

Author:  [ADVANCED](#)

Volume Page

Keyword:   

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

ONLINE ISSN : 1349-1008

PRINT ISSN : 1343-943X

**Plant Production Science**

Vol. 8 (2005) , No. 5 509-514

[\[PDF \(496K\)\]](#) [\[References\]](#)

## Promotion of Seedling Growth of Seeds of Rice (*Oryza sativa* L. cv. Hitomebore) by Treatment with H<sub>2</sub>O<sub>2</sub> before Sowing

[Kazuhiro Sasaki](#)<sup>1)3)</sup>, [Sachie Kishitani](#)<sup>1)</sup>, [Fumitaka Abe](#)<sup>1)2)</sup> and [Tadashi Sato](#)<sup>3)</sup>

1) Graduate School of Agricultural Science, Tohoku University

2) National Institute of Crop Science

3) Graduate School of Life Sciences, Tohoku University

(Received: June 9, 2004)

**Abstract:** High germinability of seeds and establishment of young seedlings in rice (*Oryza sativa* L.) are necessary for direct seeding in paddy fields. We investigated whether germinability and seedling growth were promoted by treatment of rice seeds (cv. Hitomebore) with hydrogen peroxide solution (H<sub>2</sub>O<sub>2</sub>) during the imbibition for 24 h. H<sub>2</sub>O<sub>2</sub> treatment with 50 mM H<sub>2</sub>O<sub>2</sub> promoted seed germination, and seedling growth (shoot length, root length and shoot fresh weight) in agar culture under a low temperature condition (18°C day/14°C night). Seedling growth was promoted by H<sub>2</sub>O<sub>2</sub> treatment not only under the low-temperature condition but also under a normal (23°C day/18°C night) temperature condition. Furthermore, H<sub>2</sub>O<sub>2</sub> treatment promoted seedling growth under a flooding condition in a greenhouse. These results suggest that H<sub>2</sub>O<sub>2</sub> treatment of rice seeds during the imbibition is advantageous for direct seeding. We discussed the relation between the promotion of the seed germinability and the seedling growth under a low-temperature condition, and the expression of some genes encoding ROS scavenger enzymes induced by H<sub>2</sub>O<sub>2</sub> treatment.

**Keywords:** [Ascorbate peroxidase](#), [Growth of young seedling](#), [Hydrogen peroxide treatment](#), [Reactive oxygen species](#), [Rice cultivar](#)

[\[PDF \(496K\)\]](#) [\[References\]](#)

To cite this article:

Kazuhiro Sasaki, Sachie Kishitani, Fumitaka Abe and Tadashi Sato: "Promotion of Seedling Growth of Seeds of Rice (*Oryza sativa* L. cv. Hitomebore) by Treatment with H<sub>2</sub>O<sub>2</sub> before Sowing". Plant Production Science, Vol. **8**, pp.509-514 (2005) .

---

doi:10.1626/pps.8.509

JOI JST.JSTAGE/pps/8.509

Copyright (c) 2006 by The Crop Science Society of Japan

---



---

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

