Lysimeter Studies of the Fate of Pesticides in the Soil

BCPC Monograph No. 53

Studies associated with two Workshops held at the Nuclear Research Centre, Jülich and the L.L.F.A. Neustadt, Germany in 1989 and 1990

Edited by F. FÜHR and R.J. HANCE

BCPC Registered Office 49 Downing Street Farnham, Surrey GU9 7PH, UK



Contents

Contents		Page
FOREWORD ACKNOWLEDGEMENTS		vii viii
1.	INTRODUCTION R.J. HANCE and F. FÜHR	3
2.	METHODS TO STUDY FATE AND BEHAVIOUR OF PESTICIDES IN THE SOIL R.J. HANCE and F. FÜHR	9
3.	EXPERIMENTAL APPROACHES TO LYSIMETER STUDIES: DESCRIPTION OF SYSTEMS	
	The lysimeter station at the Institute of Radioagronomy of the Research Centre Jülich, Germany W STEFFENS W MITTEL STAEDT A STORK and F FÜHR	91
	Outdoor lysimeter experiments: procedure and test system U. TRAUB-EBERHARD, M. HERRCHEN and W. KÖRDEL	35
	A lysimeter system to determine leaching and volatilization of ¹⁴ C-labelled compounds	10
	R. SCHROLL, U. DORFLER, P. SCHNEIDER and I. SCHEUNERT The lysimeter system in the Department of Phytomedicine, Neustadt,	43
	R. KUBIAK	51
	The lysimeter facility at the Crop Protection Research Center, Bayer AG, Monheim, Germany K. SCHOLZ, R. FRITZ, E. HELLPOINTER and M. SPITELLER	55
	Description of the Letcombe Lysimeter D.A. YON	65
	Description of a Swedish lysimeter test system suitable for studying dissipation of pesticides in soils L. BERGSTRÔM	73
	Facilities for the examination of the degradation and distribution of chemical compounds in sections of terrestrial ecosystems	83
4	LYSIMETER STUDIES RELEVANT TO THE FATE OF PESTICIDES IN THE SOIL	00
	Characterization of the environmental fate of the pyridine derivatives clopyralid and fluroxypyr based on lysimeter experiments B. BRUMHARD, F. FÜHR, M. SNEL and R.I. BALOCH	103
	Experience with lysimeter studies: selected topics for interpretation U. TRAUB-EBERHARD, W. KÖRDEL and W. KLEIN	115
	Fate of ¹⁴ C-terbuthylazine in outdoor lysimeters I. SCHEUNERT, R. SCHROLL and U. DÖRFLER	125
	Fate of two selected ¹⁴ C-labelled compounds in plant and soil after repeated application	
	K. KUBIAK	133

V

	Lysimeter studies relevant to the fate of pesticides in the soil. Experimental Limitations/Conclusions E. HELLPOINTER, R. FRITZ, K. SCHOLZ and M. SPITELLER	141
	The use of lysimeters to study the fate of an experimental pesticide following autumn and spring application to winter cereals D. A. YON	145
	Leaching studies of pesticides in Swedish soils measured in field lysimeters L. BERGSTRÖM	153
	Comparison of the course of temperature, water content and organic carbon in topsoil and subsoil in lysimeters with the field TH. PÜTZ, W. MITTELSTAEDT, and F. FÜHR	163
	Autoradiography F. FÜHR, J. WIENEKE and W. STEFFENS	173
	The present situation R.J. HANCE and F. FÜHR	181
INI	INDEX	