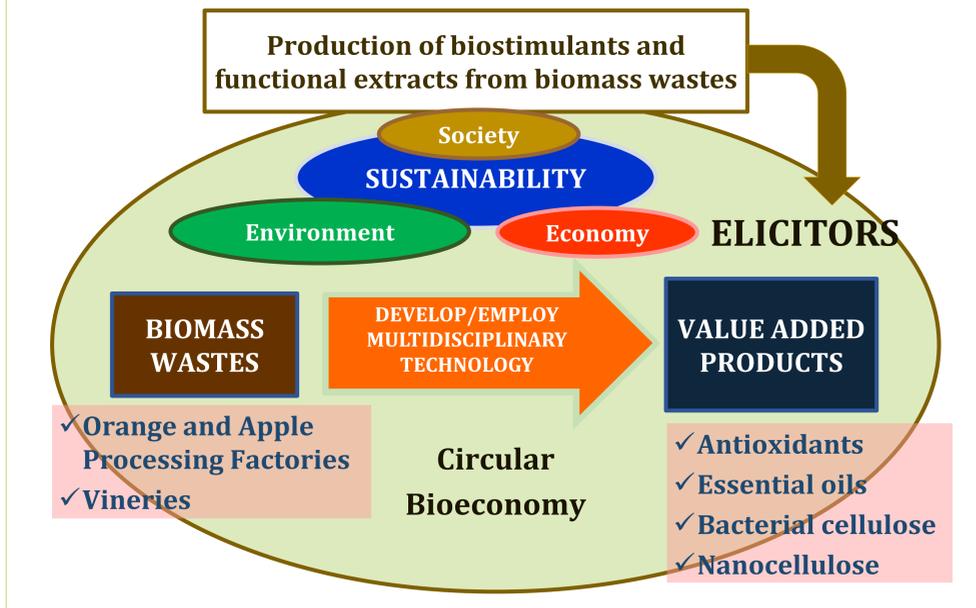


SPAREC



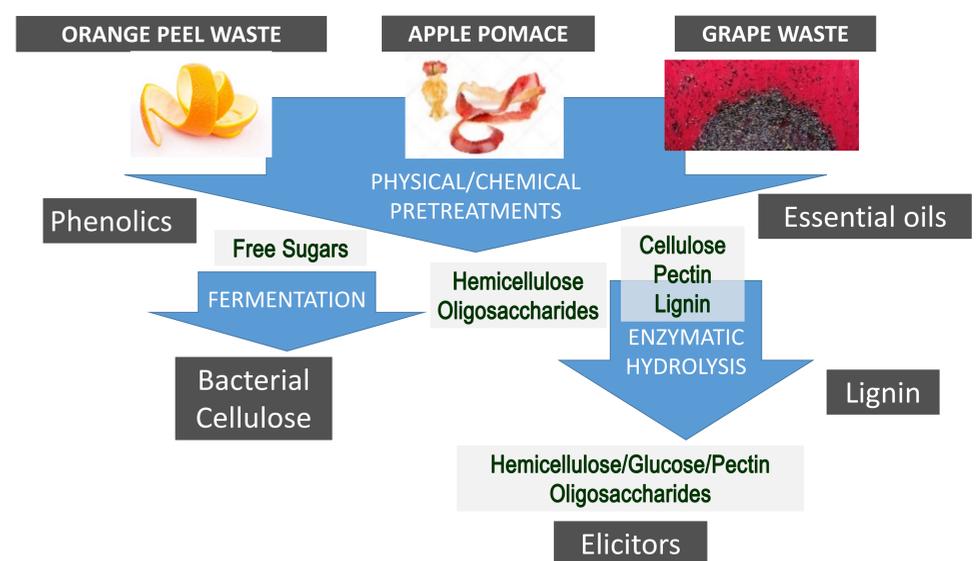
Sustainable Processing of Agrofood Residues to Elicitors and Chemicals

Summary



Is it possible to obtain functional extracts and substitutes for pesticides from food-related biomass waste by sustainable processes?

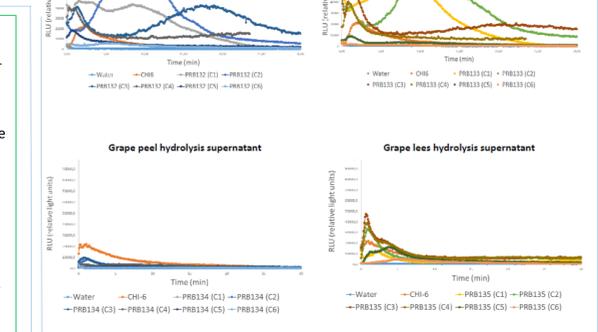
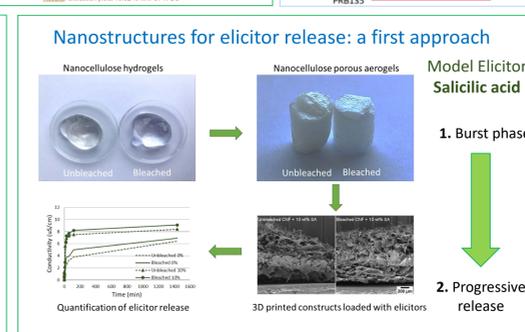
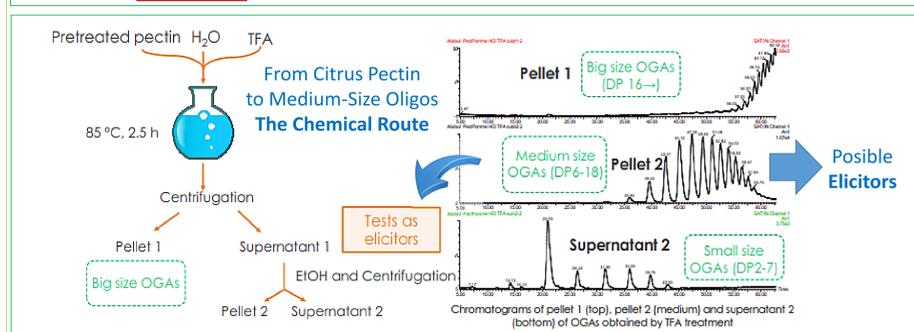
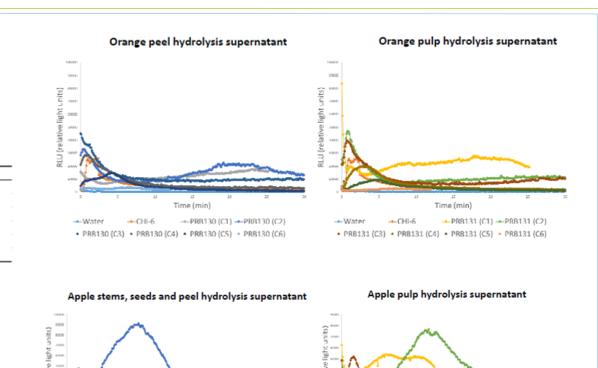
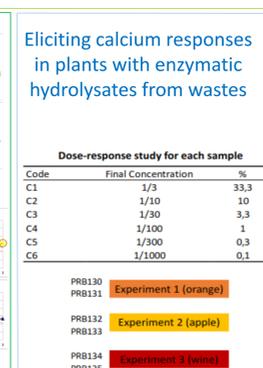
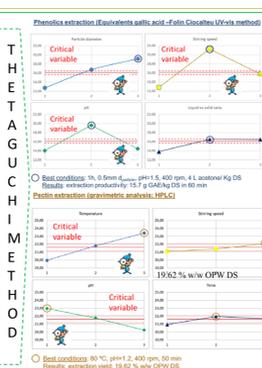
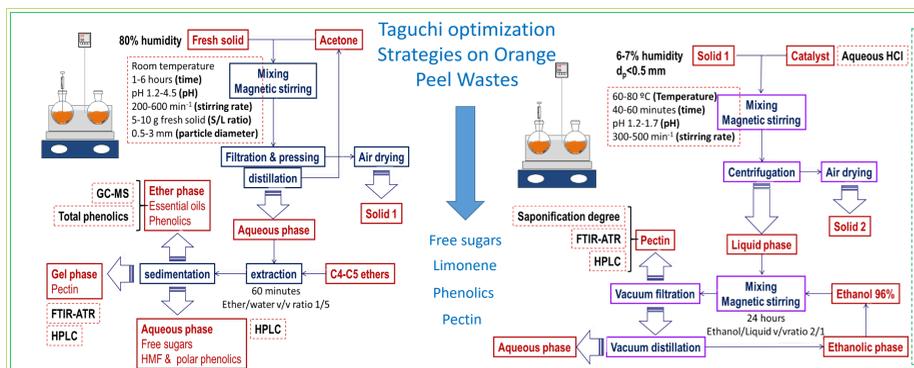
Preliminary results



Preliminary Conclusions

- ✓ NREL proximal analysis suggests support uses for lignocellulosic-rich wastes (→nanocelluloses)
- ✓ Extractions (acetone and water/ethanol) from more to less polar components
- ✓ Essential oils extraction: stirring speed is the critical variable
- ✓ Phenolics extraction: pH, stirring speed and particle diameters as critical variables
- ✓ Pectin extraction. pH and temperature are the critical variables
- ✓ OPW and grape peel&lees for antioxidant extracts
- ✓ Orange and apple enzymatic hydrolysates show promising elicitor activity
- ✓ Nanocellulose permits a progressive release of salicylic acid (as model elicitor)

- ✓ Chemical characterization of orange and apple wastes
- ✓ Protocol for free sugars, essential oils and phenolics extraction from wastes: Taguchi optimization
- ✓ Chemical pectin extraction from orange peels
- ✓ Chromatographic fractionation and production of medium-size pectin oligosaccharides
- ✓ Endopectinases cloned in *Pichia pastoris*: first productions
- ✓ Preliminary positive plant responses (depending on the waste and the sample)
- ✓ Bacterial/Nano-cellulose for controlled release
- ✓ LCA/LCC : from uni- to multiproduct/multiprocess



Topic 2: Providing added value, increased resource efficiency and reduction of waste in sustainable food systems

