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Effects of Shading and Nitrogen Fertilizer Levels on the Leaf Emergence Rate and Tillering of Rice Plants, with Special Reference to the Turning Point of the Leaf Emergence Rate

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Abstract:

The effects of shading and nitrogen (N) fertilizer levels on the turning point of the leaf emergence rate (TPLER), and the leaf emergence rate and tillering of rice plants before and after TPLER were studied. Using 1/5000 a Wagner pots, three levels of shadings (0, 50, 95%) and three N fertilizer levels (25, 100, 200 mgN/pot were supplied every ten days after planting) were applied from planting until harvest. The increase in the number of leaves on the main stem was shown by two straight lines with TPLER except the 95% shaded plot. The 95% shaded plot was shown by one straight line because of no TPLER. The leaf emergence rate before TPLER was affected strongly by light intensity, but not by the level of N, and was faster in the plot with higher light intensity. On the other hand, the effect of light intensity on the leaf emergence rate decreased markedly after TPLER. The leaf emergence rate in the plot with no shading was faster with higher N levels both before and after TPLER, but this was not true for the shaded plots. Tillering was influenced by light intensity and the largest number of tillers was obtained in the plot with no shading both before and after TPLER. Moreover, the number of tillers in this plot increased as the N level increased, but the tillers in the shaded plots were not affected as strongly by the N level. A highly positive correlation between the leaf emergence rate and number of emerged tillers in the unshaded and 50% shaded plots was observed before TPLER, but not after TPLER.

Keywords:

Leaf emergence rate, N fertilizer level, Rice plant, Shading, Tillering, Turning point of the leaf emergence rate

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