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To
The Editor,
Sir,

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I request that the following message may kindly be published in your esteemed daily:

TNAU Secures Patent for Moisture-Responsive Nanocomposite Herbicide

Tamil Nadu Agricultural University has been granted a patent for the invention of a moisture-responsive nanocomposite-based herbicide and its method of preparation. The patentees are Ms. Jakku Prasanna, Dr. S. Marimuthu, Mr. Golla Gowtham and Dr. Kadhiravan Shanmuganathan.

Chemical weed control plays an important role in modern agriculture. Atrazine is widely used to control weeds in crops such as sorghum, corn and sugarcane. It works by blocking electron transport in photosystem II, which stops photosynthesis in weeds. However, atrazine can persist in the soil and move beyond the target area, leading to groundwater contamination, especially in irrigated systems. In rainfed farming, herbicide effectiveness depends heavily on rainfall. Low rainfall can cause volatilization, while excessive rainfall can result in leaching, both of which reduce weed control efficiency.

To address these challenges, a nano-encapsulated atrazine formulation was developed. In irrigated systems, this formulation reduces environmental pollution. In rainfed conditions, atrazine capsules applied at sowing are protected from evaporation, light and microbial degradation until rainfall occurs. Once it rains, the herbicide is released gradually, effectively targeting emerging weeds.

This novel delivery system uses a guar gum–cellulose nanocomposite with borax as a crosslinking agent. The formulation achieved an entrapment efficiency of 91.5%. The released atrazine showed a slower and more controlled release pattern compared to conventional atrazine, resulting in improved weed control and reduced environmental impact. The Patent Cell of the School of Postgraduate Studies helped with the entire patent process from drafting the documents to filing them and working with the patent attorney.

Public Relations Officer