ONLINE ISSN : 1349-0923
PRINT ISSN : 1348-589X

Journal of Pesticide Science
Vol. 28 (2003) , No. 1 pp.51-54

Evaluation of Pesticide Effects on Microbial Communities in a Paddy Soil Comparing with That Caused by Soil Flooding

Kazuhito ITOH[1)], Takahiro IKUSHIMA[1)], Kousuke SUYAMA[1)] and Hiroki YAMAMOTO[1)]

1) Faculty of Life and Environmental Science, Shimane University

(Received: August 12, 2002)
(Accepted for publication: November 26, 2002)

The effect of a herbicide Zark D51 (ZD, 4.5% daimuron and 0.51% bensulfuron methyl) powder and a fungicide Fuji-One Moncut (MC, 12.0% isoprothiolane and 7.0% flutolanil) powder on microbial communities in a paddy soil was examined in laboratory experiments using Biolog GN plates. ZD had little effect on the soil microbial communities at the recommended and 50 times the recommended rate. MC showed no significant effect at the recommended rate, however, the 50-fold application caused changes in the microbial communities for at least four weeks although the activity to utilize carbon as substrate determined by color development in the Biolog plate had recovered by that time. For assessing the significance of the change in microbial communities, the magnitude of the change caused by MC was compared with that caused by soil flooding which had been shown to be the most influential environmental parameter acting on the microbial communities in paddy soils. At one week after the application of 10 times the recommended dose of MC, the microbial communities could be differentiated by the soil flooding, but not the application of MC. On the other hand, at four weeks after the application, the microbial communities could be distinctly separated by the MC application beyond the magnitude caused by the flooding. A reasonable approach is proposed for assessing the effects of pesticide on soil microbial communities.

Keywords:
paddy soil, Biolog, microbial community structure, carbon substrate utilizing activity, risk

assessment of pesticide

To cite this article:

Kazuhito ITOH, Takahiro IKUSHIMA, Kousuke SUYAMA and Hiroki YAMAMOTO, “Evaluation of Pesticide Effects on Microbial Communities in a Paddy Soil Comparing with That Caused by Soil Flooding”. *J. Pestic. Sci.* Vol. **28**, pp.51-54 (2003) .

doi:10.1584/jpestics.28.51

JOI JST.JSTAGE/jpestics/28.51