SEGES INNOVATION

RAPPORT

Plan for data registration in WP2-WP5

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Introduction

The KlimÆpro project consists of various project partners, working at different value chain stages. The "KlimÆpro, LCA methodology" delivery in 2022 (LCA: Life Cycle Assessment) describes the system boundary, and included value chain stages, that will be used for the LCA in Working Package 6 (WP6). Briefly, the main stages considered in this LCA will be the cultivation stage, the pea protein extraction (isolates and concentrates), and the production of the two products of interest. While there is a lot of research that is currently being carried out within "KlimÆpro" for the selection of the most suitable pea varieties, the plant breeding stage will be out of the scope of this LCA, but still contributing to key data describing the cultivation process (e.g., in terms of pea yields, and protein yields).

The following section gives an overview of the data that will be collected in 2024, with respect to specific points not yet covered by the "Overview of the datasets ready for the LCA" document (i.e. one of the deliveries of working package 6 (WP6), submitted in 2023).

Plan for data registration

Overall, data registration will only focus on the selected few pea varieties with the highest potential for implementation in the final products, for example in terms of protein levels, flavor, color, and extractability properties. The few key pea varieties will be chosen by the other WPs.

Pea cultivation:

- Pea yields (kg /ha).
- Protein yields (kg protein / ha), based on the protein contents in the peas.
- Is there any clear remark compared to the cultivation of common yellow peas (e.g. different harvesting techniques that can affect diesel use)?
  In other words, should we expect any major difference (if so, please quantify or at least qualify) between the cultivation of the selected "high protein" varieties, compared with the cultivation of common yellow peas (e.g. ~3.8 t/ha (Danmarks Statistik, HST77 2018-2022); ~70 L_{diesel}/ha (Lyngvig, 2020); no manure application (Farmtal online); PK amounts as reported in Farmtal online; …)?
- What are the yield differences between organic and conventional cultivation (for the considered varieties)?
  Should we expect the same yield difference shown in common yellow peas varieties (conventional VS organic) or is there any indication that points towards different trends?

Drying of peas:

- Typical dry matter of fresh peas and dried peas
- Energy requirements for the drying process

Protein extraction, via isolation

- If possible, information on protein extractabilities. For example,
  INPUT: 1 kg of dried peas, with “x” kg of protein
  OUTPUT: “y” kg of protein isolate, with “z” kg of proteins

- If possible, information on the environmental impact of the (input) dried peas used in Cosucra’s “protein isolate”.
  This would give the possibility to make sensitivity analyses looking at the potential increase of transportation distances between the extraction facility and the cultivation site.

- If possible, quantitative information on how different varieties of peas can affect the LCIA results of “pea protein isolates” (e.g., in relation to different workability / extractability properties).