



**POWER4BIO**  
REGIONS FOR  
BIOECONOMY



**Junta de Andalucía**  
Consejería de Agricultura, Ganadería,  
Pesca y Desarrollo Sostenible

[Cross-visit Andalusia] | [Seville-online], [day 2- 21<sup>st</sup> October 2020]  
[Sol Cuenca PhD.] – [CAGPDS]

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# Study on Biorefineries- Andalusia



# Factors to consider



1. Biomass availability
2. Market analysis
3. Technology
4. Viability of biorefineries
5. Additional factors to be considered
6. Conclusions



# 1. Biomass availability

## Location of the biomass

- Biomass- located
- Biomass- available not located
- Biomass- cultivated (*ad hoc*)

## Availability of the biomass

- Annual volume
- Seasonality and perishability

## Biomass potential

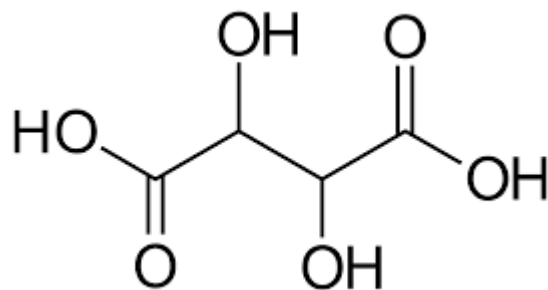
- Agro-food industry
- Pharmaceutical industry
- Cosmetics
- Animal feed
- Chemical industry
- Bioenergy

	Type	Availability	Potential
Olive	Concentrated biomass	High annual volume/non seasonality /non-perishable	Food industry Chemical industry Cosmetics Animal feeding Bioenergy
Horticulture	Concentrated and sparce biomass	High annual volume/seasonal/p erishable	Food industry Cosmetics Animal feeding Bioenergy

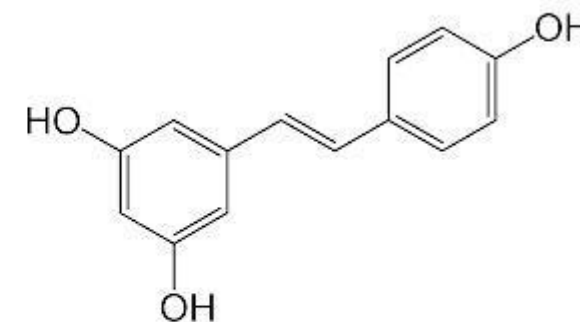
# 1. Biomass availability

*Example*

Tartaric Acid & Resveratrol



3.5 y 6.5 €/kg



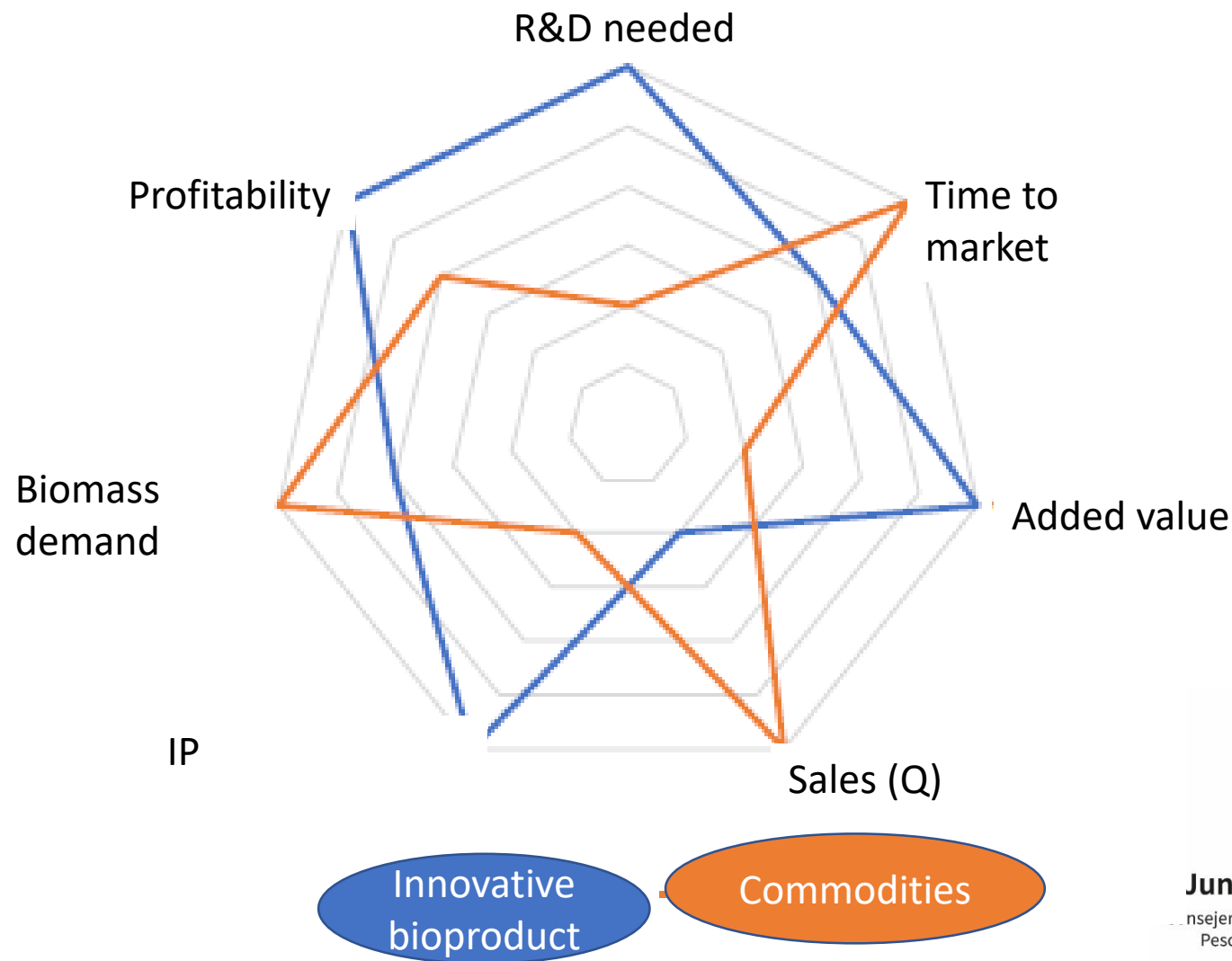
**Resveratrol**

300 €/kg



## 2. Market analysis

- Type of products
- Product type: innovative vs commodities
- Balance between high and low innovation



# 3. Technology



- Maturity of the technology: Innovation/time to market/price, optimization, re-utilisation of underused infrastructures.
- Pilot and demo plants: Limiting factor of the region, collaborations.

*“Pre-industrial validation is critical to correctly define the necessary industrial equipment in a demonstration plant, as well as to be able to define the real costs of production that establish a more realistic feasibility analysis.”*

- Technology available- examples: Physico-, Chemical, Thermo-chemical, Biotechnological processes.



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## 4. Viability

- **Tractor products:** products that justify the collection and transport of biomass at first, and that justify the industrial investment for its subsequent management.
  - Primary
  - Secondary
- **Gregarious products:** products obtained from the same biomass but which alone do not justify the total investment required for their management.





## 4. Viability

- Examples- Andalusia: tractor and gregarious bioproducts

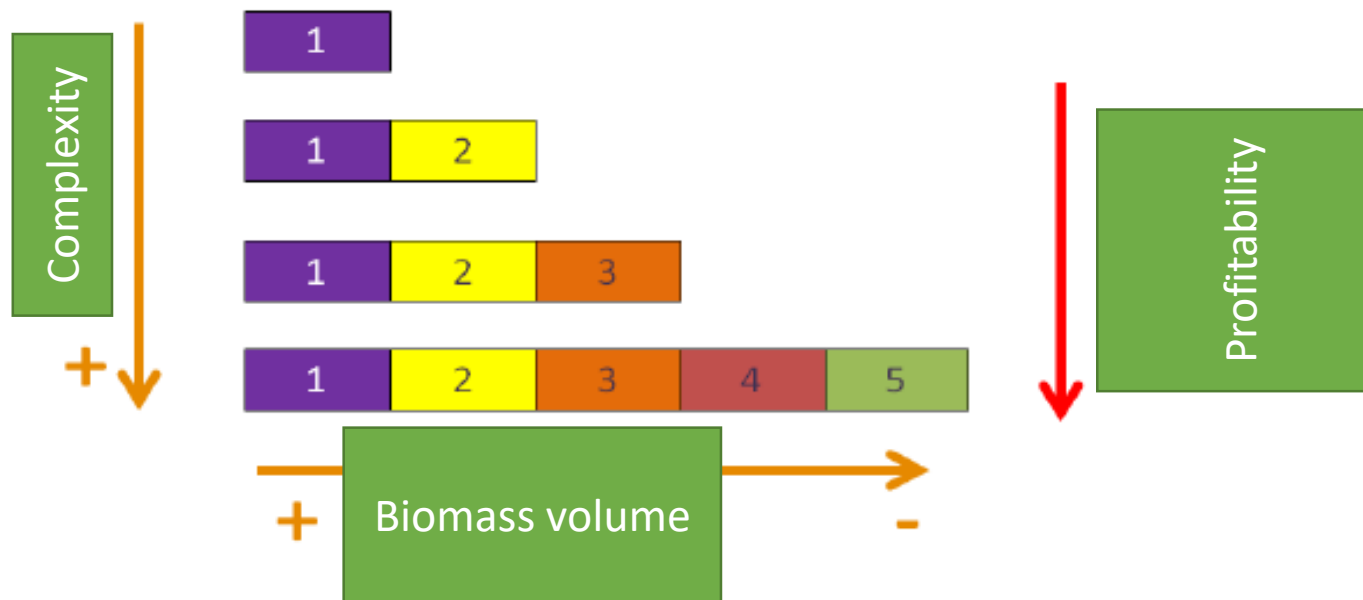
**PRIMARY TRACTOR PRODUCTS: Olive oil**

**SECONDARY TRACTOR PRODUCTS: Olive-pomace oil Bioenergy (biofuels, heat and electricity)**

**GREGARIOS PRODUCTS: Sterols, Triterpenic Alcohols, Aliphatic Alcohols, Waxes, Saturated Aliphatic Hydrocarbons Esqualene Tocopherols Phenolic compounds (hydroxytyrosol, oleuropein, oleocantal ...) Triterpenic compounds (maslinic acid, oleanolic, ursolic ...) Fermentable carbohydrates Carbohydrates and hemicellulose Proteins and amino acids Organic acids**

## 4. Viability

- One product vs multi product biorefinery



## 5. Additional factors

- Logistics
- Business model and value chain analysis
- Biomass current value
- Industrial model
- Selling price- its importance
- Sustainability factors



# 6. Conclusions



- **Biomass**

- Located: more attractive right now
- Non- located: logistic centres

- **Bioproducts**

- Innovative: high AV, lower demand and market
- Commodities: higher demand of biomass and higher market
- COMPROMISE
- Public-private collaborative alliances to increase R&D level

- **Technology**

- Pilot plants- needed
- Regional investment- pilot biorrefineries
- **Interregional collaboration**

- **Markets**

- The main markets for Andalusian agricultural biomass bioproducts are: the pharmaceutical industry, human food, animal nutrition, cosmetics, chemicals and bioenergy.

- Needs for agents for each market

- **Biorefinery design**

- Identify gregarious and tractor bioproducts
- Industrial viability of gregarious bioproducts: high investment in R&D
- Importance of cascade flows

- **Collaboration among different stakeholders**

- Industry-academia-administration





# POWER4BIO website and social media



[www.power4bio.eu](http://www.power4bio.eu)



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# Thank you for your attention!

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