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RELATIONSHIPS OF LEAF COLOR CHART AND SPAD VALUES TO LEAF N CONTENT OF JASMINE RICE IN NORTHEAST THAILAND

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Strong correlations among the leaf color chart (LCC), chlorophyll meter (SPAD) readings, and leaf N concentrations in modern rice varieties provide simple and economical methods for indirectly determining leaf N content. The LCC and SPAD have not been used widely with traditional varieties. This study aimed to determine whether the LCC and SPAD could be used to indicate the leaf N status of jasmine rice (KDML 105). Field experiments were conducted in June-November 2003 in farmers' fields in Kha Khom village, Ubon Ratchathani, and in Chumphae Rice Experiment Station, Khon Kaen. Experimental treatments included four N levels (farmers' practice, 0, 60, and 120 kg N ha^{-1}) in Ubon Ratchathani, and six N levels (0, 19, 38, 56, 75, and 113 kg N ha^{-1}) in Khon Kaen. For both sites, treatments were laid out in an RCBD with four replications under well-watered conditions. LCC and SPAD measurements were taken on fully expanded leaves of 16 plants from maximum tillering to flowering stage. The same leaves were destructively taken to determine the leaf N content. Leaf N content was 1.7–3.5%, SPAD reading 26–43, and the LCC reading 1–4. Leaf N content was linearly related to SPAD (R^2 = 0.71–0.86, P<0.01) and LCC readings (R^2 = 0.52–0.77, P<0.01) and the slopes of regression lines differed among growth stages. For any given SPAD reading, KDML 105 had a lower leaf N content than modern varieties. SPAD and LCC readings estimated leaf N content of jasmine rice. The SPAD and LCC can be used for site-specific N management of jasmine rice in Northeast Thailand.

Keywords: leaf color, leaf N content, chlorophyll content, KDML105, traditional varieties