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Objective
To investigate the environmental impacts of feedstock production and upstream processing, as regards the STAR-ProBio case studies. The feedstocks considered for the production of the case studies are fermentable sugars from sugar beet pulp, maize grain and maize stover.

Steps WP2
Life Cycle Assessment

System boundaries

Table 1. Scenarios for agricultural activities and pre-treatment processes

Conversion units

WP2 Partners

Results

Table 2. Environmental results to produce 7.5 g of fermentable sugars -1 piece of BoPLA

Conclusion

The average values from the 20 scenarios for the production of 1 kg of fermentable sugars emit about 0.50 kg of CO₂ eq and 6 MJ of energy. However, standard variation values are very high due to the different agricultural systems considered in this study. In this upstream LCA, the outcomes showed that the use of fermentable sugars from beet pulp has less impact than maize grain and stover, consequently reducing the global impacts of the three STAR-ProBio case studies.

Figure 1. Steps of Life Cycle Assessment

Figure 2. Conversion units for WP2 and WP3

Figure 3. Generic overview of the system boundaries for WP2

Figure 4. Threshold values for BIOD and SE indicators for maize grain only. Pt= m²/year • PAS

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Publications