

French Bioindicator Program : tools for soil monitoring, characterization and risk assessment – Tools based on soil fauna

Hedde M¹, Bispo A², Cluzeau D³, Cortet J⁴, Douay F⁵, Galsomies L², Grand C², Houot S⁶, Leyval C⁷, Pauget B⁸, Ruiz-Camacho N⁹, Ulrich E¹⁰, Vandenbulcke F¹¹, de Vaufléury A⁸, Villenave C¹², Pérez G³

¹PESSAC UR 251, INRA Versailles-Grignon; ²ADEME; ³ECOBIO, UMR CNRS 6553 Rennes; ⁴LSE, INPL/ENSAIA Vandoeuvre-lès-Nancy; ⁵LSE, ISA Lille; ⁶EGC, UMR INRA 1091 Versailles-Grignon; ⁷LIMOS, UMR CNRS 7137 Vandoeuvre-lès-Nancy; ⁸LCE, UMR CNRS 6249 Besançon; ⁹BIOEMCO, UMR CNRS 7618 Paris ; ¹⁰Réseau RENECOFOR, ONF ; ¹¹IUT A, Univ Lille ; ¹²ECO&SOL, UMR IRD 210 Montpellier

The main objectives of the Bioindicator Program is to provide new tools for soil monitoring, characterization and risk assessment, based on soil biological properties. In the first step of this program, research teams have developed and tested their indicator on a few given situations. After selection, the most relevant indicators are now tested and compared on same sites.

This communication presents the first results of the soil fauna working group. Three types of indicator are studied. The IQGS (Global Index of Soil Quality) combine physical, chemical and biological (macro-invertebrates) indicators. A second type deals with measures linked to the structure and/or the diversity of soil invertebrate communities (macro-, meso- and micro-fauna). Last, measures are also realized at organism level (metallothionein coding gene expression in earthworm or metal bioaccumulation in snail or micromammal). These indicators are all tested in 13 sites selected according to their history, their current use and their contamination level. The results presented in this communication are those obtained during spring 2009.

Key-words: communities, bioaccumulation, metallothionein, macrofauna, microarthropoda, nematodes, earthworms, snails.