

Comparison of final yield and leaf colour of four Rice cultivars under different N-fertilizer levels

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Abstract

The selection of fertilizer responsive rice varieties is one of the important criteria in rice improvement programs. Fertilizer responsiveness is important to reduce the cost of production and minimize the possible environmental pollution caused by excessive application of inorganic fertilizers. This study was conducted at the RRDI, Batalagoda in 2020/21 Maha season to compare the performances of four rice varieties under different nitrogen (N) fertilizer rates. Two aerobic rice varieties (Aeron 9-3, Aeron7-11), one promising rice line (Bg15-520) and the most popular rice variety Bg352 were planted under four different N rates (0, 50, 100 and 150 kg/ha). Five weeks after the planting, leaf colour was recorded and grain yield was recorded at harvesting. Results revealed that the leaf colour is an important indicator for N-fertilizer responsiveness under Sri Lankan conditions. It is found that two rice varieties (Aeron 9-3, Aeron 7-11) which were developed to increase the water use efficiency recorded the potential yield at low-N-fertilizer levels as well. Rice varieties Aeron 9-3 and Aeron 7-11 had absorbed required N, even at low N-fertilizer levels and had improved greenness as well. Further, rice variety Aeron 9-3 reported the potential yield at all the tested nitrogen levels. The maximum agronomic N use efficiency (22.1 kg/kg N) was recorded by Aeron 9-3 at the recommended N-fertilizer application (100 kg/ha). Interestingly, the yield recorded by the mostly grown rice variety Bg 352 in Sri Lanka, at N-fertilizer rate of 100 kg/ha can be obtained by Aeron 9-3 at the rate of 50 kg/ha. Introduction of Aeron 9-3 will cut down the N fertilizer application considerably in the farmer fields.

Keywords: Aeron 9-3, Agronomic N use efficiency, Leaf colour N fertilizer

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