



## **Mineral versus organic fertilization in vulnerable zone: monitoring Nitrogen and Phosphorus**

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The importance of the winery industry in Mediterranean regions is accompanied by the generation of big amounts of wastes from the wineries and distilleries. The recycling of these materials as source of organic matter and nutrients is a good option of management. The agricultural use of exhausted grape marc after composting is a good option in the economy circular context.

A three-year field experiment was carried out in a drip-irrigated melon crop traditionally grown in the area where these wastes are generated, in climatic Mediterranean conditions. The area is designated as “vulnerable zone” by the Nitrates Directive 91/676/CEE. The objective is to compare the behavior of organic fertilization versus fertirrigation, from both the environmental and nutritional point of view using nitrogen and phosphorus balances applying a randomized complete-block design.

Each fertilization treatment was replicated four times in plots (12 by 15 m) formed by ten rows with eight plants each. The drip-irrigation system consisted of one drip line per crop row with emitters every 0.5 m, providing 2 L h<sup>-1</sup> per emitter. The irrigation water quality was monitored weekly in order to determine the amount of nitrates and phosphorus applied. The water used to irrigation was groundwater from a well near the experimental plots.

The relative grown rate of melon crop and its components has been used as comprehensive indicators for the evaluation.