



S1 P12

**AGRICULTURAL LANDSCAPE OVER-SIMPLIFICATION AND AGROBIODIVERSITY
DETRIMENT: THE REHABILITATING ROLE OF AGROFORESTRY PRACTICES IN THE PO
PLAIN DISTRICT**

Gemma Chiaffarelli¹, Ilda Vagge¹

¹*Department of Agricultural and Environmental Sciences, University of Milan, Via Celoria 2, I-20133 Milan, Italy*

The agricultural systems capacity to sustain territorial, ecological and productive functions is currently significantly undermined, consequently to agricultural mechanization, rural landscape over-simplification affecting its underpinned support-regulating functions and services. The Po Plain district brings striking evidence on such impacts, combined to the condensed urbanization and grey infrastructures impacts, restricting natural ecosystems, often degraded and dominated by invasive alien species. To face this, integrated approaches are needed, working on multi-scale assessment and management strategies, enabling to rehabilitate the landscape ecological functioning, restoring its capacity to support higher agrobiodiversity levels. To this aim, our study intends to bring light on the role of farm-scale and local-scale landscape features management (agroforestry approach), by locally testing viable monitoring tools for recognising and supporting farmers' contribution to agroecosystems' biodiversity. Landscape ecology analyses are led on 4 pilot farms (Western Po Plain) adopting agroforestry approaches to different degrees. An extended set of landscape structure indices (composition, shape, connectivity) is computed at farm-scale and local-scale, comparing agroforestry-based approaches to conventional management. Functional interpretations of structural traits refer to two non-specific taxa groups (sensitive and generalist behaviours). Wider scale qualitative analyses frame lower scale results. Indices comparison allowed us to: i. distinguish the most virtuous farm management model; ii. forecast the effects of landscape features design scenarios on connectivity values; iii. highlight the influence of local-scale landscape ecological conditions on farm-scale ecological processes; iv. detect indices sensitiveness to management options, their relative correlations patterns, allowing their preliminary screening (indices selection, suitable for representing Po Plain landscape peculiarities). Our assessment is conceived as a pilot tool for: i. accounting and promoting virtuous management models, supporting agrobiodiversity values; ii. coherently driving agroforestry farm design and management strategies; iii. integrate the more commonly used field-scale agrobiodiversity assessment approaches (e.g floristic-vegetational, faunal studies), framing them into a multi-scale perspective, enhancing their mutual informative potential whilst optimising assessment efforts.