



Tracking food spoilage and verifying food quality using environmental sensors

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The problem

Over 8% of food losses occur during distribution, with spoilage during transportation contributing significantly due to inadequate conditions. Existing monitoring technologies are imprecise, leading to the harvest of unripe produce to avoid further losses, which reduces shelf life and quality.

The solution

SISTERS extends produce shelf life using a sensor kit by Rebus Labs to monitor temperature, humidity, carbon dioxide (CO₂) and oxygen (O₂). The CO₂ sensor uses thermal conductivity for high repeatability, stability, and low power consumption, while the O₂ sensor offers multiple output modes with accurate measurements. Temperature and humidity sensors use new CMOSens® chips for reliability. These cloud-connected sensors enable real-time monitoring, allowing swift responses to environmental changes and helping prevent food spoilage.

Benefits



Accurate measurements of the four key factors affecting produce during transportation.



Reliable data for analysis, leading to CO₂ reduction in food transportation.



Extended shelf life of produce through data-driven insights.



Real-time monitoring of food spoilage.



Improved spoilage prediction to minimise food waste.

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PRACTICAL RECOMMENDATIONS

- Monitor temperature, humidity, CO₂ and O₂ levels during produce transportation.
- Provide accurate data for food spoilage analysis.
- Enable real-time monitoring, via the cloud, of transportation environment.
- Aid in the demonstration of improved shelf life of fresh produce.
- Showcase the viability of specially developed food transportation units aimed at reducing CO₂ emissions and extending produce shelf life.



About SISTERS and this Practice Abstract

This practice abstract was elaborated in the framework of the SISTERS project, based on the EIP AGRI practice abstract format. © 2024

Project dates: from November 2021 to April 2026.

Goal: to systemically reduce food loss and waste in the main stages of the food value chain in Europe through innovations targeted to each stage of the chain.