ONLINE ISSN : 1349-1008
PRINT ISSN : 1343-943X

Plant Production Science
Vol. 9 (2006) , No. 3 206-211

[PDF (459K)] [References]

Effect of 2,4-Dichlorophenoxyacetic Acid on the Efficiency of Wheat Haploid Production by the *Hordeum bulbosum* Method

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(Received: August 22, 2005)

Abstract: Intergeneric crosses between Japanese wheat cultivars (*Triticum aestivum* L. cv. Nishikazekomugi and Zenkojikomugi) and a tetraploid wild barley, *Hordeum bulbosum* L. were used to examine the effect of 2,4-dichlorophenoxyacetic acid (2,4-D) on the formation of wheat haploid embryo and its development into plantlets. The detached wheat spikes with florets pollinated with *H. bulbosum* were cultured for 14 days in a sucrose and sulfurous acid solution to which 2,4-D was added at the concentrations of 0, 25, 50, 75, 100, 125, 150, and 175 mg L^{-1}. The percentages of florets with seeds set and with embryos formed were increased by increasing the concentration of 2,4-D up to 100 mg L^{-1}. Fourteen days after pollination, embryos (haploid) were isolated from the seed and cultured on agarose-solidified B5 medium. Embryo size tended to decrease as the concentration of 2,4-D increased, but the larger embryos tended to have higher ability to develop into haploid plants. The percentage of florets from which haploid plantlets were developed by embryo culture was slightly increased by the treatment of the spikes with 25-100 mg L^{-1} 2,4-D, but significantly reduced by 125-175 mg L^{-1} 2,4-D. It is suggested that treatment with 2,4-D at 25 100 mg L^{-1} would be effective for haploid wheat production by of *H. bulbosum* method.

Keywords: 2,4-dichlorophenoxyacetic acid, Embryo size, Haploid, *Hordeum bulbosum*,

To cite this article:

Tomohiko Ushiyama, Tatsuo Kuwabara and Tomohiko Yoshida: “Effect of 2,4-Dichlorophenoxyacetic Acid on the Efficiency of Wheat Haploid Production by the *Hordeum bulbosum* Method”. Plant Production Science, Vol. **9**, pp.206-211 (2006) .

doi:10.1626/pps.9.206

JOI JST.JSTAGE/pps/9.206