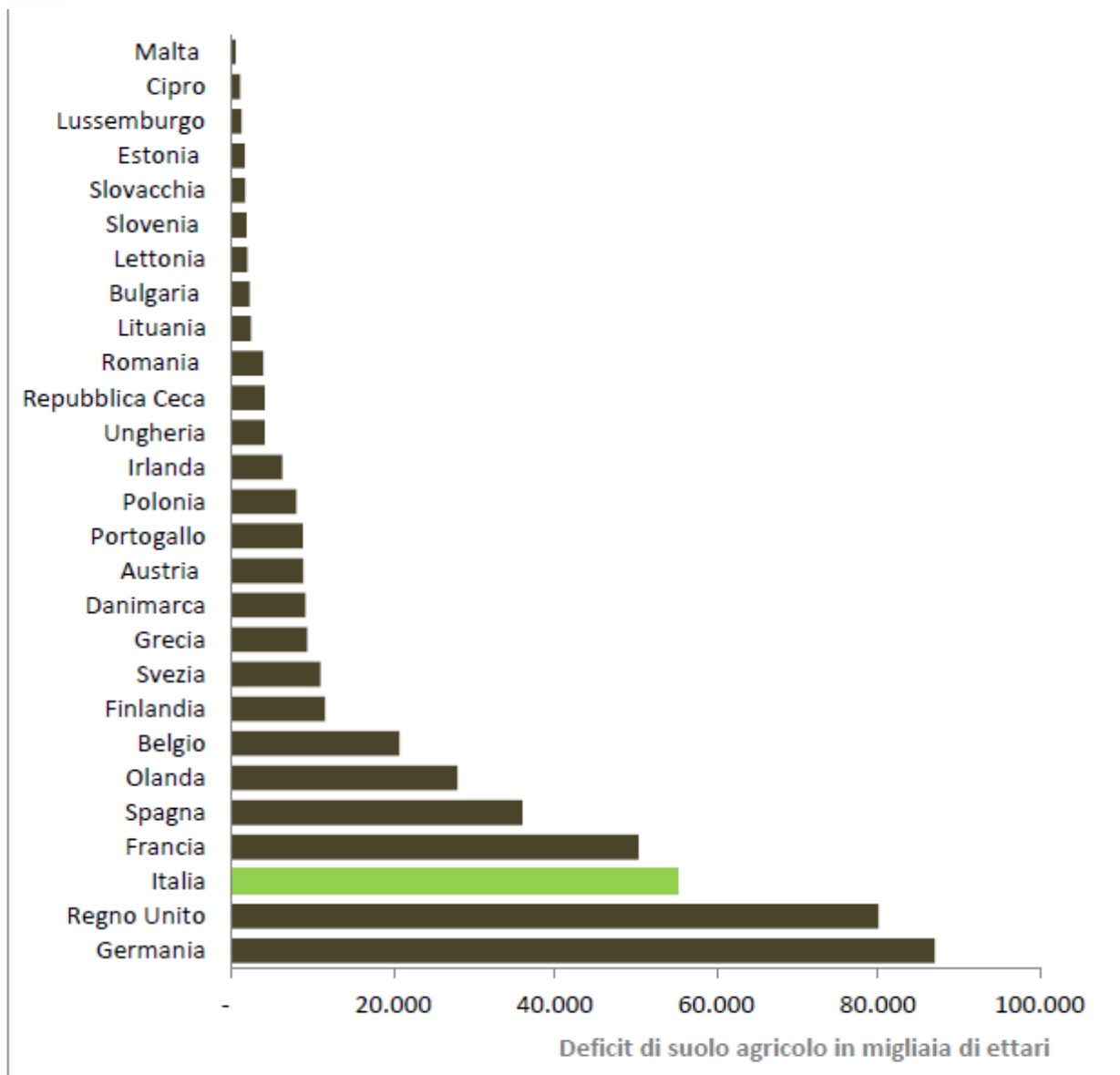
data.worldbank.org/indicator/SP.POP.GROW?view=map





Variation of agricultural land in Italy (ISTAT, 2012)





Fonte: Elaborazione Mipaaf su dati SERI, 2011

New soilless crops



Benefits of using hydroponics cultivation in cities:

- **Lowered environmental impact**
- Reduction in water consumption
- Improved [health and nutritional value](#)
- Lowered use of pesticides
- Ability to scale the agricultural operation to [any size of facility](#)
- [vertical growing](#) techniques

<http://www.powerhousehydroponics.com/6-advantages-of-soilless-agriculture/#prettyPhoto>

Hydroponics to feed cities...

... Talking about
FUTURE



Soilless cultivation is already part of feeding cities process!

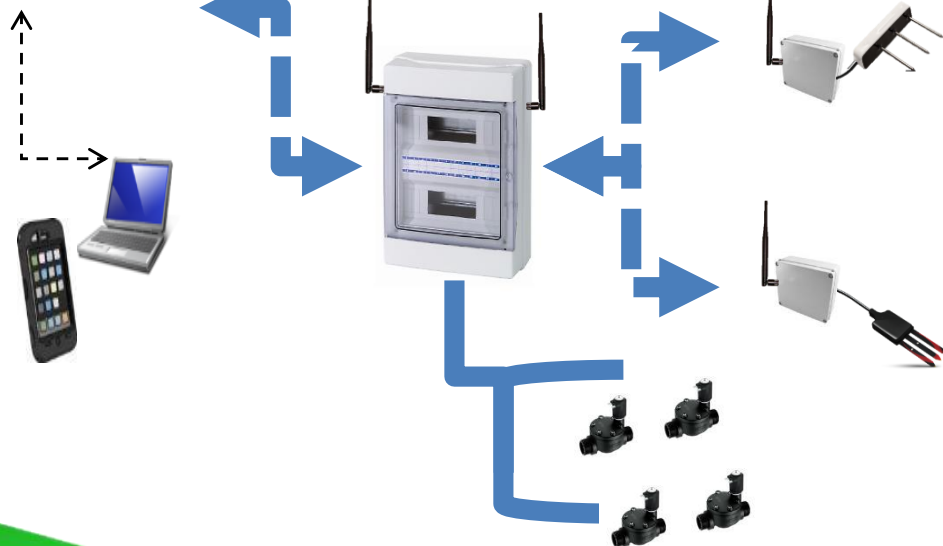
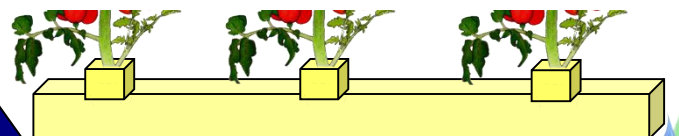


Efficient use of resources (water and fertilizers)

Closed cycle cultivation

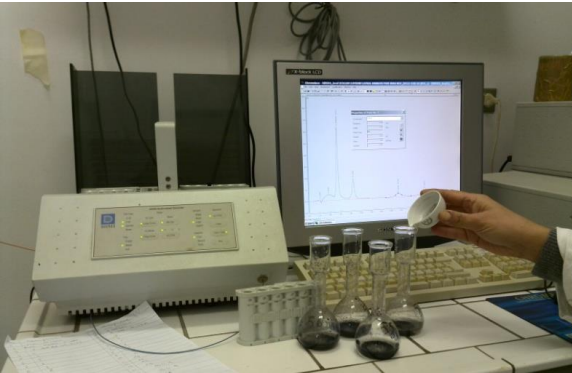


HORTICULTURAL SCIENCES CONTRIBUTION

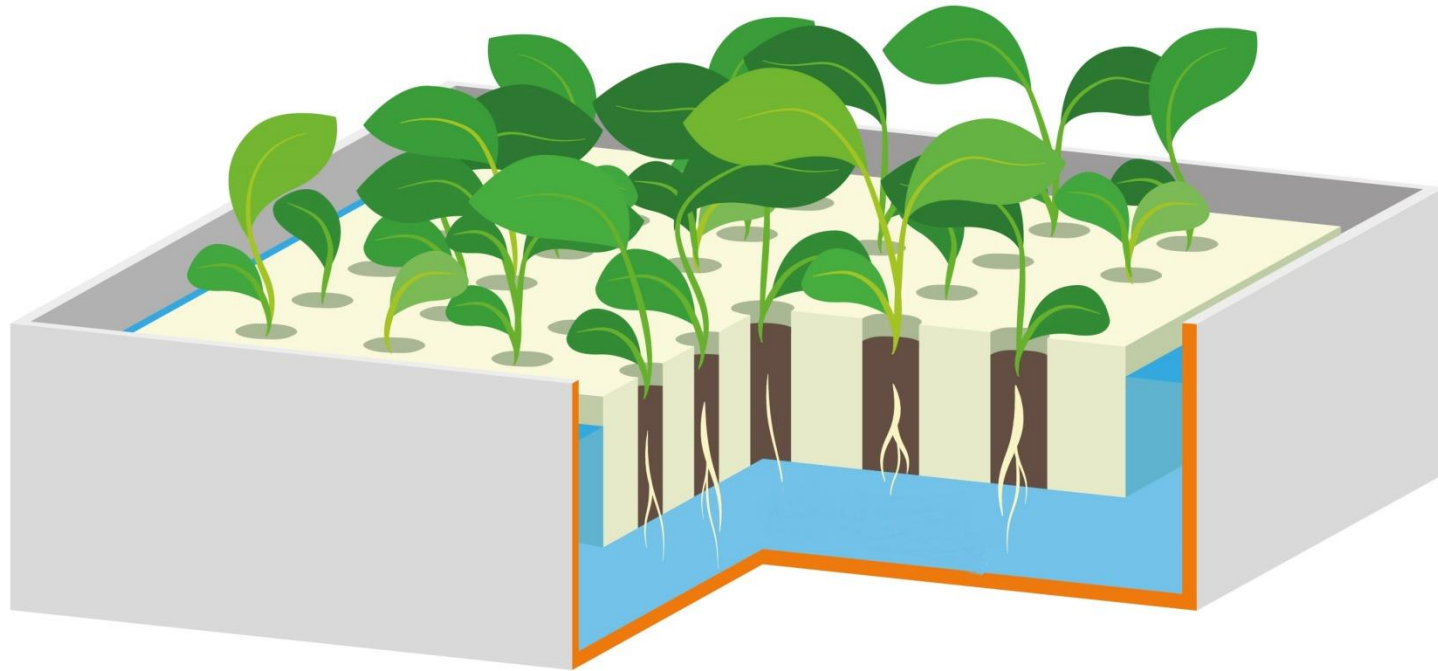


Improved health and nutritional value

High-quality, healthy products



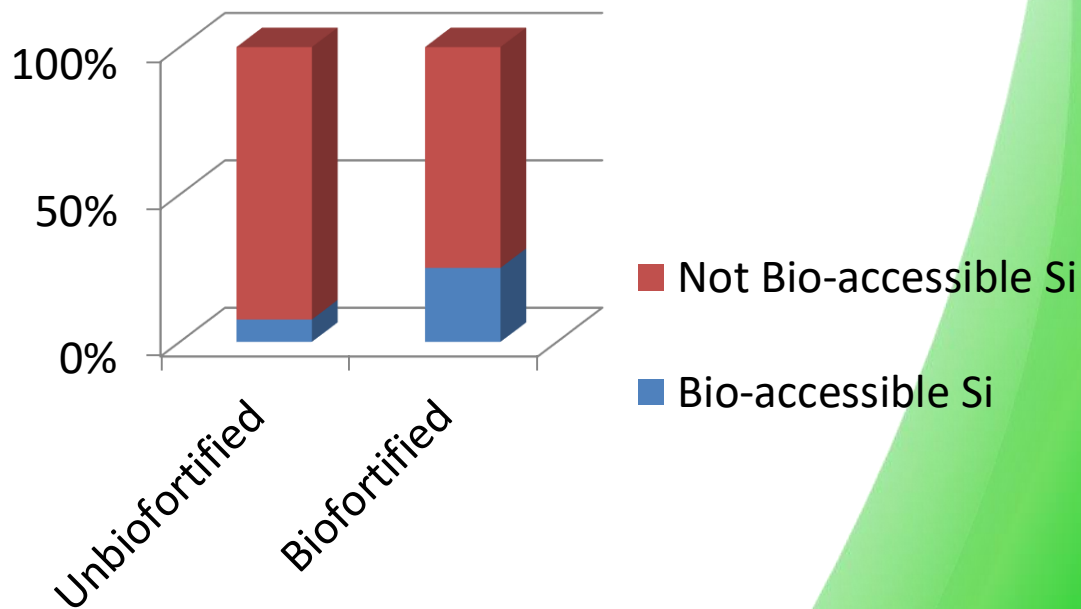
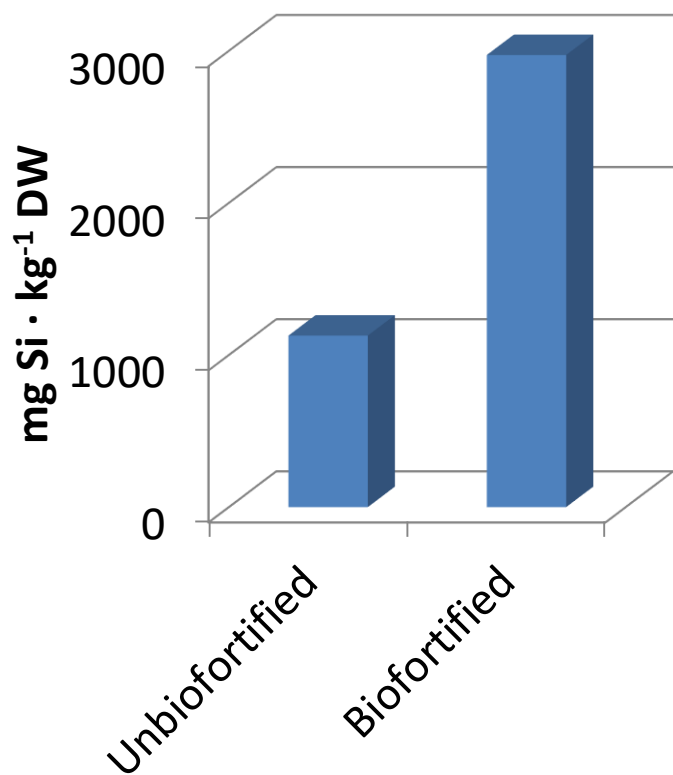
- Optimal growth conditions for plants
- Possibility to control with high precision the mineral plant nutrition
- Controlled stress to plants



Floating system is a closed soilless system utilised to produce **leafy vegetables**, allows a quickly microelement uptake in plant.



Si concentration



Effect of SILICON SUPPLEMENT



Effect of BIOFORTIFICATION





**Gusta il
Biodiverso**
microgreens

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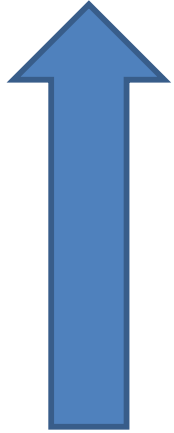
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Vertical farming is a disruptive idea, which enormous potentials for urban horticulture



Need to REDUCE COSTS !!!



Be aware of technical issues related to the growing technique:
dependence from electricity, difficulties connected to closed cycle
cultivation, phytopathology issues



Need to develop designs to maximize the
use of sunlight

Thanks for your attention

francesco.montesano@ispa.cnr.it