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Evaluation of growth status of napiergrass under high temperature environment using SPAD values and electrolyte leakage rates (1)

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Abstract

The aim of this research was to analyze the growth status of domestic napiergrass and determine the correlation relationship with SPAD values Soil-Plant Analysis Development) under high summer temperature. The napiergrass varieties Taishu No. 1 to No. 8 (NP cv. TS 1 - 8) were planted in the greenhouse in the summer for eight weeks to simulate the environment of summer heat stress. SPAD (Soil-Plant Analysis Development) values, electrolyte leakage (EL) rates, PHL, and forage yield per pot were determined. Results showed that the changing rate of PHL for Taishu No. 6 was the highest. Taishu No. 6 and No. 7 had the highest SPAD values, whereas Taishu No. 4 and No. 5 had the lowest. There was no significant difference in electrolyte leakage rates among the varieties. Pearson correlation analysis showed that there were positive relationships between SPAD values and PHL changing rates; while those between EL and changing rates of PHL were insignificant. The correlation coefficients between SPAD values and PHL changing rates for Taishu No. 3, No. 5, No. 6, No. 7, and No. 8 ranged between 0.3 and 0.7, and the highest was Taishu No. 4 with 0.716. This research showed that the relationship between SPAD value and PHL changing rate was positive. Such information could be applied to future breeding of napiergrass varieties.

Key words: High temperature, Napiergrass, SPAD value, Electrolyte leakage rate.

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