



XIII Congresso de ECOLOGIA

III International Symposium of Ecology and Evolution

Múltiplas ecologias: evolução e diversidade

08 a 12 de outubro de 2017 • UFV - VIÇOSA | MG

PUTTING “ECO” INTO “ECOTOXICOLOGY” OF THE SOIL ECOSYSTEM: SCREENING EFFECTS OF HERBICIDES TO SOIL FAUNA

Júlia C. Niemeyer^{1*}, Fernanda B. de Santo¹, Altair R. Maçaneiro Filho¹, Naiara Guerra¹

1. Federal University of Santa Catarina (UFSC), Curitibanos, SC, 89520-000, Brazil.*Correspondence to juliacarina@ufsc.br

Tema/Meio de apresentação: Ecologia Aplicada/Oral

Since 2008, Brazil reached the top of the agrochemical's used ranking, with more than 500.000t of agrochemicals years old⁻¹, where herbicides represent more than 55%. However, impacts on non-target species of soil invertebrates are quite neglected in registration of plant protection products (PPPs), being represented uniquely by lethality tests with earthworms. Acute test not take into account ecological principles as chronic effects on reproduction, avoidance behavior or ecological interactions, neither the sensitivity of other groups of organisms in soil. In this work, avoidance behaviour test with earthworms (ISO 17512-1) and collembolans (ISO 17512-2), reproduction test with collembolans (ISO 11267), and the bait lamina test *in situ* (ISO 18311, 2016) were carried out to investigate the ecological risk after the application of four commercial glyphosate herbicides. Roundup Original®, Trop®, Zapp QI 620® and Crucial® at the recommended dose (720 g a.e. ha⁻¹) were applied to burndown oat at the Experimental Farm of Federal University of Santa Catarina, in Curitibanos, SC, Brazil, in three plots per treatment. As Controls were used three plots without application of herbicides. Results from avoidance tests were analysed using Fisher exact test ($p < 0.05$), while reproduction and bait lamina were analysed using ANOVA followed by Dunnett's test ($p < 0.05$). No avoidance behaviour was observed in soil or oat straw, neither effects on reproduction. However, the mean consumption in bait lamina after 40 days was impaired in plots where Crucial® was applied. The values were 63.4% (± 10.7) to Control; 69.2% (± 25.9) to Roundup Original®; 57.7% (± 2.2) to Trop®; 68.2% (± 13.8) to Zapp®; 37.9% (± 7.0) to Crucial®, being this last one significant lower than the Control ($p < 0.05$). Despite no effects observed in laboratory tests (avoidance and reproduction), the field test can indicate impairment to ecosystem functions such as nutrient cycling. Further studies should be done to identify which groups of soil fauna this product affects.

Funding: AGRISUS and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brasil, Projeto Universal CNPq 454842/2014-7.