Plant diversity in understory vegetation strips of alley cropping agroforestry systems

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Understory vegetation strips (UVS) are uncropped vegetation strips associated with tree rows in alley cropping agroforestry systems (Fig. 1). UVS are in appearance similar to other semi-natural habitats, such as field margins, which can constitute refugia for flora and fauna (Marshall & Moonen, 2002). To our knowledge very few studies have described the vegetation of UVS. Mézière *et al*., (2016) showed that 33% of the species present within UVS were never found in adjacent crop alleyways. However this result was restricted to only one field, in Southern France (Hérault). The purpose of this study was to confirm this result over more fields. Vegetation surveys were carried out in May 2017 in South-Western France over 16 winter cereal fields (8 alley cropping systems and 8 pure crop controls), either under conventional or organic management. The study revealed that UVS harboured richer, more even and more abundant floras – including species that are rarer in arable habitats – compared to crop alleyways and pure crop controls, especially under conventional management. Enhanced plant diversity at field scale is likely to have positive impacts on higher taxa that provide ecosystem services, such as pollinators and natural enemies.

Figure 1. Understory vegetation strips of alley cropping systems in South-Western France (March 2017). Picture: J.Poulmarc'h.

Keywords: semi-natural habitats, agricultural landscape, biodiversity conservation, weeds, community ecology.

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