

Author: Keyword:

Search

[ADVANCED](#)Add to
Favorite / Citation
Articles AlertsAdd to
Favorite
PublicationsRegister
AlertsMy J-STAGE
HELP[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1882-4757

PRINT ISSN : 0372-798X

Journal of Weed Science and Technology

Vol. 53 (2008) , No. 2 pp.48-54

[\[PDF \(837K\)\]](#) [\[References\]](#)

Germination and survival of paddy weed seeds after soil sterilization with hot water

Jun Ushiki¹⁾, Yoshiaki Kawana¹⁾ and Hirohiko Morita¹⁾²⁾

1) National Agricultural Research Center

2) Present address: Akita Prefectural University

(Received: October 11, 2007)

(Accepted: January 16, 2008)

Summary:

We studied the effect of soil sterilization with hot water on the germination and viability of paddy weed seeds. Laboratory experiments showed that seeds of *Echinochloa oryzicola*, *Scirpus juncooides* var. *ohwianus*, and *Oryza sativa* (weedy rice) lost their ability to germinate after heat treatment at 70°C for over 30min or at 60°C for over 180min in hot water. Soil was sterilized with hot water at about 90°C sprinkled at the rate of 120lm⁻² on soil covered with plastic film under the field condition. The treatment increased the soil temperature at 6cm depth to 73°C and maintained it at over 60°C for 150min. One month after the treatment and following the transplantation of rice seedlings, the heat treatment depressed the number of emerged weeds as much as typical herbicide treatment did, and neither treatment harmed the growth of the transplanted rice. However, at harvest time, the total fresh weight of weeds collected from the heat-treated plot was 2 to 3 times as much as that of weeds collected from the herbicide-treated plot. We investigated the survival rate of weed seeds buried in the soil after the harvest. About 50% of *S. juncooides* seeds survived in the herbicide-treated plot, but the rate had no correlation with the depth of burial. On the other hand, up to 5% of *S. juncooides* seeds survived at depths of 3, 6 and 9cm, and about 60% survived at 12cm in the heat-treated plot.

Keywords: soil sterilization, seed bank, integrated weed management, *Echinochloa oryzicola*, *Scirpus juncooides* var. *ohwianus*, weedy rice

[\[PDF \(837K\)\]](#) [\[References\]](#)

To cite this article:

Jun Ushiki, Yoshiaki Kawana and Hirohiko Morita 2007. Germination and survival of paddy weed seeds after soil sterilization with hot water . J. Weed Sci. Tech. 53, 48-54 .

doi:10.3719/weed.53.48

JOI JST.JSTAGE/weed/53.48

Copyright (c) 2008 The Weed Science Society of Japan



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

