

Ground Beetle (Coleoptera: Carabidae) Assemblages in Conventional and Diversified Crop Rotation Systems

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ABSTRACT Ground beetles (Coleoptera: Carabidae) are important in agro-ecosystems as generalist predators of invertebrate pests and weed seeds and as prey for larger animals. However, it is not well understood how cropping systems affect ground beetles. Over a 2-yr period, carabids were monitored two times per month using pitfall traps in a conventional chemical input, 2-yr, corn/soybean rotation system and a low input, 4-yr, corn/soybean/triticale-alfalfa/alfalfa rotation system. Carabid assemblages were largely dominated by a few species across all cropping treatments with *Poecilus chalcites* Say comprising >70% of pitfall catches in both years of study. Overall carabid activity density and species richness were higher in the low input, 4-yr rotation compared with the conventionally managed, 2-yr rotation. There were greater differences in the temporal activity density and species richness of carabids among crops than within corn and soybean treatments managed with different agrichemical inputs and soil disturbance regimes. Detrended correspondence analysis showed strong yearly variation in carabid assemblages in all cropping treatments. The increase in carabid activity density and species richness observed in the 4-yr crop rotation highlights the potential benefits of diverse crop habitats for carabids and the possibility for managing natural enemies by manipulating crop rotations.