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Practice Abstract

How to improve environmental sustainability of strawberry production in different cultivation systems: Breeding Value outcome

The Breeding Value project conducted several field trials across Europe to assess the environmental sustainability of new strawberry cultivars developed for pest and disease resistance and higher productivity in various cultivation systems.

The Life Cycle Assessment method was used to evaluate the environmental impacts of production, identify hotspots, and suggest mitigation strategies.

The results showed critical sustainability benchmarks for common indicators. For example, the carbon footprint of 1 kg strawberry ranged from 0.21 to 3.80 kg CO2 eq/kg strawberry with an average of 0.58. No cultivation system proved superior; instead, trade-offs were observed. Tunnel-soilless systems had higher productivity, but their impacts varied depending on substrate type and infrastructure lifespan. Open-field systems had lower impacts for some indicators but were more sensitive to climatic variation and yield fluctuations. Results varied across partner sites due to technical and operational variability.

The study provides growers with benchmark data and hotspot insights that can guide informed decisions in cultivation practices. Environmental hotspots identified were fertilizers, agrochemical emissions, substrate materials, and infrastructure.

For growers using protected cultivation systems, strategies for impact reduction include extending infrastructure lifespan via durable materials, selecting alternative lower-impact soilless substrates, exploring the reuse of growing media, and considering biodegradable plastic covers.

In open field systems, efficient agrochemical management and adopting sustainable mulch alternatives, like reusable or biodegradable options, can lower impact and improve efficiency.

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