https://doi.org/10.7250/CONECT.2025.033

REGIONAL LIFE CYCLE INVENTORY OF SOFT WHEAT IN CENTRAL ITALY: A PRIMARY DATA-BASED STUDY

Claudia CAMPLONE[1*], Renzo SANTI[2], Francesco ROMAGNOLI[3], Luisa PAOLOTTI[4], Lorenzo COVARELLI[5], Lucia ROCCHI[6]

[1,4–6] *Department of Agricultural, Food and Environmental Sciences, University of Perugia, Borgo XX Giugno 74, 06121, Perugia*

[2] *Colussi SpA, Via dell'Aeroporto 7, 06081, Petrignano d'Assisi, Perugia*

[3] *Institute of Energy Systems and Environment, Riga Technical University, Azenes iela 12/1, LV-1048, Riga, Latvia*

[*] ***Corresponding author.*** *Email address: Claudia.camplone@dottorandi.unipg.it*

Abstract – Wheat is one of the most important cereals worldwide as it plays a fundamental role in the diet of all population groups, including low-income ones. It accounts for the largest share of cereal production, representing about 20 % of calories and protein in the human diet. In Italy, 6.5 million tons of bread wheat are produced annually, spread across 540 000 hectares, placing the country among the top 15 global producers. The aim of this study is to present a Life Cycle Inventory (LCI) of the soft wheat supply chain in central Italy, following the guidelines outlined in ISO 14040:2006 and ISO 14044:2006, using primary data provided by three major Umbrian farms (central Italy) that are part of the supply chain of an important Italian bakery products industry (Colussi S.p.A). Among the various stages of soft wheat production analysed, we focused on the protection against fungal diseases and the use of pesticides, as this phase involves particularly critical points due to process variability. The reference unit used in this study was defined as 1 ha, and all the stages from raw materials production to seed harvesting were considered.

The regionalized inventory provided by this study can be used as a starting point for data collection and as a guideline for future studies in comparable areas, allowing for more accurate results through the use of primary data.

Keywords – Environmental impact; soft wheat; LCI; Life Cycle Assessment

ACKNOWLEDGEMENT

We acknowledge financial support under the National Recovery and Resilience Plan (NRRP) published on 14.9.2022 by the Italian Ministry of University and Research (MUR), funded by the European Union – NextGenerationEU.