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REPORT

NANO-FERTILIZER TO BOOST PRODUCTIVITY OF RICE (*Oryza sativa* L.) IN SRI LANKA

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The system of low input agriculture changed dramatically due to the introduction of green revolution in Sri Lanka, As a result traditional rice (*Oryza sativa* L.) varieties were replaced by high yielding varieties that require higher inputs *viz.* chemical fertilizer and agro-chemicals. The move towards a more liberalized economy since late 1970s and provision of subsidy for fertilizer in Sri Lanka has intensified the use of inorganic fertilizers imported to the country for rice production. Almost all farmers use new high yielding rice varieties with a yield potential over 10 t ha^{-1} so that the application of chemical fertilizer has become imperative to achieve the potential yield. To encourage the farmers to apply fertilizer, three major fertilizers (N, P and K) are provided at a 95 % subsidized rate at present. Studies conducted to-date has revealed that the fertilizer use efficiency is below 50 % in many occasions resulting low yields and a trend to apply fertilizers than the required quantities.

The application of slow release fertilizer has been identified as a remedy to improve the fertilizer use efficiency and to increase grain yields in rice and nanotechnology can be used effectively to achieve the objective. Experiments conducted at the Rice Research and Development Institute (RRDI) using the products developed at the Sri Lanka Institute of Nanotechnology (SLINTEC) revealed that the leaf colour of both nano-fertilizer and urea-treated pots was higher than the untreated pots. In addition, the nano-N fertilizer has produced higher number of tillers, panicles, seeds and higher grain yields compared to that of urea. The estimated yield increase by nano-N fertilizer over urea is 30 %. As such, the nano-N fertilizer could be be available in the future as a source of nitrogen for rice cultivation.