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Modular sito-specific grassing as an agroecological strategy in viticultural systems

Giuseppe Bombai; Rafael Piva; Jacopo Davanteri; Marco Braschi; Marta Castiglione; Giorgio Lamanna; Paola Tessarin; Anna Maria Bregoli; Alessandra Lombini; Adamo Domenico Rombolà

Currently, agriculture is strongly dependent on the availability of fossil fuels, other external inputs and natural resources contributing about one fifth to the global emission of greenhouse gases into the atmosphere. There are, however, ample opportunities to mitigate the impact of agricultural activities on the climate. By appropriate soil management, organic and biodynamic woody systems can become quantitatively important sites for the provision of ecosystem services (protection of water, soil, biodiversity and landscape, carbon sequestration and efficient use of water resources), able to actively counteract climate change. The agroecological system developed proposed by the "AgroEcology Participatory Research Group" (University of Bologna), introduce, among the innovative and highly sustainable techniques of soil management, the "stripped" biodiverse grassing, already successfully adopted in Italy and abroad. The system consists in the cultivation, along the row, of legumes and grasses with low water requirements, some of which are self-reseeding (eg. subterranean clover, burclover) and of a mixture of herbaceous species (eg. French honeysuckle, field beans, barley) in the alley. Noteworthy, the inclusion of these species, particularly of self-reseeding legumes, does not imply additional water consumption during the summer period. The soil protection provided by herbaceous species after cutting (or rolling) in the alleys and by self-reseeding legumes in the row, reduce soil evaporation and organic matter oxidation phenomena. Field trials conducted in different Italian farms have demonstrated the multiple benefits of the modular sito-specific grassing enhancing carbon sequestration, biodiversity, resilience and productivity of the viticultural systems.