



Estimates of biomass residue volumes, composition, bio-based yields and environmental performances

Agricultural residues represent a significant underutilized resource with potential for conversion into valuable bio-based products. To unlock this potential, comprehensive data on residue availability, composition, and conversion yields are essential for informed decision-making.

This desk study presents data sets and methodologies for: estimating the volumes of key agricultural residues in Europe, approximating their potential yield to diverse products, and prioritising the most promising valorisation pathways.

Project activity

Agricultural residual streams were selected for screening, based on their crop production level in the EU. First estimates of secondary residue volumes were provided in an earlier Agriloop study (Deliverable 1.1). Then, a more detailed inventory addressing also primary residues, was presented, and distinguished different processing pathways per crop. Next, residue volumes per country were calculated, based on the production level of each crop and crop-to-residue ratios from literature. This included both primary residues generated close to fields as well as secondary residues from plant processing sites. As expected, the largest volumes of agricultural residues (dry matter) are generated in countries such as France and Germany.



Then, information on the nutrient composition of residues was collected and expressed as the amount of nutrients available per country and per residue stream. Finally, yields of biopolymers, protein and other biobased products were estimated both per country and per ton of residues using heuristic rules.

Key findings and recommendations

The methodologies and data sets created in this study enhance our understanding and decision-making capabilities for optimising the use of agricultural residues as resources within a circular bioeconomy.

- Environmental indicators will be added to the methodology in future work, enabling the sustainability of residue valorization to be maximised.
- Future studies will supplement the European datasets with information on Chinese residue streams.



References

Agriloop project deliverable 1.4: Estimates of biomass residue volumes, composition, bio-based yields and environmental performances https://www.agriloop-project.eu/wp-content/uploads/2024/05/D1_4_20231130_WR.pdf

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