Wool for crop resilience

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To which domain did you submit your proposal?

Textiles, Topic 5: recycling of discarded carbon-based materials

What are you exploring? With what objective?

We want test the re-use of a currently discarded keratin-rich side stream from farming activities i.e. **wool** as an alternative **growing media** for crops in greenhouses, and its potential as source of nutrients for microorganisms and plant protection against pathogens.
We aim to answer:

1) Which wool **treatment** is needed to keep plant performance?
2) Does wool let plants **grow** and **protect** against a pathogens?
3) What **microorganisms** are dominating in the wool-based media?
4) Bring together **partners** to further develop the use of wool in horticulture

Why is this interesting scientifically?

Previous work showed the **positive** effect on **yield** in wool-grown plants, compared to other substrates. Furthermore other **keratin-rich** products are protecting plants against **pathogens**. Our study will bring:

1) Knowledge on how wool can provide plant **support** and **protection**
2) Data on **microorganisms** that can grow on this media and which ones could potencially protect plants

How is this relevant to the materials transition?

This project could increase the societal impact in the direction of a renewable carbon-based material i.e. wool transition as:

a) Reduce the environmental **footprint**, by avoiding the burning of the wool
b) Reducing the need for non-recyclable **rockwool** and natural **peat**
c) Creating a **value chain** for wool, sheep farmers could benefit from all the product (wool)

What are the key activities or steps?

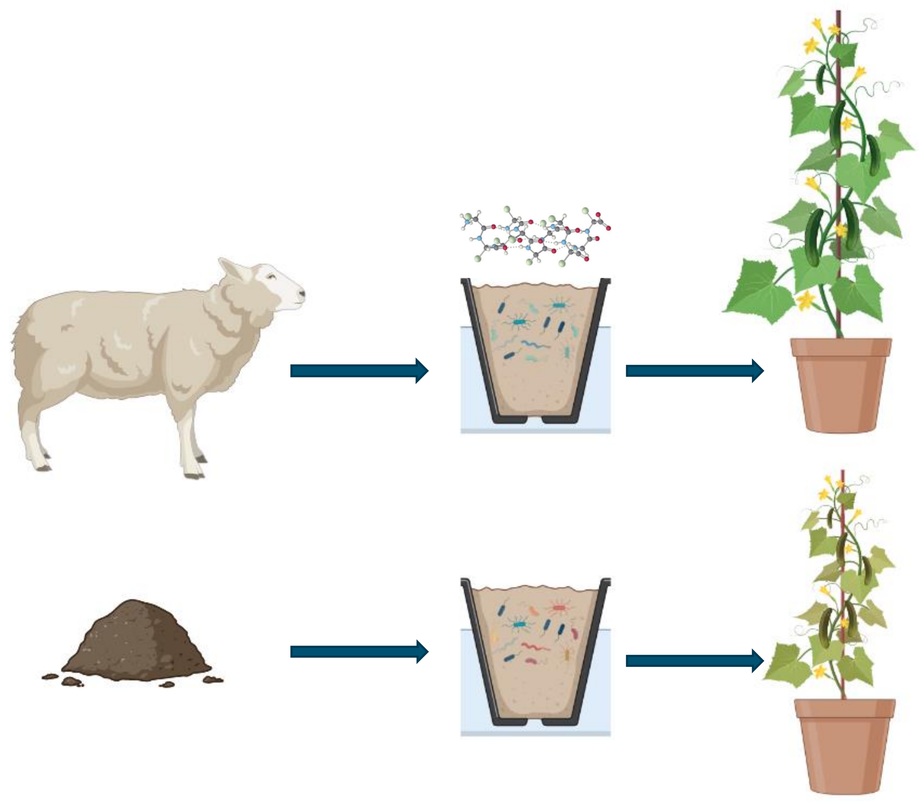
1. Preliminary test of wool physico-chemical properties and potential treatments to apply
2. Test of wool as growing media in the greenhouse
3. Pathogenicity bioassays of wool-media grown plants
4. Microbiome profiling of wool-based growing media

What are key deliverables?

- Data of the physico-chemical properties and treatment of wool based growing media
- Data on plant performance in wool based growing media
- Data on microorganisms that are enriched in wool-based media
- Collaboration with other projects working in a related topic
  - PPS Systematic Approach for Finding Alternatives to Peat Substrates
  - PPS Peat alternatives mushroom & horticulture sectors
  - KB-34 Microbiome connections in the circular production systems

One what issues would you like to get input from others?

Are there other materials that could we tested in a follow up project? Such as keratin/chitin/cellulose/lignocellullose rich side streams



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