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New Philippine agri-tech initiative targets heavy metal contamination in food crops

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The Philippines is intensifying its food-safety and agricultural quality agenda with the development of a portable rapid-diagnostic system capable of detecting heavy metals and trace elements in high-value crops, marking a significant convergence of agricultural science, public health, and export competitiveness.

The initiative, spearheaded by the Philippine Nuclear Research Institute under the Department of Science and Technology, aims to create a faster, non-destructive, and more affordable testing mechanism for contaminants in crops including cacao, coffee, corn, cabbage, lettuce, coconut, mango, and banana.

The project â?? *Development and Application of Rapid, Non-destructive Heavy Metal and Trace Element Detection Techniques in Plant Materials* â?? is being implemented by DOST-PNRI and monitored by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD).

The programme reflects growing pressure on agricultural exporters worldwide to comply with increasingly stringent food-safety regulations, traceability standards, and environmental quality requirements across global markets.

Officials said the technology will employ nuclear-allied analytical techniques to help identify contaminants such as cadmium, copper, lead, chromium, arsenic, and mercury â?? heavy metals that can enter agricultural systems through fertilizers,

pesticides, industrial activity, contaminated soils, processing equipment, or post-harvest handling infrastructure.

The two-year project will be implemented across key agricultural regions including Ilocos, Western Visayas, Davao, Zamboanga Peninsula, and Soccsksargen, with the broader objective of strengthening quality assurance systems for both domestic consumption and export-oriented agriculture.

Beyond laboratory innovation, the project is also designed to address one of the major structural gaps in agricultural quality management: accessibility.

Current testing systems for heavy metal contamination often remain expensive, centralized, and difficult for farmers and cooperatives to access in real time. By developing a portable and cost-effective detection platform, authorities aim to equip local producers, technicians, and agricultural enterprises with practical field-level monitoring capabilities.

The initiative is also expected to generate a calibration database that could support future food-safety regulations, contamination mapping, and science-based policy interventions related to agricultural land management and bioremediation.

As international markets continue tightening oversight on food contaminants, the Philippine government is increasingly positioning scientific innovation as a strategic pillar of agricultural competitiveness.

The project underscores how food safety is rapidly evolving from a regulatory requirement into a market differentiator â?? particularly for high-value crops competing in premium global supply chains increasingly shaped by sustainability metrics, traceability systems, and consumer health concerns.

For the Philippines, where agriculture remains deeply intertwined with export earnings and rural livelihoods, the ability to rapidly verify product safety may ultimately become as critical as productivity and yield itself.