

TU298 Sensitivity of hypogean and epigeal freshwater copepods (Crustacea Copepoda) to agricultural pollutants: single toxicants and mixtures T. Di Lorenzo, Istituto per lo Studio degli Ecosistemi CNR; M. Cifoni, Department of Life Health and Environmental Sciences University of L'Aquila; D. Galassi, Department of Life Health and Environmental Sciences University of L'Aquila; W.D. Di Marzio, Universidad Nacional de Lujan CONICET. Widespread pollution from agriculture is one of the major causes of poor freshwater quality currently observed across Europe and worldwide. Nutrient loads (nitrogen and phosphorus) from fertilizers and pesticides are known to adversely impact freshwater ecosystems, both surface- and ground water. The Crustacea Copepoda are by far the most abundant and species-rich taxon in ground water and they are consistently represented in ecotonal environments also, as in the hyporheic zone. The direct impact of agricultural pollutants on freshwater biota has been addressed in several studies by means of laboratory bioassays. However, the ecotoxicological research concerning freshwater copepods is scarce for epigeal species and almost non-existent for the hypogean ones. Moreover, when available, ecotoxicological studies have been performed considering the effect of toxicants taken individually. Actually, this approach does not reflect the conditions in the field high concentrations of both N-fertilizers and pesticides co-occur. In this study we assessed the acute (at 96h) sensitivity of adults of a hypogean and an epigeal species, both belonging to the Crustacea, Copepoda, Cyclopoida, Cyclopidae, to two agricultural toxicants: the ammonium nitrate and the herbicide Imazamox. Both chemicals are widely used for cereal agriculture in Europe. We tested the sensitivity considering the LC50 with mortality endpoints for individual and combined (a mixture solution of ammonium nitrate and Imazamox) toxicant concentrations. The hypogean species was more sensitive than the epigeal one to both chemicals and their mixture. Ionized ammonia proved to be more toxic than the herbicide Imazamox for both species. However, the LC50 of both chemicals were lower than the actual standard law limits for good freshwater quality status defined by the Water Framework Directive (2000/60/CE). The effect of the mixture, of the two toxicants was fairly synergic. Concerning ionized ammonia, the LC50-96h in the mixture was higher than the law limits for both species. According to these results, the actual law limits for the good quality of freshwater bodies should be revised accordingly by authorities in charge of water management.

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