Spatial and temporal relationships between biodiversity and the heterogeneity of the Rolling Pampa’s agricultural landscape

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The agricultural landscape is a mosaic of man-disturbed habitats that may be occupied by many species. This mosaic includes a relative stable array of patches (fields), corridors and borders that show temporal and spatial variability, regarding their structure and functions, mainly driven by cultural activities. We evaluated the impact on biodiversity of shifts towards cultural homogeneity in the Rolling Pampas, induced by the introduction of no tillage cropping and transgenic soybean cultivars resistant to glyphosate. Our study reveled that there is a positive relationship between species diversity and habitat heterogeneity in space and time. During the ten year period since the introduction of the new cultural practices alpha diversity and functional richness of weeds decreased over time. Landscape heterogeneity explained some of these changes, as alpha diversity of weeds and non herbivorous arthropods increased with spatial heterogeneity, given by the contrast between content (soybean field) and context (adjacent fields).