ONLINE ISSN : 1349-1008
PRINT ISSN : 1343-943X

Plant Production Science
Vol. 9 (2006) , No. 4 364-368

Change in Hydraulic Resistance and Shoot Morphology of Napiergrass (*Pennisetum purpureum* Schumach.) under Shaded Condition

Kiyoshi Nagasuga[1)] and Fumitake Kubota[1)]

1) Graduated School of Bioresources and BioScience, Kyushu University

(Received: January 11, 2006)

Abstract: Acclimation to light condition is associated with change in water transport system in napiergrass. In this study, the effects of shading on shoot hydraulic resistance and morphology of napiergrass (*Pennisetum purpureum* Schumach.) were investigated. In the plants under shading (to 30% of full sunlight) for 30 days (S plants), total hydraulic resistance of a shoot (R_{shoot}) increased from that of full sunlight (control). In the plants grown under shade condition for 24 d followed by full sunlight conditions for 6 d (SF), the R_{shoot} value was intermediate between that of control and S plants. A similar response to shading was found in total hydraulic resistance of a stem (R_{stem}), which accounted for more than 60% of R_{shoot}, but the total hydraulic resistance of the leaves was not significantly affected by shading. Leaf length, leaf area and stem length were larger, but the stem cross-sectional area (SA) was smaller in S and SF plants than in the control plants. SF plants showed similar leaf length, leaf area and stem length to those in S plants, but the SA in SF plants was slightly larger. Normalization of R_{stem} by SA and stem length decreased the difference among the treatments, indicating the increase of R_{shoot} and R_{stem} under shading resulted from the decrease of SA and the increase of stem length.

Keywords: Hydraulic resistance, Napiergrass, Shading, Specific hydraulic resistance, Stem cross-sectional area, Stem length

To cite this article:

Kiyoshi Nagasuga and Fumitake Kubota: “Change in Hydraulic Resistance and Shoot Morphology of Napiergrass (*Pennisetum purpureum* Schumach.) under Shaded Condition”. Plant Production Science, Vol. **9**, pp.364-368 (2006) .

doi:10.1626/pps.9.364

JOI JST.JSTAGE/pps/9.364