Preparation and properties of slow-release fertilizer using wastepaper

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The present study aimed to investigate the utilization of wastepaper as a slow-release fertilizer. Preparing slow-release fertilizer from wastepaper has advantage in that it could avoids surface runoff or leaching of nutrients while providing an excellent medium for the recycling of wastepaper. The successful impregnation of urea into wastepaper was confirmed by scanning electron microscopy and observed that the surface and micropores of secondary fibers were uniformly filled with crystalline structures of fertilizer. This study also evaluated the release patterns of N from impregnated wastepaper using a simulated soil solution and distilled water as leaching solutions. The release patterns of N were examined in both static and continuous-flow conditions for 720 h. The release of N from impregnated wastepaper was found to be slow and steady though the release rate was lower in distilled water than soil solution under both conditions. The difference in the release amount from both is due to the presence of counter ions in the soil solution. Therefore, fertilizer impregnated into wastepaper could function as a slow-release fertilizer with maximum uptake and utilization of the nutrients.

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