TRansition paths to sUstainable legume-based systems in Europe

WP5: Environmental LCA and Nutrient Quality Assessment

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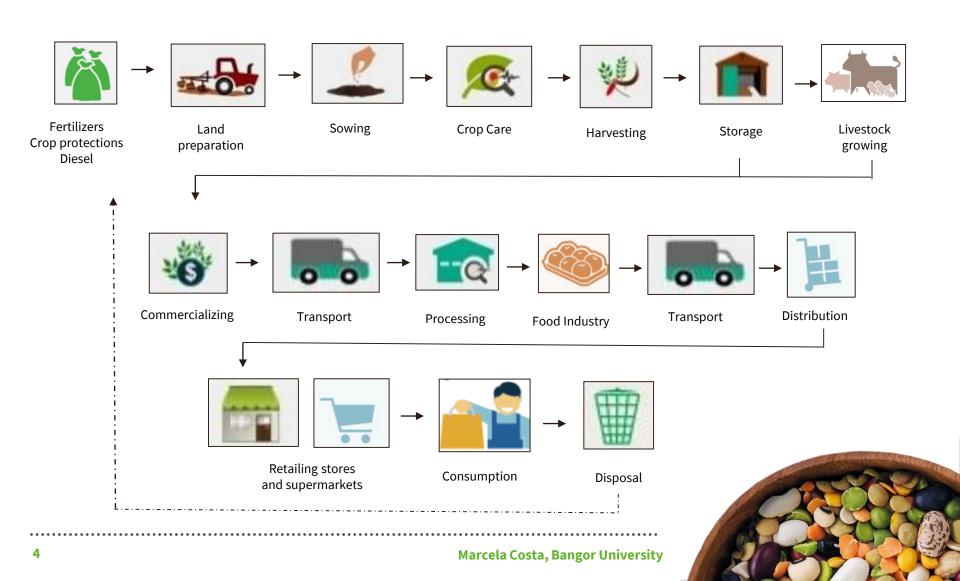marcela.costa@bangor.ac.uk

What?

More than generic labels

We want to provide accurate information for:

1. consumers on legume footprints, with robustness and transparency;

2. policy makers on potential for legumes to address agri-environmental challenges.
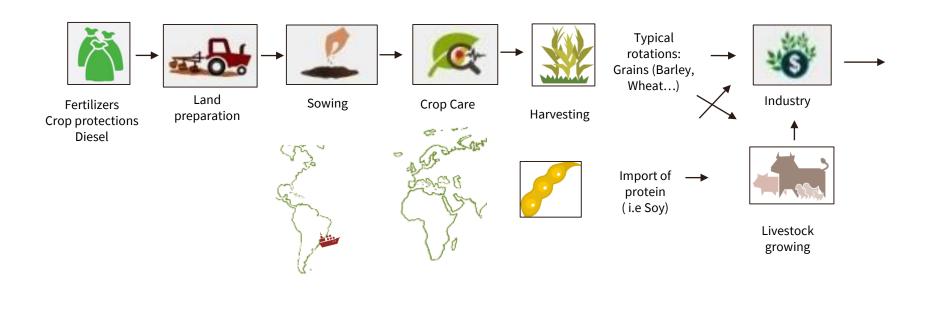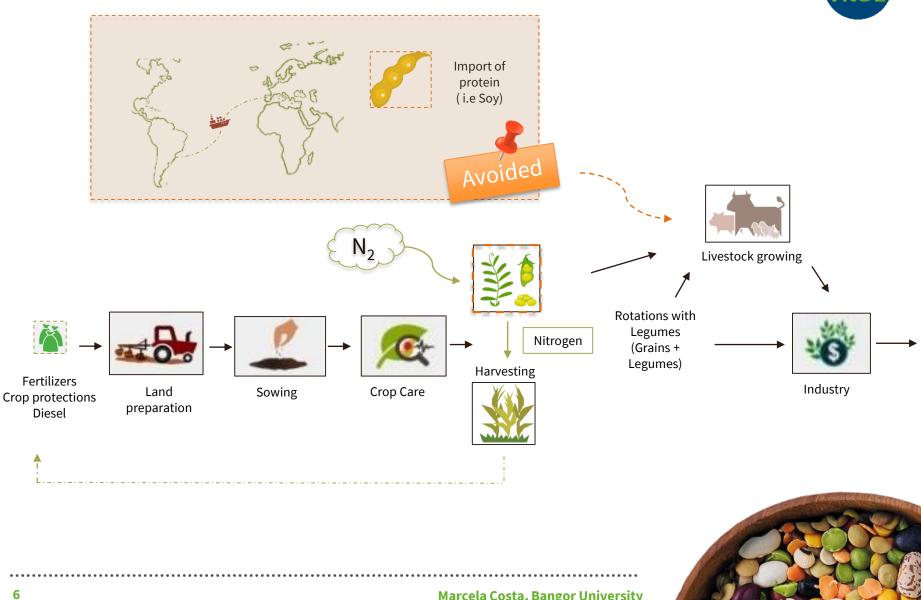
Agriculture LCA

Fertilizers Crop protections Diesel	Land preparation	Sowing	Crop Care	Harvesting	Storage	Livestock growing

Commercializing → Transport → Processing → Food Industry → Transport → Distribution

Retailing stores and supermarkets → Consumption → Disposal

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Up to Farm Level LCA: grain rotations

Fertilizers
Crop protections
Diesel

Land preparation

Sowing

Crop Care

Harvesting

Typical rotations:
Grains (Barley, Wheat…)

Industry

Import of protein
(i.e Soy)

Livestock growing

Up to Farm Level LCA: legumes-grain rotations

Import of protein (i.e Soy)

Avoided

N_2

Livestock growing

Nitrogen

Rotations with Legumes (Grains + Legumes)

Fertilizers Crop protections Diesel

Land preparation

Sowing

Crop Care

Harvesting

Industry

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Nutrition and Environmental Impact

Human diets

Alcohol and fish Industry

1st ;2nd

Alcohol: Gin from Pea and Beer from Lentil

Fish Feed from legumes

Pasta of legumes

Pasta production

3rd

2nd use: Protein Flakes

4th

Breakfast Cereal

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Replacing Meat

5th   Protein Intake by the population

Milk and meat fed by legumes

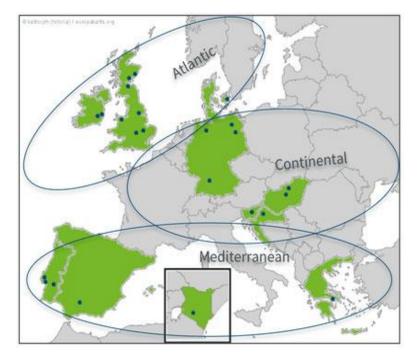**6st ; 7th**

White clover pastures

Alfalfa, Red clover silage

Replace imported Soya, Palm oil kernals

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What do we need to calculate the life cycle assessment of all pathways?

What , Where and How grain-legumes are planted?

What are the potentials?

- **Typical farm typologies**
- **Main rotations/ intercropping systems**

Representativeness farm level info:

- **Inputs**

- **Management practices**

- **Yields**

- **Nutrient balance**

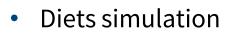**Marcela Costa, Bangor University**

Next Steps & partnerships

- Define farm typologies: December 2018

- Data Collection: April 2019

- Farm level LCAs (grain and Grain-Legumes rotations): October 2019

- Pathway Simulations

- Diets simulation

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THANK YOU

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