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The response of soybean (*Glycine max* (L.) meer.) varieties from the tropical region to five watering regimes under a controlled environment**Apriyana Y¹, Fichtler E² and Whitbread A²**¹Indonesian Agroclimate and Hydrology Institute, Indonesia²University of Göttingen, Germany

In some rice dominated tropical regions, such as in Indonesia, soybeans are an increasingly important dry season crop which is often exposed to periods of drought stress. The morphological and physiological responses, which could lead to some tolerance to water stress, may vary between varieties. By better understanding the plant response to drought stress and finding if these responses vary between varieties better dry season production could be achieved. An experiment was conducted to compare the response of four varieties of soybean (*Glycine max* (L.) Meer.) to five watering regimes, with the objective of determining the response of common soybean varieties across a wide range of water supply. Plant response to water supply was measured using gas exchange measurement with the rate of photo synthesis decreasing progressively from well watered to dry conditions across the four varieties. A correlation of stomatal conductance and transpiration rate has a close relationship with photosynthetic rate, where stomatal conductance of Burangrang variety has higher value than other varieties. Varieties Burangrang and Argomulyo stomatal conductances are higher value than those of Anjasmoro and Grobogan varieties. In a deficit of water condition, the Argomulyo varieties have a higher value of transpiration efficiency and significantly different than the other three varieties. The transpiration efficiency significantly declined for treatments watered once every two or three weeks. The transpiration efficiency values of Agromulyo and Burangrang varieties were significantly higher than another variety.

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