

Biodiversity impacts ecosystem properties and the ecosystem services provided by those ecosystems. As a result, promoting plant diversity in agricultural systems has been a key issue in agriculture over recent years. In this context, weeds have an important role in maintaining field biodiversity, when it is balanced with their potential negative impact on crop production. Functional trait diversity, rather than the diversity of species *per se*, is a facet of biodiversity most directly related to species and community responses to management practices, with subsequent consequences for ecosystem services. Trait-based approaches, originally developed in the field of comparative ecology, allowed the description of weed species responses to management practices in annual crop systems. Here, we aimed to extend the trait-based approach to the spontaneous vegetation of vineyards. First, we propose a brief summary of current knowledge about weed communities in vineyards. Then we show how the relationships between management practices, weeds and grape vines can be translated into a response–effect framework: soil management practices (tillage, cover crops, spontaneous vegetation) can be considered as environmental filters that determine the composition and structure of vegetation, which, in turn, modify grapevine growth conditions in the vineyard. Finally, we tested this framework in a Mediterranean vineyard where, for 2 years, we characterized the responses of different components of weed communities (taxonomic and functional composition) in three inter-row management practices (tillage, cover crops and mowing spontaneous vegetation) and their effects on several grapevine processes (vine yield, vine leaf water potential and assimilable nitrogen in must).