

PhD Thesis Defenses

On **Friday May 10th 2024 at 10.00am** at the classroom **Giuseppe Perrotta**, Via Santa Sofia 100

International
Doctor
Candidate

Silvia Zingale (XXXVI cycle)

Will discuss her PhD theses titled

Addressing quality and environmental sustainability in the organic durum wheat supply chain

Thesis Abstract

Sustainable food systems are essential to nourish the increasing global population within planetary boundaries. However, agricultural production and food consumption processes lead to environmental degradation and pollution. Staple cereals have a central role in the transition towards sustainable food systems because of their severe environmental impacts, recommended consumption in the form of whole products for a healthy lifestyle, and good aptitude to be enriched to obtain functional foods. This thesis has applied the Life Cycle Assessment (LCA) methodology to the durum wheat sector, from field to cooking, and integrated it with the quality and nutritional properties accounting. Methodological insights on how to advance the LCA methodology were provided, along with solutions to minimise the environmental impacts associated with pasta production. In particular, the following key methodological choices were adopted to best capture and represent durum wheat production systems' complexity: the adoption of combined modeling approaches, taking into account crop rotation effects; and the use of multiple functional units, including quality-corrected and nutritional ones. As the most important output of the thesis, a new pasta nutritional quality index (PNQI) was proposed and tested. Overall, mitigation strategies for the organic durum wheat pasta sector resulted in a) the enhancement of durum wheat productive performances through agro-ecological practices; b) the development of new varieties well adapted and performing under low-input conditions and naturally embedded with high nutritional quality; c) the experimentation with innovative healthy and nutritious pasta formulations; and d) the adoption of more sustainable pasta cooking appliances and procedures.

Advisor:

Prof. Paolo Guarnaccia

Co-advisor:

Giuseppe Timpanaro

Biagio Fallico