



## **Effect of vegetative buffer strips on herbicide runoff from a non-tilled soil**

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Buffer strips can reduce herbicide runoff from cultivated fields owing to the ability of vegetation to delay surface runoff, promote infiltration and adsorb herbicides. Conservation agriculture has many environmental advantages, but the transition phase from conventional to conservation system is a critical period especially for surface runoff. A field in transition from conventional to conservation agriculture was tested in Italy in 2015 to analyze the efficacy of different types of buffer strips compared with no-buffer plots in reducing the runoff of three herbicides. At each runoff event, water volume was measured and terbutylazine, metolachlor and mesotrione concentrations were determined. Buffer strips were able to completely intercept the runoff water. The runoff volumes and number of runoff events were significantly reduced in the presence of buffer strips, while no differences were found between types of buffer strips. Among herbicides, mesotrione was not detected in runoff water samples, because of its rapid soil disappearance. The highest losses of terbutylazine and metolachlor were from plots without buffer strips at the first three runoff events. All types of buffer strips significantly reduced the total losses of terbutylazine and metolachlor in the monitored runoff events, with a reduction of more than 99%. This study confirmed that buffer strips are a very effective mitigation system against surface water pollution by herbicides, even in agronomic situations that promote runoff.