18th European Weed Research Society Symposium

EWRS 2018

17-21 June 2018
Ljubljana, Slovenia

New approaches for smarter weed management

Book of Abstracts

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What is the contribution of the residual weed floras to reduce nitrate leaching?

Delphine Moreau, Olivia Pointurier, Bernard Nicolardot, Nathalie Colbach
INRA, DIJON, France

Integrated crop protection tolerates residual weed floras if they are not harmful for crop production. Weeds are often solely considered with a negative viewpoint, but they may also provide beneficial services for agroecosystems, such as plant biodiversity promotion and trophic resources for other organisms such as pollinators. The role of residual weed flora as nitrate catchers, during the summer fallow, has seldomly been assessed, in spite of the high potential of some weed species to take up nitrogen. The present study aimed to (1) develop an indicator to account for the potential role of weed floras as nitrate catchers at the field scale, and (2) calculate this indicator from the outputs of a weed dynamics model (FlorSys) in order to analyse, with simulations, whether weed floras may, in some situations (to be identified), significantly contribute to reduce potential nitrate leaching, while limiting negative impacts on crop production. When developing the indicator, we considered that the potential of weed floras as nitrate catchers depended on both the 'nitrophilic' level and the plant leaf area of the species present in the weed floras, during the period running from the harvest of the preceding crop to the beginning of water drainage. This indicator was used to predict the potential of nitrate catching by weed floras in cropping systems from six regions from France and one from Spain which were simulated with the FlorSys model. Data analysis (under progress) will determine trade-offs between this indicator and other indicators of weed harmfulness for crop production and weed contribution to plant and functional biodiversity. It will help to identify in which production situations residual weed floras can play a significant role in preventing nitrate leaching, while minimising negative weed impacts, such as crop yield loss and harvest pollution by weed seeds. Funding: INRA, CoSAC project (ANR-15-CE18-0007).

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