

Kedsuda Montrisri 2006: Growth, Yield and Physiological Traits of Soybean Grown under Saturated Soil Culture Receiving Different Managemental Factors as Compared with those Grown under Conventional Irrigation. Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Professor Aphiphan Pookpakdi, Ph.D. 93 pages. ISBN 974-16-2877-3

Growth, yield and physiological traits of soybean grown in saturated soil culture (SSC) while receiving or not receiving additional factors was compared with soybean planted in the conventional irrigation condition (CI). In the SSC, treatments composed of soybean planted alone, seeds were pre-germinated prior to planting, and the application of nitrogen fertilizer through the soil and also through foliar application. Cultivars of soybean used was CM 60 and the trail was conducted at Lampang Agricultural Research and Training Centre, Rajamangala University of Technology at Lampang province between July – October 2004. Results of the experiment revealed that soybean grown in the SSC showed the trend of increasing yield over CI. Vegetative dry matter, leaf area per plant and leaf area index (LAI) in the SSC were greater than those of CI. When using SPAD chlorophyll meter to colorimetrically measured the greenery of leaves, it was found that at the beginning of SSC, the leave of soybean showed chlorotic symptom due to the lack of nitrogen. However, between the stage of $V_3 - V_4$, plants did acclimatized and gained the normal green leaf color. SSC plants showed higher stomatal conductivity than those of conventional planting which emphasized the higher CO_2 exchange in leaf result into the increase in photosynthetic rate. Subsequently, this study also showed that net assimilation rate of soybean grown under SSC was higher than those of CI. Although the results of this experiment did not showed the different in N_2 – fixation between the SSC and the CI, however, it was found that soybean grown in this study obtained their nitrogen pool from the process of N_2 -fixation as the ureide content and relative ureide index were uniformly maintained throughout the entire growth period while the nitrate content which was high during V_2 growth stage decreased drastically as growth of soybean was advanced due to the increase in the rate of N_2 -fixation.

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