Good practices in production and communication of urban agriculture

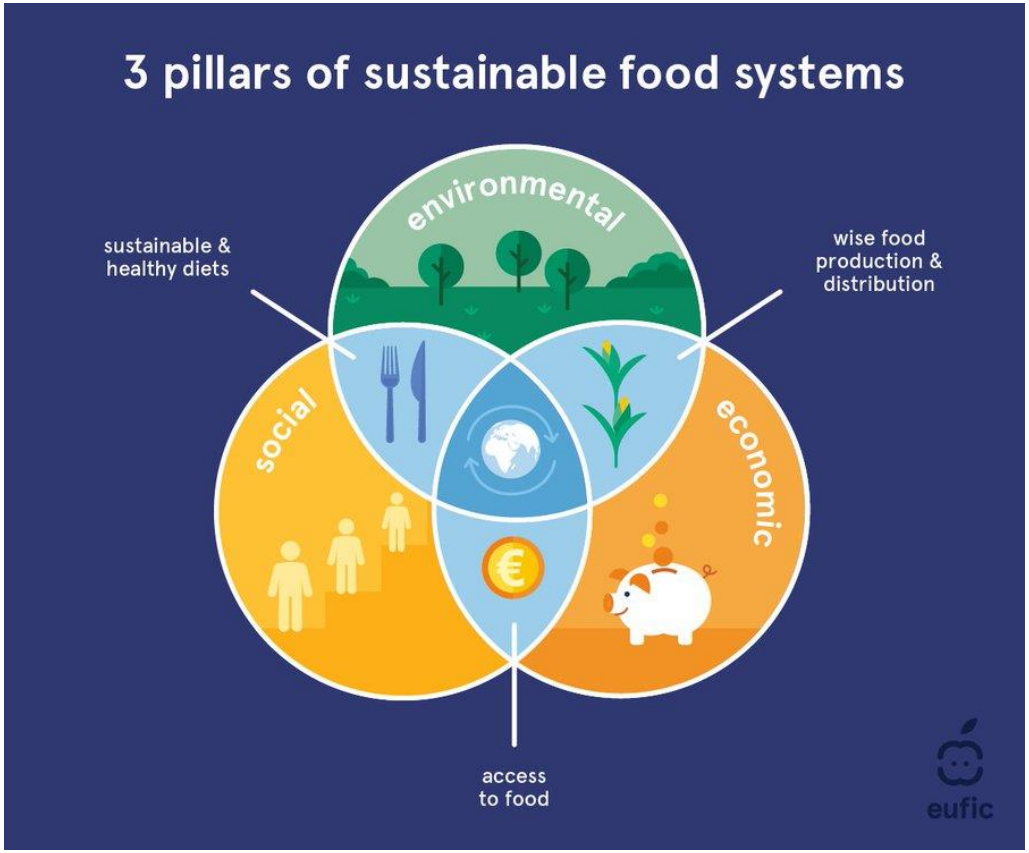
Fernando González-Andrés

Full Professor of Crops Production at University of León (SPAIN)
Research group IQUIMAB “Engineering for Circular Economy”

fgona@unileon.es

11 May, 2023 Final event

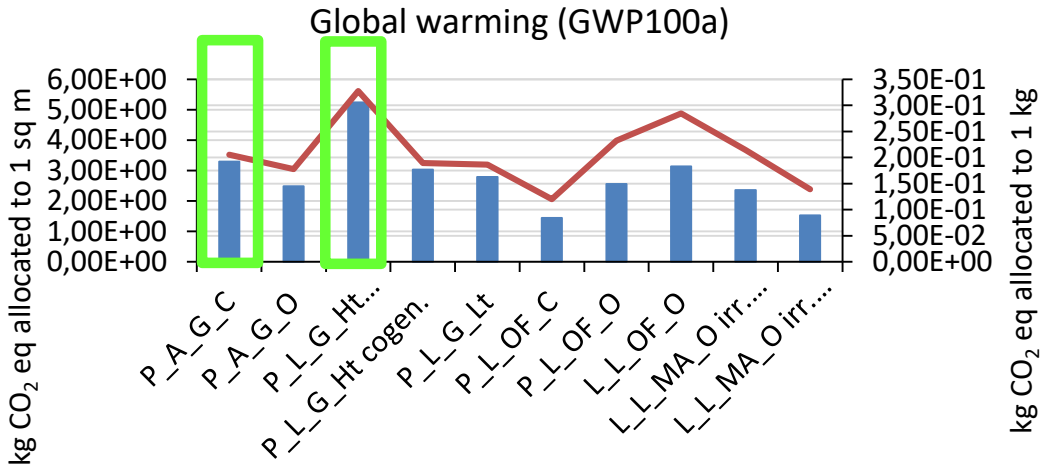
Inspiring Good Practices in Urban Agriculture to meet sustaninability



Sustainable Agriculture is Efficient Agriculture

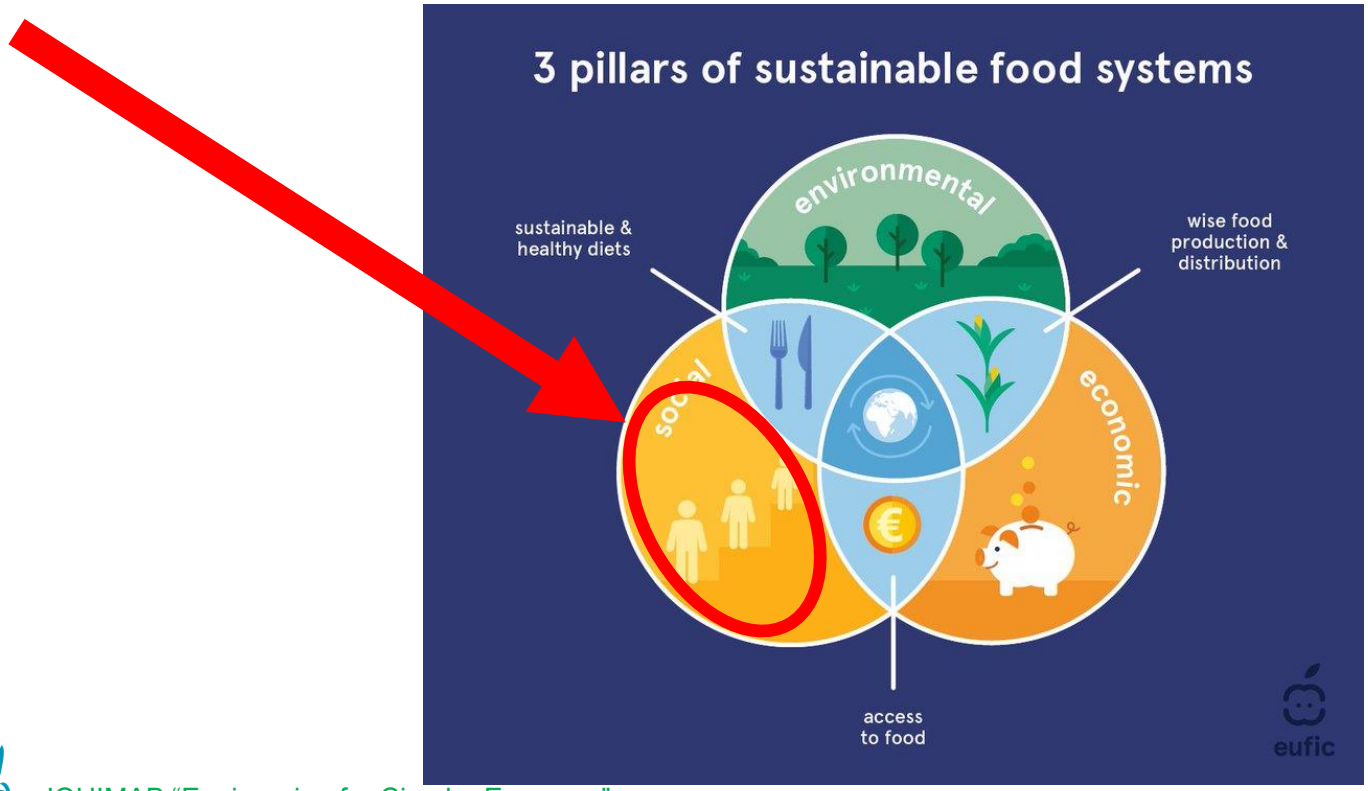
SOME STRATEGIES TO OPTIMIZE EFFICIENCY IN AGRICULTURE

- Intensive agriculture (maximize yield per hectare)
- With cutting edge technology to avoid waste of resources (water, nutrients, …) , depletion and contamination
- In regions that meet crops requirements: E.g. Not necessary heating/cooling systems
  - ☞ Transportation is less impacting (GWP) than heating



Urban Agriculture if focused in Social Aspects does not optimizes efficiency

- Leisure
- Education
- Therapy of disabled person (persons with different capacities)
- Occupational therapy (unemployed, retired persons, …)



Let us make UA more efficient and more sustainable with the following simple inspiring good practices!!

The key: release policies that promote to adapt UA strategies to local conditions and crops requirements

Other actions to make UA sustainable

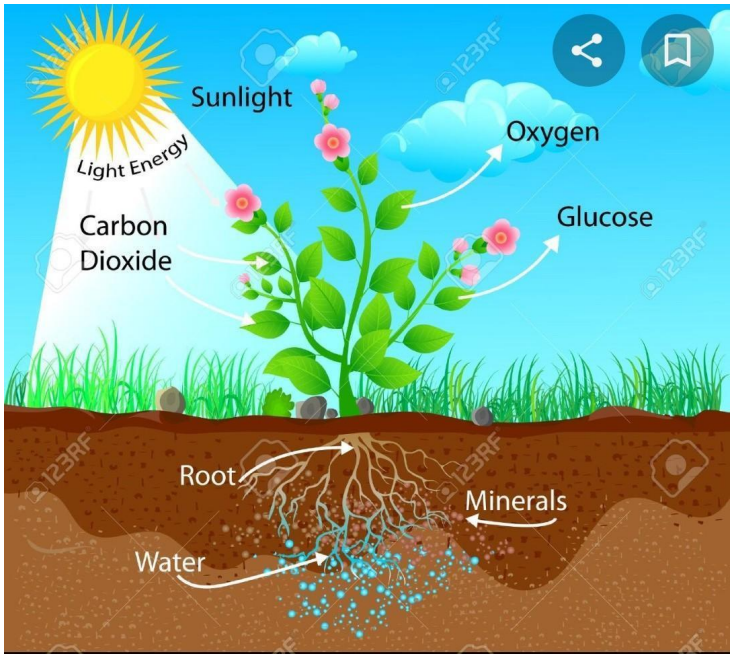
- Recycling city wastewater for irrigation
- Recycle Organic Fraction of Urban Solid Waste as substrates or organic fertilisers …

☞ You need an agronomist!!!!

Plants are living beings, are fragile and have their own requirements

General requirements for all the plants

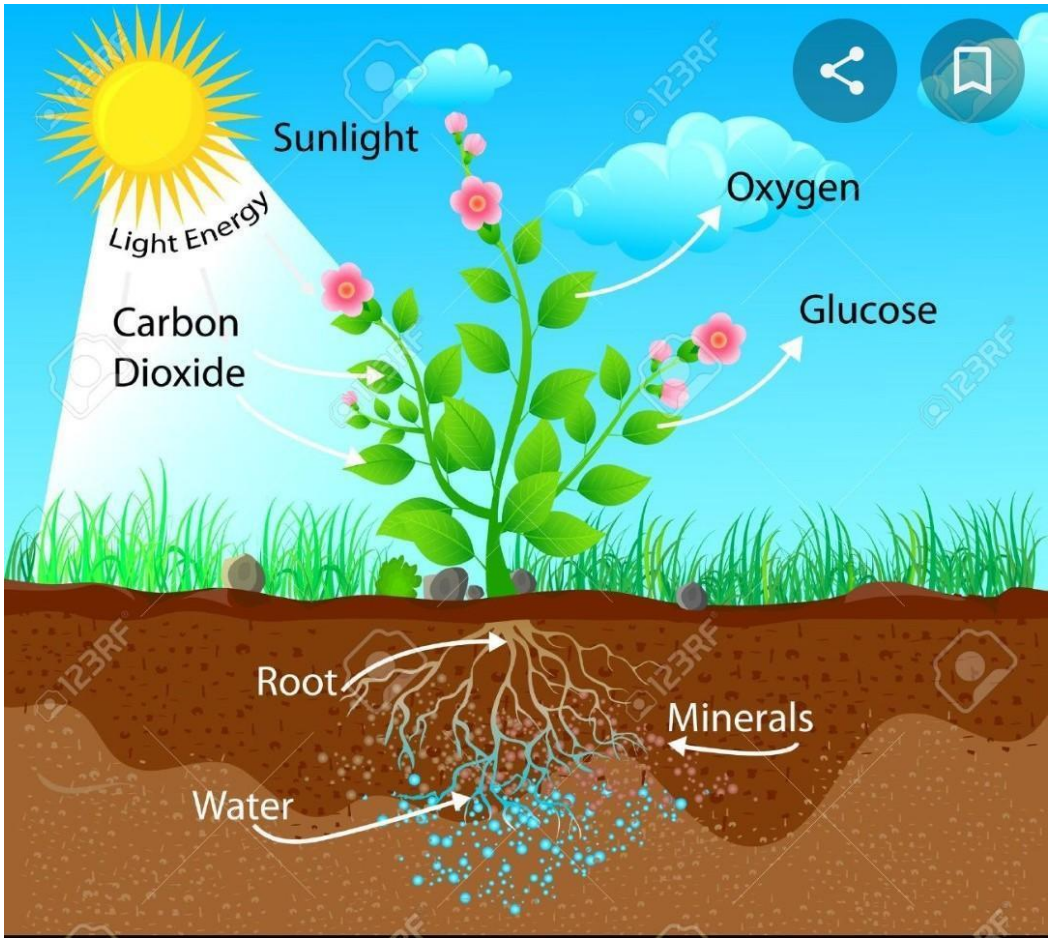
- Sunlight (for photosynthesis)
- CO_2 (for photosynthesis)
- O_2 (for respiration)
- Mineral nutrients dissolved in water to be absorbed by the roots



Specific requirements of each species i.e. different levels of exigency of

- Light intensity
- Air/soil temperature
- Water requirement
- Quantity of nutrients reqired

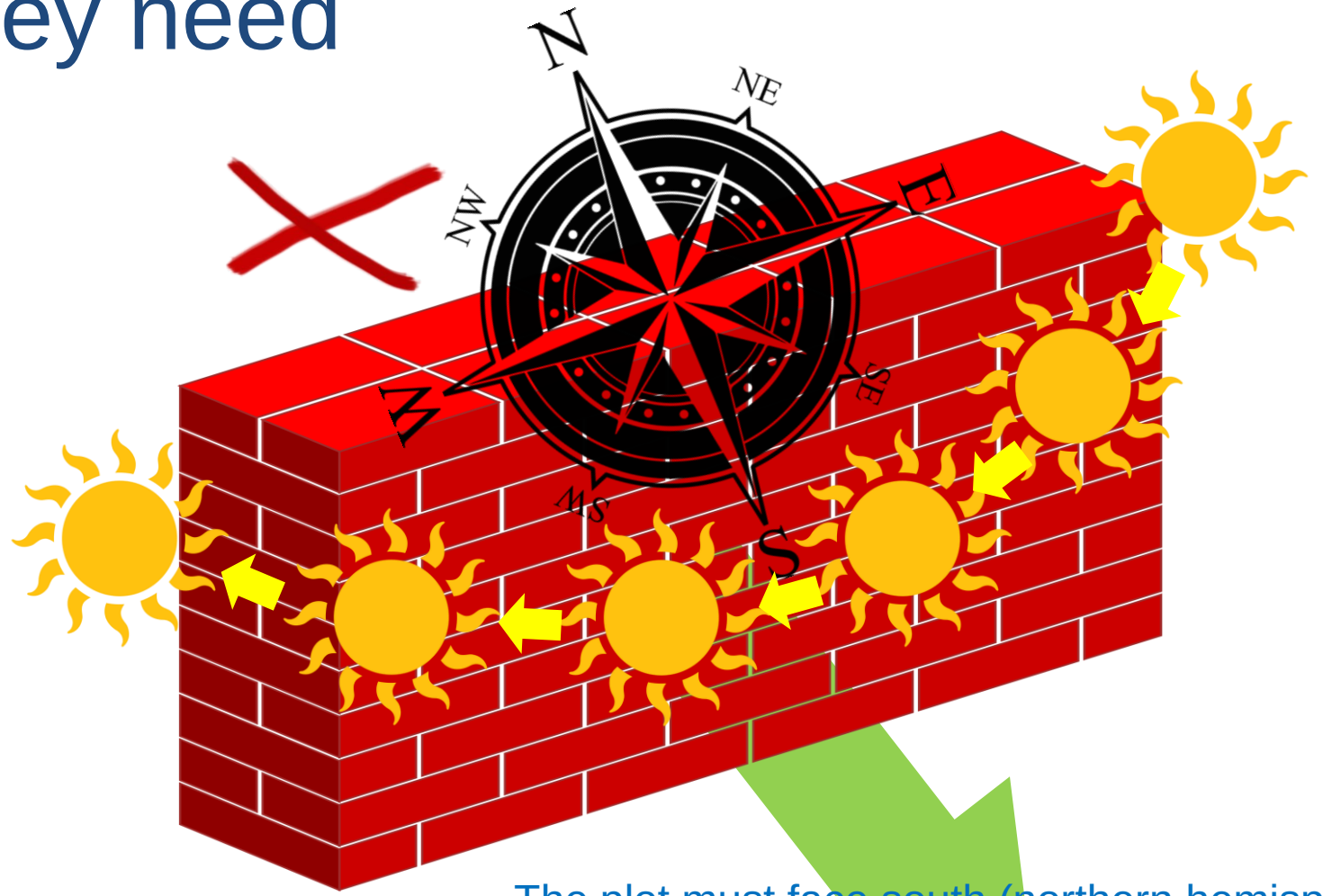
G.P.1. Provide crops the sunlight they need



G.P.1. Provide crops the sunlight they need

Avoid Urban Farms in areas surrounded with tall buildings (shadow)

G.P.1. Provide crops the sunligh they need



The plot must face south (northern hemisphere)

G.P.1. Select crops with less sunlight needs

E.g.

Lactuca sativa (lettuce)

Daucus carota
Carrot

Valerianella locusta
Common cornsalad

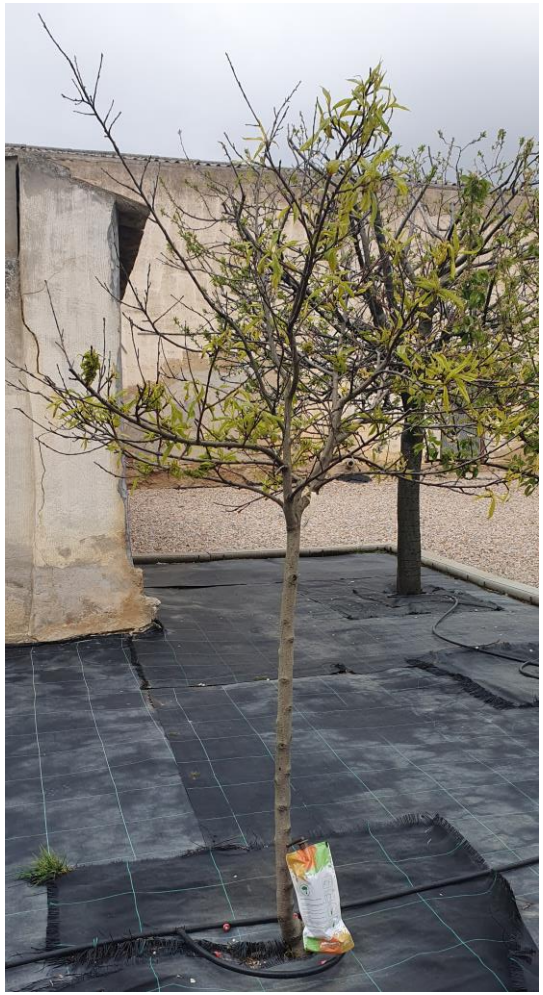
Eruca vesicaria (rocket)

Tomato and pepper need many hours of direct sunlight

G.P.2. Provide a good soil

Soils from cities are usually of bad quality (fill from other places)

- bad structure
- low organic matter



G.P.2. Provide a good soil

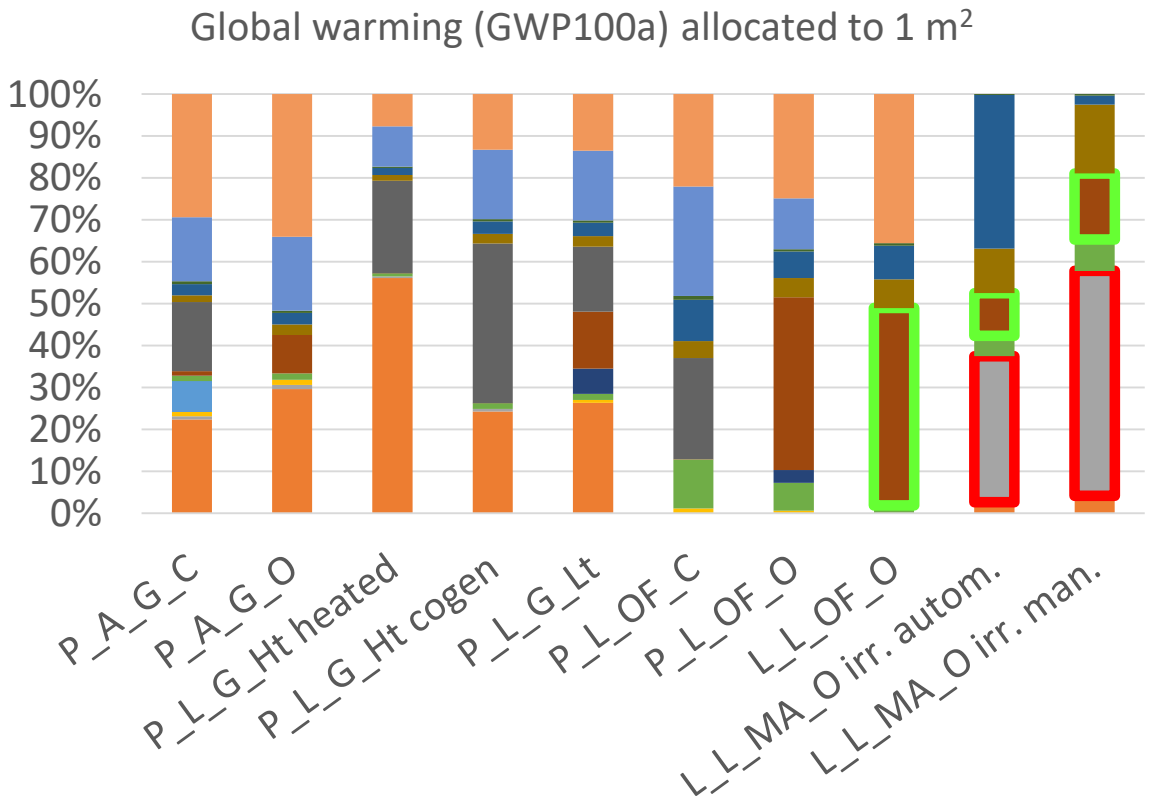
- Add organic matter: organic matter is life for soils!!!!!

- Use professional substrates in raised beds which are based on
  - Coconut fibre and vermicompost
  - Enriched peat

☞ Both are rich in labile Carbon … and …

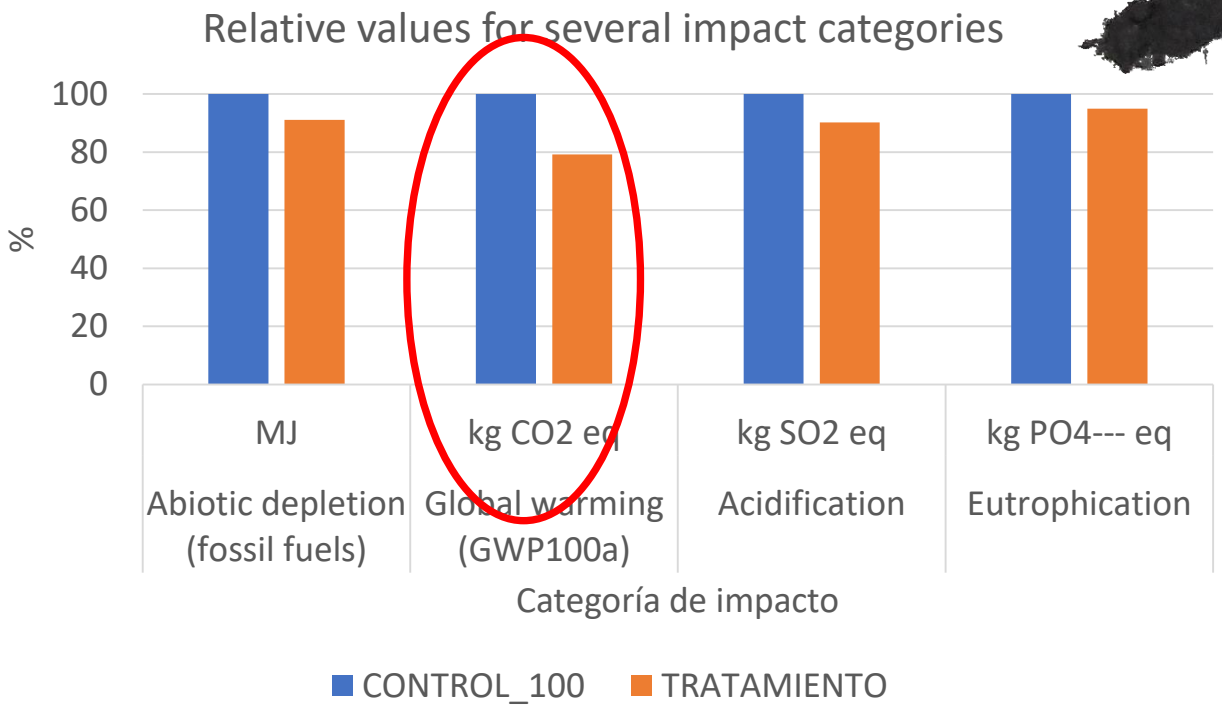
G.P.2. The drawback of organic products rich in labile Carbon

Products with high content of labile Carbon have a high Carbon footprint

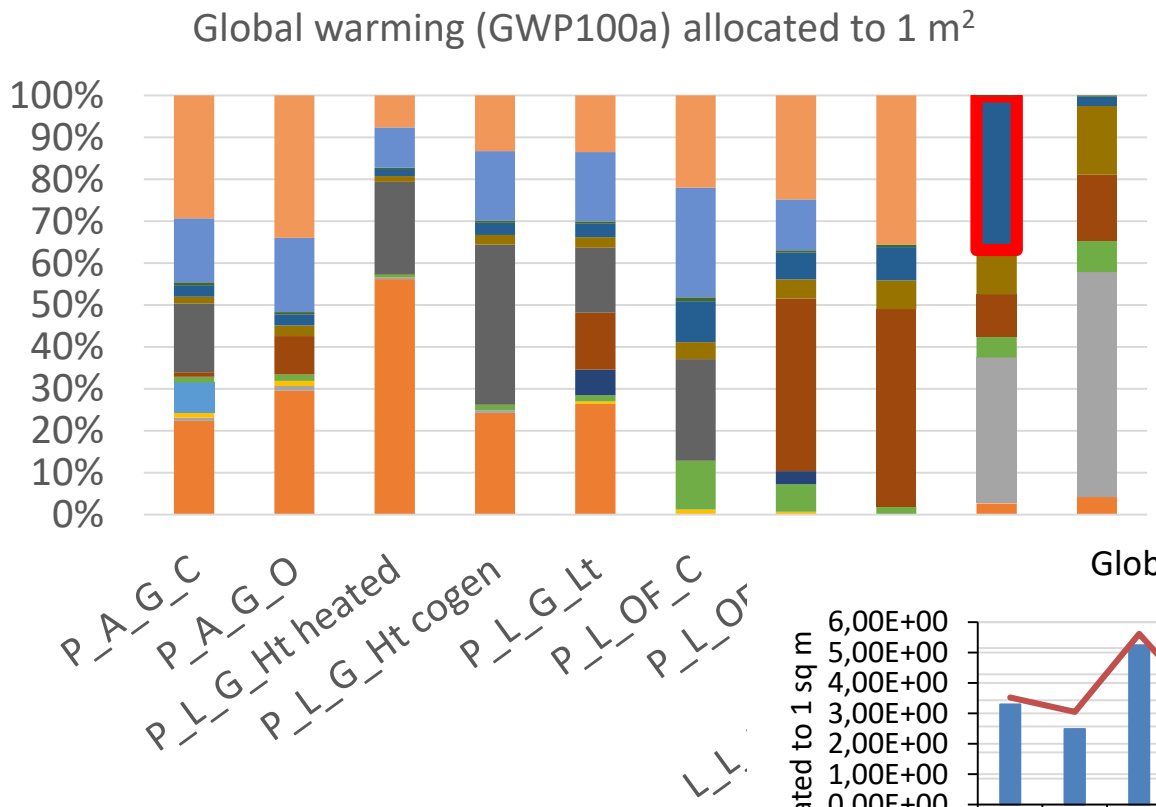


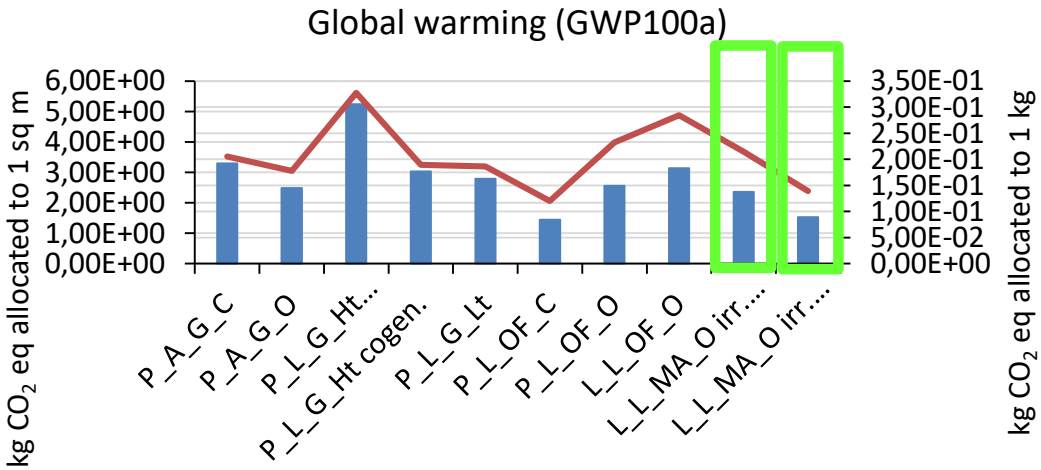
G.P.2. The solution: Mix the organic input with a Carbon shrinks: biochar

Biochar is a soil conditioner that improve the substrate and acts as a carbon shrink



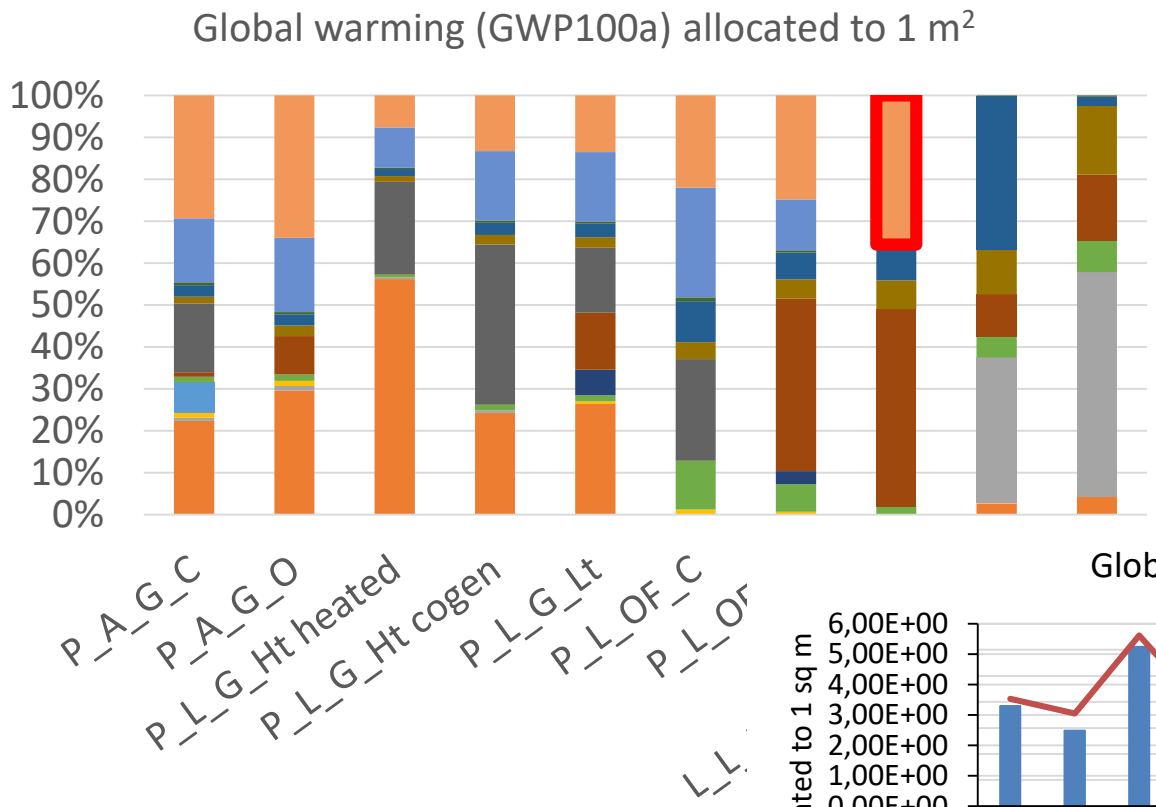
G.P.3. Take care of the urban farm in summer!! automation is expensive and environmentally impacting

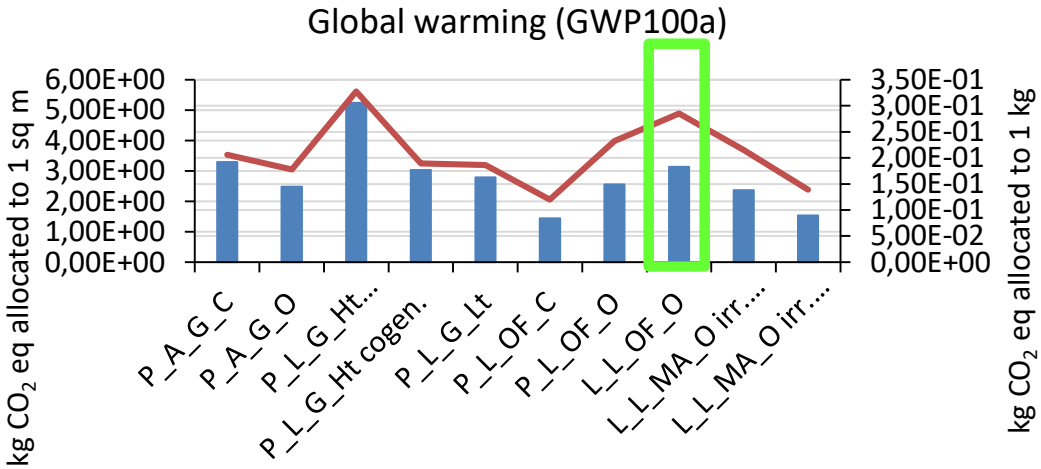




G.P.4. Avoid use the car for collecting a few kg of vegetables. This is a prime environmental impact

G.P.4. Avoid use the car for collecting a few kg of vegetables. This is a prime environmental impact



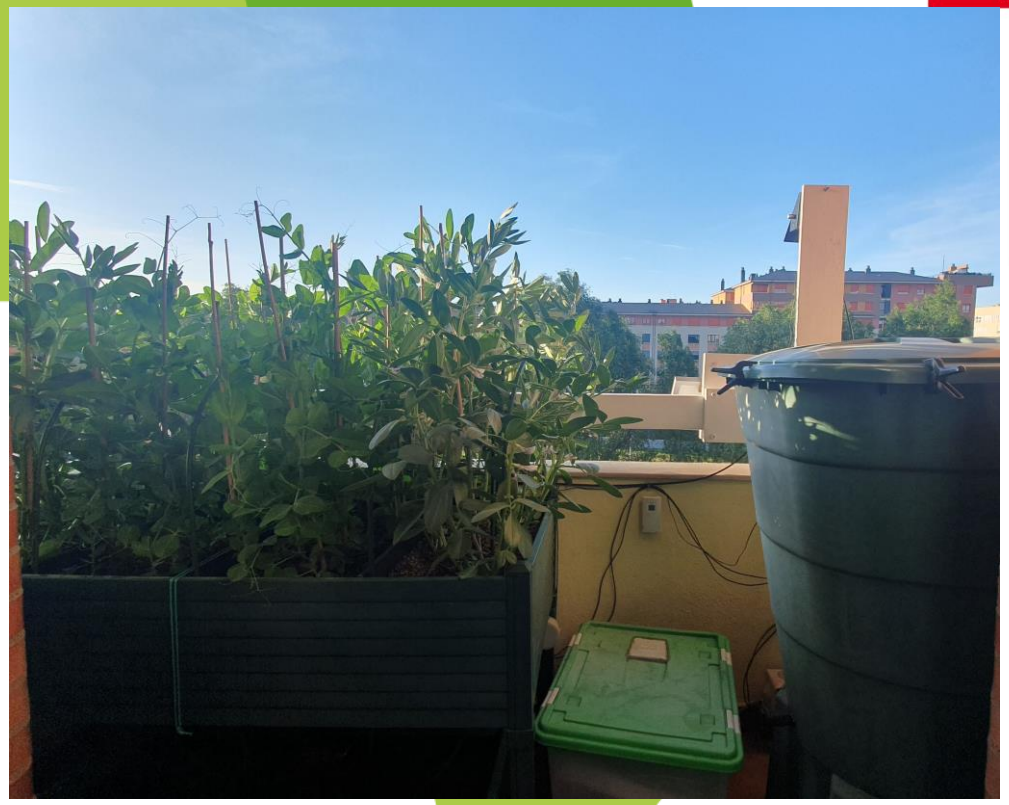


universidad de león

CityZen
Interreg Europe

European Union
European Regional
Development Fund

IQUIMAB "Engineering for Circular Economy"



Thank you!

Questions welcome

Project smedia