



Japanese journal of crop science

The Crop Science Society of Japan [Info](#) [Link](#)[TOP](#) > [Journal List](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN: 1349-0990

PRINT ISSN: 0011-1848

Japanese journal of crop science

Vol.66 , No.1(1997)pp.108-117

[\[Full-text PDF \(1192K\) \]](#) [\[References \]](#)

Effects of Water Table on Physiological Traits and Yield of Soybean : II. Effects of water table and rainfall on leaf water potential and photosynthesis

Shinji SHIMADA, Makie KOKUBUN and Shigeo MATSUI

1) National Agriculture Research Center:(Present address)Agriculture,
Forestry and Fisheries Research Council Secretariat, Ministry of Agriculture,
Forestry and Fisheries2) National Agriculture Research Center:(Present address)Japan International
Research Center for Agricultural Sciences3) Chugoku National Agricultural Experiment Station:(Present address)Japan
International Research Center for Agricultural Sciences

[Received: 1996/06/07]

[Published: 1997/03/05]

[Released: 2008/02/14]

Abstract:

The effects of constant and fluctuating water tables at 15~100 cm below the soil surface on the leaf water potential, stomatal conductance and photosynthesis of lysimeter-grown soybean (*Glycine max* cv. Tachinagaha) were examined during 1991 (wet year) and 1992 (dry year) in Tsukuba, and during 1992 in Fukuyama. The effects varied greatly with the amount of rainfall. During the wet year in Tsukuba, the apparent photosynthetic rate did not change while the stomatal conductance and leaf water potential decreased with the increasing depth of the water table in dry soil. In contrast, the apparent photosynthetic rate and water potential increased with the increasing depth of the water table in wet soil. During the dry year, the photosynthetic rate and stomatal conductance were highest when the water table was 40 cm below the soil surface. The leaf water potential decreased with the increasing depth of the water table both in Tsukuba and Fukuyama. These results suggest that the water table level affects the photosynthesis and water status of soybean leaves, the magnitude of the effect being dependent on the amount of rainfall.

Keywords:

Leaf water potential, Photosynthesis, Soybean, Stomatal conductance, Water table

[\[Full-text PDF \(1192K\) \]](#) [\[References \]](#)

