

**2481 A TECHNOLOGY TO MITIGATE THE PESTICIDE CONTAMINATION INTO THE WATER****Merli A.<sup>\*1</sup>, Trevisan M.<sup>1</sup>, Fait G.<sup>1</sup>, Capri E.<sup>1</sup>**<sup>1</sup> Istituto di Chimica Agraria ed Ambientale, Sezione Chimica Vegetale Università Cattolica del Sacro Cuore, via Emilia Parmense 84, 29100 – Piacenza, ITALY. \* phone: +390523599345; fax: +390523599217; E-mail: annalisa.merli@unicatt.it.

Although plant protection products are already regulated in Europe under Directive 91/414/EEC, there is increasing concern about the pollution of ground and surface water caused by point sources of pesticides, such as tank filling, spillages, faulty equipment, washing, waste disposal, and direct contamination. One tool for the reduction of pesticide point source contamination is a biological system where chemicals are bound and biologically degraded: an offset lined system where wastewaters containing pesticide residues leach through a biomix. A pump system is provided to pump the water onto the surface of the biomix and allow it to drain under gravity, keeping the biomix wet. The biobed was installed in a vineyard farm in province of Piacenza in 2003 and, since then, the functioning of the system has been monitored every year with sampling of water and biomix. This monitoring program has been done in order to verify the efficiency of the mitigation system during five years of experimentation in real field conditions, where loadings of organic and inorganic pesticides remained in the waste water and reached the biobed. In the system, the water was pumped on the biomix in cycles of 15 minutes every 4 hours. The pesticide residues were analysed by HPLC-DAD or GC-MS, depending on their chemical characteristics. The analysis of some pesticide residues in water and biomix inside the system showed the biobed to function well, reaching a water decontamination greater than 90% for example for metalaxyl, penconazole, fludioxonil, cyprodinil. At the same time, some studies were conducted at a lab scale developing a prototype system where it is easier to test different biomass compositions (beginning from the original Swedish biomixture) and to determine which the best performance was. Water and biomix were sampled and analysed by HPLC-DAD, and some results were quite promising, representing a useful starting-line to improve the knowledge of the biomix used in biopurification installations. New studies on hydraulic improvements and on biomix composition are in progress, developing some biofilters at laboratory and field scale.

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**2500 STRATEGIES OF BIOREMEDIATION OF A CONTAMINATED COASTAL ECOSYSTEM (BOLMON LAGOON, SOUTH-EASTER MEDITERRANEAN COAST)****Charpy-Roubaud C.<sup>1</sup>, Stéphanie F.<sup>2</sup>, Franquet E.<sup>2</sup>, Pietri L.<sup>3</sup>, Anselmet F.<sup>3</sup>, Brun L.<sup>4</sup>, Roux B.<sup>5</sup>**<sup>1</sup> IRD (UMR 193), <sup>2</sup> IMEP C32, <sup>1,2</sup> IMEP (UMR CNRS/IRD) Aix-Marseille Université, Faculté des Sciences de St. Jérôme, Boîte 441, 13397 Marseille cedex 20. <sup>3</sup> IRPHE - UMR 6594 Technopôle de Château-Gombert 49, rue Joliot Curie - B.P. 146 13384 Marseille Cedex 13, France. <sup>4</sup> SIBOJAI Hôtel de Ville, Place Bellot 13220 Château Neuf Les Martigues<sup>5</sup> IRPHE Technopôle de Château-Gombert 13451 Marseille cedex 20. FRANCE,

Bolmon ecosystem (Bouches du Rhône, South-easter France) is a coastal mediterranean lagoon. This ecosystem presents a great interest in terms of ecology, economy and cultural aspects. Bolmon is connected to the salty Berre pond, itself connected to Mediterranean sea, via tiny artificial channels and a main one (Rove channel) that also bounds it to the South. It also receives fresh water from the small river La Cadiere (with a mean annual inflow of 1 m<sup>3</sup>/s). This lagoon is hyper-shallow (1 m to 1.8 m depth) and contains a large amount of soft, muddy bottom sediments. The resuspension of sediments, due in particular to the wind, creates an important and quasi-permanent turbidity. As a consequence of the urbanisation of the close environment Bolmon lagoon is strongly contaminated by different pollutants arriving from its drainage basin. The impacts result in supra-eutrofication with a drastic decrease of the animal and vegetal bio-diversity; in the same time, phytoplanktonic blooms with high growth of cyanobacterias (one of these potentially toxic) were recurrent. Because from the hydrodynamic point of view this hydro-system is controlled mainly by the wind forcings, it occurs a strong competition between salty and fresh waters through the channels. The increase of the salinity induced by recent hydrologic managements appeared to favour the functioning of Bolmon ecosystem. In association with different Scientific and regional Institutions, a plan of remediation of Bolmon lagoon had been elaborated. Two types of actions will be considered: (a) active control of hydric exchanges with adjacent hydrosystems (with higher salinity); (b) active control of turbidity by orienting the loaded water to suspension traps: creation of islets (playing the role of artificial wetlands). The respective impacts of these perspectives of Bolmon lagoon remediation will be studied on different planktonic and benthic biological compartments, on the composition and on the state of the sediment and on the organic matter.

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