

Improvement of ecosystem services in corn crops due to zero-tillage

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Tillage practices in crops management threat soil, arable layer and crop-associated biota. This biota is essential to improve and maintain agroecosystems sustainability, e.g. as natural-enemy of pests on crops. The zero-tillage practice improves soil and its associated biota conservation. Zero-tillage management improves insect scavenging by natural enemies compared with non-zero-tillage managements. At Centro Nacional de Pesquisa Milho e Sorgo (EMBRAPA; Sete Lagoas, MG) eleven 20x20m corn plots have been managed with different agricultural equipments since 1994. One of these corn fields was managed with zero-tillage and other with annual alternation of two of following equipment: power tiller, mouldboard plow, offset disk and disk chisel. Insect scavenging of larvae corpses of *Tenebrio molitor* (Coleoptera: Tenebrionidae) from corn plots was evaluated for three days between February and March, 2014. At each corn plot, one opened and other paired enclosed bait were exposed with 20 *T. molitor* corpses, the first permitting access of all organisms and the second excluding organisms larger than 1cm (mesh size of cage) being accessible by invertebrates only. Difference of insect scavenging between baits type should thus reflect the vertebrates' action. Corpses were checked and replaced (if removed) each 1.5h for 6 times from 9h a.m. ANOVA was used to compare scavenging among corn fields. Scavenging was similar between baits type ($F(1, 308)=1.566$; $p=0.211$). Three bird species were visualized at fields in low frequency what may explain the similar scavenging in different baits type. However, scavenging was at least 1.5 times larger at zero-tillage field than others ($F(10, 308)=7.610$; $p<0.001$), difference probably due to a higher diversity of soil biota in this field. In fact, four non identified ant species were visualized scavenging *T. molitor* corpses. These insects are important scavengers in cropping systems with reduced use of pesticides.