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INSECT ENVIRONMENTAL SUSTAINABILITY AND ECONOMICS

Enabling circular economy in the Italian agrifood sector: determinants of farmers on insect biorefinery acceptability

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In a world with finite resources, repurposing food loss and waste (FLW) is crucial. Insect biorefinery (IB), an emerging circular bioeconomy approach, plays a pivotal role in upcycling nutrients from FLW. The European insect industry's sustained leadership and integration with the bioeconomy depend on implementing symbiotic production models through site selection and partnerships. Presently, only 8 studies (4 European, 3 African and 1 South America) have explored the acceptability of stakeholders. This Italian pilot study is the first to focus on potential Upstream Stakeholders (US) – defined as the one involved in the earlier stages of the supply chain, such as suppliers – addressing a critical literature gap. This research explores the factors influencing the willingness of potential US to adopt IB. Preliminary analyses probed the willingness of companies to participate in the survey, determining a representative at the level of production heterogeneity sample of 31 SMEs who were administered a survey with 23 questions divided into 4 sections. R software was used to carry out a Principal Component Analysis. It considered five components: (1) company dimension, (2) attitudes towards by-products management on-farm, (3) attitudes towards by-products management off-farm, (4) predisposition toward innovative management methods, and (5) interest in insect rearing. Components 1 and 2 explained 79% of data variances, rising to 93% with n. 3. Component 1 was inversely correlated with 4 and 5. This is potentially influenced by prevalent funding opportunities in the Italian and EU contexts, encouraging innovative practices in small and medium-sized enterprises. Identified barriers to adoption include misinformation, anticipated negative media impact on branding, and resistance to changing by-product management practices. This pilot study serves as a foundational exploration, offering insights into IB acceptability among potential US. It offers valuable insights for future in-depth studies, shaping the discourse on the acceptability and integration of IB within bioeconomy.

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