

[Available Issues](#) | [Japanese](#)>> [Publisher Site](#)Author: [ADVANCED](#)

Volume Page

Keyword: [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1349-1008

PRINT ISSN : 1343-943X

Plant Production Science

Vol. 11 (2008) , No. 4 434-439

[\[PDF \(825K\)\]](#) [\[References\]](#)**Relation of Seed Structures to Soybean Cultivar Difference in Pre-germination Flooding Tolerance**[Nao Muramatsu](#)¹⁾, [Makie Kokubun](#)¹⁾ and [Akira Horigane](#)²⁾

1) Graduate School of Agricultural Science, Tohoku University

2) National Food Research Institute

(Received: December 5, 2007)

Abstract: Flooding during germination inhibits the sprouting and emergence of soybean [*Glycine max* (L.) Merr.], reducing subsequent growth and yield. Previous studies revealed that cultivars tolerant to pre-germination flooding have a mechanism of reducing water absorption speed (WAS) during the initial stage of inundation; however, seed structures involved in WAS have not been fully clarified to date. The objectives of this study were to identify possible seed structures responsible for cultivar difference in WAS and pre-germination flooding tolerance. WAS of two tolerant cultivars (Peking and Williams) and two susceptible cultivars (Nakasennari and Enrei), which were identified in our previous study, was compared in relation to seed structures. In Peking, WAS was markedly lower than that of the other cultivars, either in intact seed or seed with the seed coat removed, suggesting that both the seed coat and the embryo have a mechanism of reducing WAS in this cultivar. WAS of the hilum side tended to be higher than that of the back side, and sealing of the micropyle significantly lowered WAS, showing that the micropyle rather than the hilum appeared to be responsible for the higher WAS of the hilum side regardless of cultivar. A comparison of cross section area of the hilum revealed that the tolerant cultivars tended to have a larger area than the susceptible cultivars, suggesting that an inner space of the hilum can act as a reservoir at the initial stage of inundation, thereby reducing WAS in tolerant cultivars.

Keywords: [Aleurone layer](#), [Flooding tolerance](#), [Germination](#), [Hilum](#), [Micropyle](#), [Seed structure](#), [Soybean](#), [Water absorption](#)

To cite this article:

Nao Muramatsu, Makie Kokubun and Akira Horigane: "Relation of Seed Structures to Soybean Cultivar Difference in Pre-germination Flooding Tolerance". *Plant Production Science*, Vol. **11**, pp.434-439 (2008) .

doi:10.1626/pps.11.434

JOI JST.JSTAGE/pps/11.434

Copyright (c) 2008 by The Crop Science Society of Japan



[Japan Science and Technology Information Aggregator, Electronic](#)

