

# Assessing the environmental effects of agroforestry at the landscape scale

Palma J<sup>1</sup>, Bunce R<sup>2</sup>, De Fillippi R<sup>1</sup>, Herzog F<sup>1</sup>, van Keulen H<sup>3</sup>, Mayus M<sup>4</sup>, Reisner Y<sup>1</sup>

<sup>1</sup> Ecological Controlling Research Group, Agroscope FAL Reckenholz, Zurich, Switzerland

<sup>2</sup> ALTERNIA – Research for the Green World, Wageningen, The Netherlands

<sup>3</sup> Dept Crop and Weed Ecology, Wageningen, University, Wageningen, The Netherlands

<sup>4</sup> INRA, Montpellier, France

## **Abstract**

Silvoarable Agroforestry, the deliberate combined use of trees and crops on the same area of land, can potentially improve the environmental performance of agricultural systems in Europe. **Four** major potential benefits are identified: soil water erosion reduction, nitrate leaching reduction, carbon sequestration enhancing and landscape diversity improvement.

The application of existing, and state of the art, models at landscape scale for each of the environmental impacts is described and applied to three landscape test sites.

The assessment demonstrates the applicability of existing models at the landscape scale for the evaluation of SAF and the results showed that SAF systems could improve the environmental performance in comparison with monocropping practices.

## **Keywords**

Agroforestry, silvoarable, erosion, leaching, sequestration, landscape, biodiversity, modelling, Europe, monocropping, alley cropping