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IIT-I engineers smart storage kit to preserve veggies, grains

TIMES NEWS NETWORK

Indore: Indian Institute of Technology, Indore (IIT-I), has engineered an innovative smart storage kit for farmers to preserve vegetables and grains at an economical cost and in an environmentally sustainable manner, specifically designed to assist small and marginal farmers tackle post-harvest storage challenges.

The kit facilitates remote monitoring via a mobile application and is adaptable for industrial utilisation, warehouses, and other large-scale implementations. It employs photodynamic inactivation (PDI) to eliminate microbes on exposed and packaged food items, ensuring thorough sterilisation and prevention of microbial proliferation.

The research is spearheaded by Professor Debayan Sarkar with notable contributions from student Niladri Sekhar Roy.

IIT-I director Professor Suhas Joshi said, "Recognising the challenges faced by small and marginal farmers in Madhya Pradesh, IIT-I has developed a groundbreaking alternative to cold storage facilities for preserving vegetables and grains."

IIT-I indicated the post-harvest storage solution would be transformative for small-scale farmers, offering an eco-friendly and cost-effective method to preserve their produce, strengthen food security, and minimise environmental impact.

This smart storage kit utilises a safe, derivatised vitamin B2 spray as a photosensitiser and a flash visible light source at effective wavelengths of 455 and 476 nm.

Professor Sarkar said, "The system incorporates IoT-enabled features for enhanced functionality. Farmers can manage and monitor the device remotely through a mobile app, which also provides a user-friendly interface for customer interactions. A bottom-view camera is integrated for visualisation and monitoring during operation. Designed to fit in a small 10x10 ft room, the system can store significant quantities of vegetables and fruits, extending their shelf life and keeping them fresh longer."

This visible disinfectant lighting system, combining chemical and visual lighting, is safe, energy-efficient, and customisable.

Delivered on a subscription model, the device will reduce dependency on expensive cold storage facilities, stated the institute.

INNOVATIVE KIT FEATURES

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- It will reduce dependency on expensive cold storage facilities