



## Theme 2 Sustainable soil management for food security and better nutrition



# New mulching techniques: improve soil fertility through circular use of agricultural plant waste

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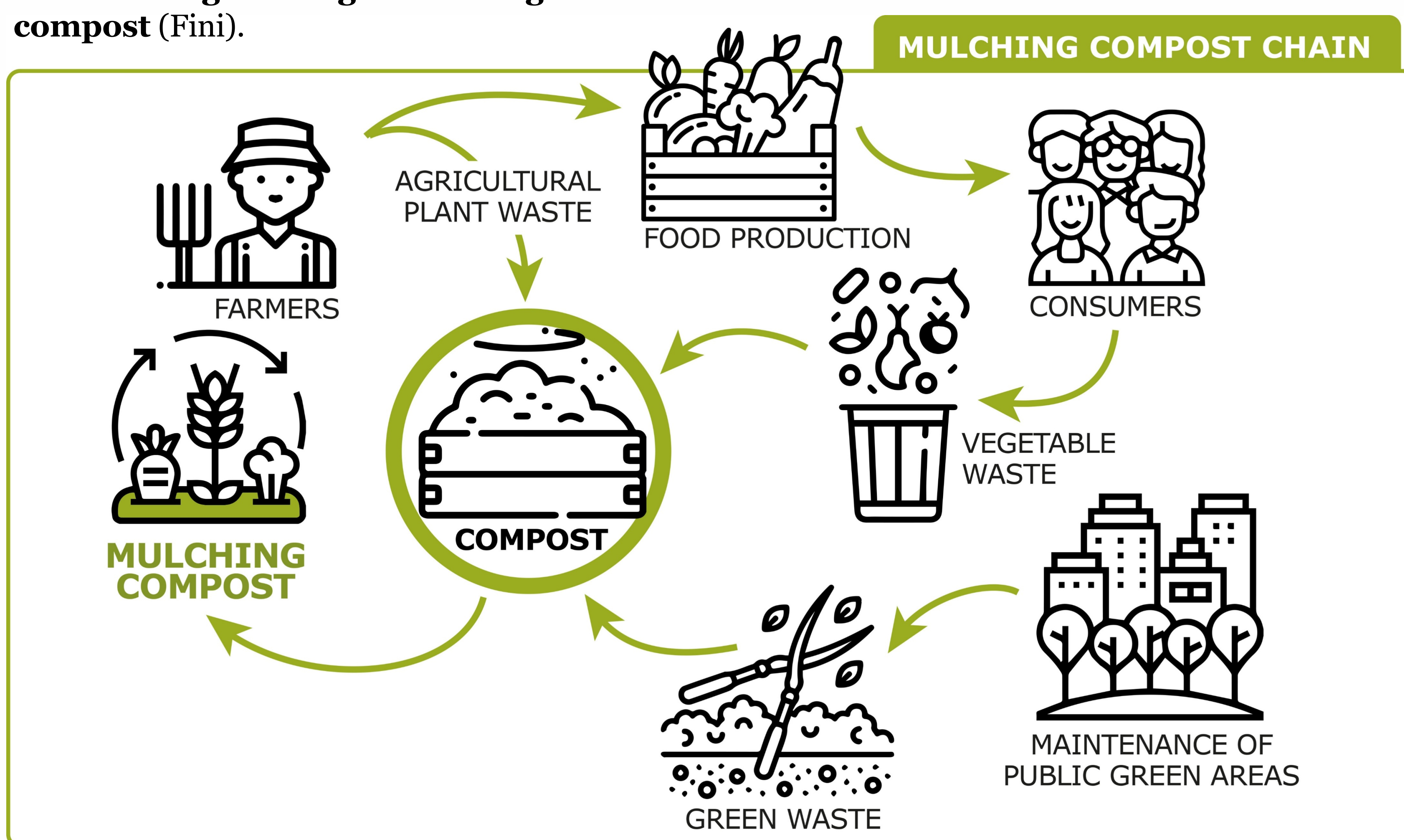
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## INTRODUCTION

This research investigates some **innovative techniques of small pioneer farms** used to maintain soil fertility without the addition of synthetic substances or even manure but using vegetable waste (Beni).

This project intends to pursue the improvement of the functionality and fertility of the soil in natural horticulture through the greater diffusion of rational soil cover techniques, such as **mulching of vegetable origin with compost** (Finì).

In Italy, an Operational Group was created, made up by a set of agricultural production companies (coordinated by: il Bosco delle Galline Volanti di Viviana Germano), a public research organization, Council for Agricultural Research and Economics (CREA), represented by two structures (AA and IT).



## METHODOLOGY

- Optimize new mulching techniques and propose mature or semi-mature compost and the BRF (Bois Raméal Fragmenté) as soil cover (Boselli).
- Create a network to connect producers of the "zero km" agro-food chain, companies for the production of BRF and compost which operate in the maintenance of public green areas, local authorities, animation groups of the territory, and local schools.
- Create an interactive app to provide advice on the production and use of compost; and to collect data to build a detailed database on the various needs in different areas of Italy and in the perspective of the European Union indications.

## REFERENCES

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- Finì A., F. Ferrini, Degl'Innocenti C., 2016. Effect of mulching with compost on growth and physiology of Ulmus 'FL634' planted in an urban park. Arboriculture and Urban Forestry, 42(3):192-200.

Natural horticulture, mulching, circular economy, soil fertility, compost, Bois Raméal Fragmenté.



**Easy implementation of the production system, with very low costs for individual farms. It is an innovative use of a product with an already mature technology.**

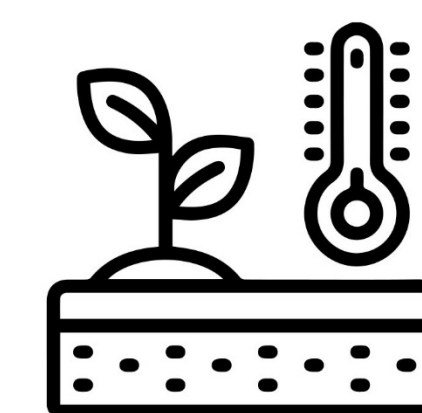
## RESULTS



- Solve the disposal of agricultural waste, in particular, those deriving from fresh-cut production and pruning, transforming it into a resource.



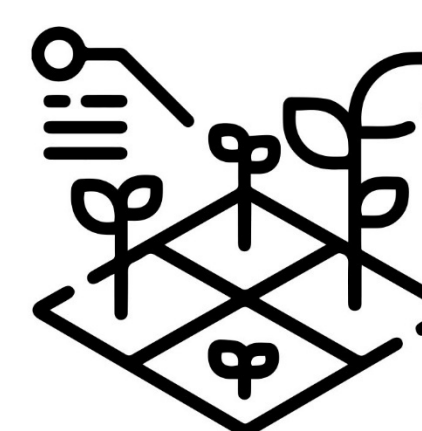
- Abolition of plastic mulch.
- Cut the cost and usage of biodegradable plastic covers (10% residues).



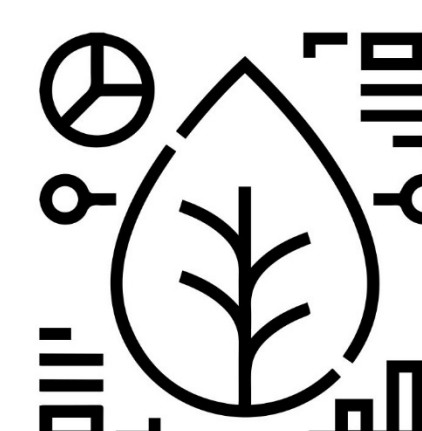
- Better temperature management than plastic sheets with consequent plants wellbeing.



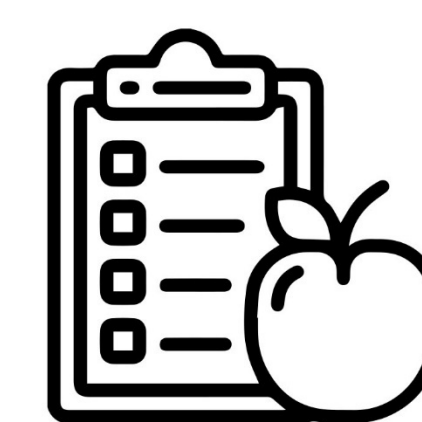
- Optimal management of water use, reduction of washout.
- Compost humidity.



- High biodiversity of microorganisms and healthier plant.
- More information about plant fertilization management.
- More rationalization in pioneering micro-enterprises.



- Creation of a shared software for the information collection.
- Greater knowledge of mulching methods.
- Analysis on the metal residues of plants that use mulch compost.



- Analysis and comparison between conventional products and products with this method.
- Residue analysis.
- Healthier food at "zero km".
- Food safety.



- Savings for everyone:
  - farmers** (internal use of resources)
  - citizens** (less costs for waste disposal)
  - local authorities** (rational use of waste)

## CONCLUSION

The focus of this project will increase the level of innovation of mulching techniques by creating a positive economic impact, linked to their use and the creation of a supply chain between all the "actors" involved. This is particularly interesting, also in small rural realities, not only in Italy but in the world. The ultimate goal is to increase productivity, food safety and environmental sustainability. Also, to give the possibility to improve in terms of territorial circular economy and waste disposal.

