NEWSLETTER

February 2025

SUSTAINABILITY NEWS

CHEM GREEN Innovations Pvt. Ltd.

PORTABLE KIT DEVELOPMENT: A POTENTIAL ALTERATION OF POST-HARVEST MANAGEMENTS

SCENARIO

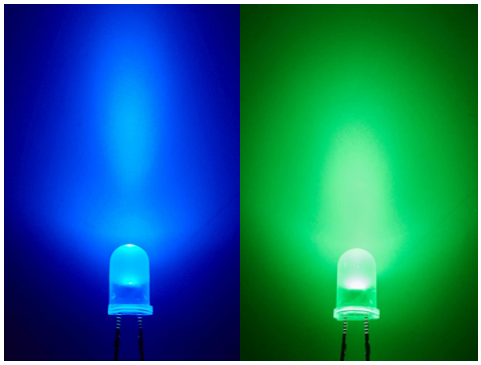
IIT Indore, a premier technology institute in Central India, has been working to improve the quality of life for its rural population through various research projects. Post-harvest of agricultural products has been a big challenge owing to inadequate storage facilities. Cold storage costs have risen dramatically. Thus, the most recent technologies of alternate post-harvest storages do not require farmers to go to cold storages, and the new storage techniques focus on storing small to large-scale production.

VISION

The primary goal of this initiative is to develop a portable kit that incorporates a small, non-toxic vitamin B2 spray solution, which functions as a photosensitizer when combined with a flash visible light source. This kit allows for photodynamic inactivation of microbes in open food items and packed food components. This technique would quickly destroy the germs, ensuring their complete removal from food and surfaces while also stopping their reproduction.

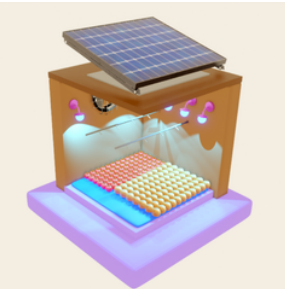
DESIGN

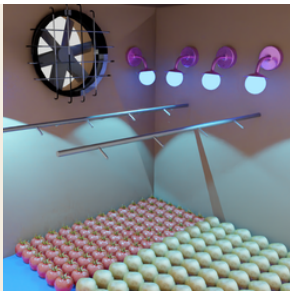
The development of an automated system kit that uses environmentally friendly photosensitizers and visible light at wavelengths of 455 and 525 nm for efficient visual disinfection and sterilization. This will increase effectiveness, prioritize human health, and include the IoT's capabilities for enhancing performance. A visible disinfectant lighting system that is appropriate for a variety of industrial applications, warehouses, and vast surface cleaning.



FACILITY

This technology combines chemical and visual lighting, ensuring human safety and IoT compatibility while improving energy efficiency, decision-making support, responsive service, user experience, and product customization. It shows great potential for the post-harvest management system.





CONTROL

The system is IoT-enabled, allowing the device to be controlled via a server and a responsive GUI via the internet. The machine is delivered to clients on a subscription basis, requiring registration on the web server. The machine's position and state can be controlled through the GUI. A mobile application is available for user access, enabling IoT-enabled management and customer interaction.

DEVELOPERS' CORNER

Dr. Debayan Sarkar (left) with his Ph.D. student Mr. Niladri Sekhar Roy (right)

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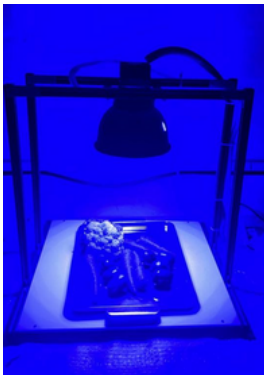

BENEFIT

The machine features a bottom-view camera for monitoring and visualization. The combination of PDI and low temperature keeps vegetables fresh for longer, making it an effective food storage protocol in colder regions and high altitudes.

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