

Pattaranapa Sakoonawat 2010: Phytotoxicity of MBOA on Test Plants and the Changes in Its Concentration in Soil. Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Tosapon Pornprom, Ph.D. 65 pages.

This study of phytotoxicity of MBOA (6-methoxy-2-benzoxazolinone) on some test plants and the changes in its concentration in soil was carried out in the laboratory at the Department of Agronomy, Faculty of Agriculture at Kamphaeng Saen, Kasetsart University, Kamphaeng Saen Campus, Nakhon Pathom and Laboratory of Life and Environmental Science, University of Tsukuba, Japan during January, 2007 - September, 2008. The efficacy of various concentrations of MBOA by plant bioassay in *Bidens pilosa* L. var. *radiata* Sch. Biq., *Ageratum conyzoides* Linn., and *Oryza sativa* Linn. var. RD 6 was evaluated. The results showed that MBOA at 1 mM can inhibit growth of all test plants especially in root length. The phytotoxicity of various concentrations of MBOA in the soil was determined using plant bioassay in *Oryza sativa* Linn. cv. Nipponbare. The results indicated that the phytotoxicity of MBOA was the highest in sea sand, followed by Ryugasaki and Tennodai soil, respectively. In addition, the concentration of MBOA in the soil was investigated at 0, 1, 2 and 3 days after application. By centrifugation method using double tubes, the soil water was separated from the applied-soil. The amount of MBOA in the soil water and the centrifuged-soil were then measured by High Performance Liquid Chromatography (HPLC). The results indicated that MBOA concentration in the soil water in Ryugasaki soil was higher than Tennodai soil. However, the amount of MBOA adsorbed in Tennodai soil was higher than that of Ryugasaki soil which was closely related with the different phytotoxicity of MBOA between the two soils. These results suggested that MBOA concentration in the soil was induced substantially by its concentration in plant-available soil water which was primarily determined by its adsorption in soil, mostly in soil organic matter.

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Thesis Advisor's signature