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Preliminary study of the effect of soil management systems on the adventitious flora of a vineyard in northwestern Spain

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Abstract

The necessity to develop low-input, environmentally friendly agronomic techniques has encouraged changes in soil management systems in vineyards. The study and characterisation of adventitious flora is important if the integrated management of vineyards is to be achieved.

The composition of vineyards weed flora is strongly affected by agricultural practises. This preliminary work reports an inventory of the adventitious flora growing in a vineyard in north-western Spain at different times of year, the response of weed vegetation to different soil management systems (such as the use of tillage, herbicides, or the maintenance of a plant cover) was recorded. The objectives of the study were: (1) to analyse the changes in plant cover and species richness in the vineyard between different

soil management systems and along the temporal gradient and (2) to test whether life forms spectrum shows different patterns in each management system.

Two soil management systems were compared: tillage and permanent plant coverage (sown with *Lolium perenne* and *Trifolium repens* or natural), this permanent covers were managed by either: mowing, chemical control (contact herbicide or systemic herbicide treatment). Vegetation was studied by using floristic spectrum, Raunkiaer life forms and soil cover levels.

A total of 56 species belonging to 26 families were recorded. The plant spectrum was dominated by therophytes (annual weeds that germinate from seeds and complete their life cycle within one growing season or year) and hemicryptophytes (biennial or perennials weeds with resting buds at or near the level of the soil in a rosette form). The subplots sown with *L. perenne* and *T. repens* showed less serious infestation by weed species. *T. repens* was more stable over the long term. The highest plant coverage levels were obtained in the sown subplots that underwent mowing. Species associated with particular management types and particular seasons were determined.



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Keywords

Vineyard; Weeds; Herbicides; Tillage; Plant cover; Mowing

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