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Thailand develops a test kit to detect pesticide contamination in waterÂ

07 March 2023 | News

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Thailand's Chulalongkorn University is leading a research project developing a water test kit to detect pesticide residues in water. The prototype is ready for testing in practical conditions to support sustainable and safe agricultural practices in the country.

The test kit measures pesticide contaminants in water by using absorbent materials synthesized by porous nano carbon materials to detect agrochemicals such as paraquat and atrazine even in micro quantities. A light-weight porous carbon material with nanometer-sized pores is created by burning organic chemistry materials in inert air and is used in the detection process. The highly sensitive color grading analysis techniques helps in achieving accuracy.

Assoc. Prof. Dr. Thanyalak Chaisuwan, The Petroleum and Petrochemical College, Chulalongkorn Universit explains that â? Thailand has over 150 million rai of farmland, with revenue from agriculture accounting for 10% of the country's GDP. In 2021, Thailand ranked 7 in the world for the number of pesticides and chemicals used in agriculture, amounting to 0.65 kg of such substances per rai (a unit of measurement of land in Thailand equal to 1600 square meters in metric measurement). The government's push to reduce the income gap and low income per capita, as well as their support of Smart Farming, requires technology. The development of a test kit for pesticide contaminants in water will be truly beneficial for sustainable and safe agricultureâ?•.

Farmers in Thailand still largely use chemical herbicides, especially paraquat and atrazine, to control weeds on their farms. According to research by the Office of Agricultural Economics, in 2019, Thailand imported almost 10 million kilograms of paraquat and close to 3.5 million kilograms of atrazine. The residues of these herbicides cause harm to the environment, living creatures, and human/animal health. Research have demonstrated that chemicals like paraquat and atrazine can lead to Parkinson's disease and cancer if accumulated in the body. The research has yielded satisfactory results. In the future, the research will be furthered by applying the materials to detect other substances.

***1 acre is approx 2.5 Rai*