BOOK OF ABSTRACTS

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Book of Abstracts

Editors:
Aleksandar Mikić
Diego Rubiales
Vuk Đorđević

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Tree nutritional status and olive yield after three years of the cultivation of legume species as a cover crop in an olive orchard

M Ângelo Rodrigues[1], Isabel Q Ferreira[1], Paulo Dimande[2], Ermelinda L Pereira[1], Margarida Arrobas[1]

[1]*Mountain Research Centre – Polytechnic Institute of Bragança, Bragança, Portugal*
[2]*Escola Superior de Desenvolvimento Rural – Universidade Eduardo Mondlane, Vilanculo, Moçambique*

Growing self-reseeding annual legumes in olive orchards may increase the sustainability of the cropping system by increasing soil organic carbon and reducing the use of nitrogen fertilizers. In this work, results are presented on the nitrogen nutritional status of trees and olive yields three years after the introduction of different ground-cover treatments in an olive orchard located in NE Portugal. The experimental design included three ground-cover treatments: Natural vegetation (Nat veg); Natural vegetation fertilized with 60 kg N ha^{-1} yr^{-1} (Nat vet +N); and a mixture of eleven self-reseeding annual legumes (Legumes). The experiment started in October 2009. The nutritional status of olive trees was assessed by leaf analysis, collecting leaves in July 2012 and January 2013 and determining the concentration of nutrients in leaves. In November 2012, the olive yields were recorded from eight pre-tagged trees per treatment. Nitrogen concentration in leaves and olive yields were significantly different among the ground-cover treatments. In July 2012, leaf N concentrations were 10.8, 11.9 and 14.1 g kg^{-1}, respectively in the treatments Nat veg, Nat veg +N and Legumes. In January 2013, the values were 12.6, 15.6 and 15.7 g kg^{-1}. The olive yields were 2.9, 5.6 and 8.6 kg $tree^{-1}$, respectively in Nat veg, Nat veg +N and Legumes. Three years after the establishment of the ground-cover treatments, the olive trees of the Legumes treatment showed a better nitrogen nutritional status and a higher productivity than those managed with natural vegetation even when they were fertilized with 60 kg N ha^{-1}.