

Effects of silvoarable agroforestry on profitability and environmental indicators

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Introduction

Silvoarable Agroforestry (SAF) has been proposed as an alternative land-use system for European agriculture. Yet, uptake is still marginal. A larger uptake depends on farmers being informed about the productivity and profitability of silvoarable systems, and improved policy support, so that silvoarable systems are not disadvantaged through subsidy systems.

One possible justification for improved policy support is because of environmental benefits. Work being undertaken on the 'Silvoarable agroforestry for Europe' project (www.montpellier.inra.fr/safe) aims to reduce uncertainties regarding silvoarable systems in Europe. This poster illustrates a combined environmental and economic assessment of silvoarable systems.

Integrated Assessment

An integrated economic and environmental assessment will be carried out in each Landscape Test Site (LTS), using the data shown in Fig 1. Environmental assessments include erosion, water recharge, C-sequestration, N-leaching and landscape diversity and the economic assessment is provided through an evaluation of the Net Present Value of arable, forestry and silvoarable systems. The approach for each of these is graphically illustrated:

Data Collection and Generation

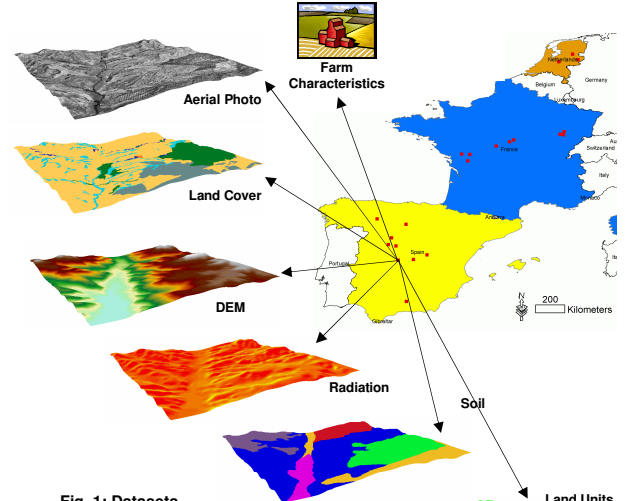


Fig. 1: Datasets required for each of 21 Landscape Test Sites

A land unit represents the typical farming conditions (economic and environmental) of the larger regions

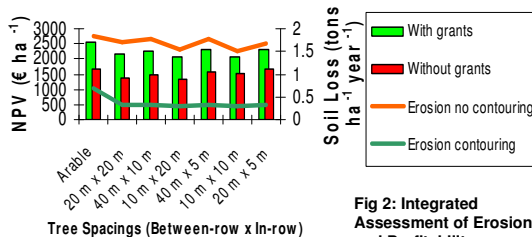
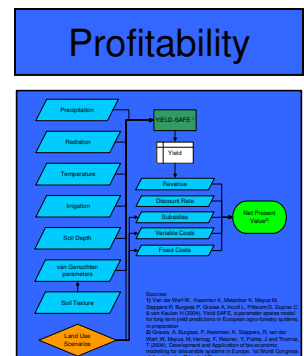
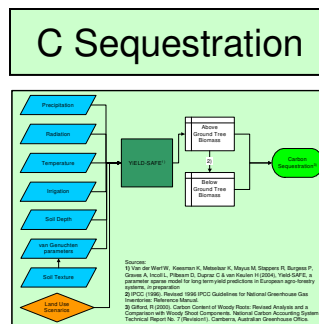
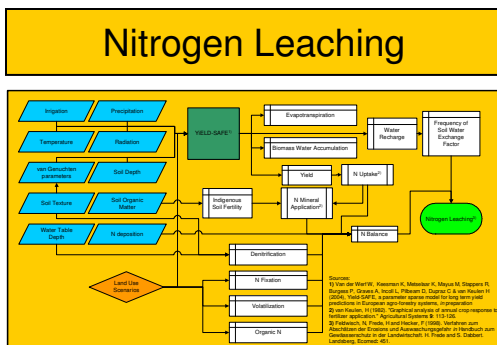
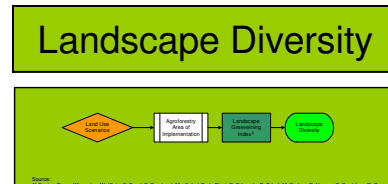
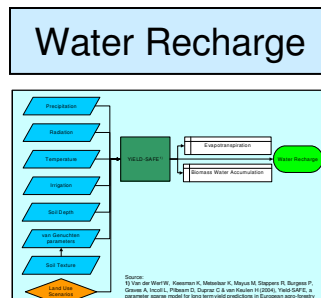
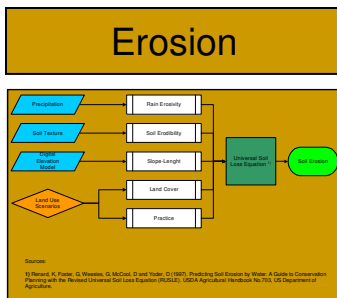


Fig 2: Integrated Assessment of Erosion and Profitability
NPV: Net Present Value

Results (preliminary)

For a single LTS in Spain, results indicated that some poplar silvoarable systems could reduce soil erosion compared with existing arable systems, especially combined with contouring practices or when between-row distance was minimized (Fig 2). However, silvoarable systems are less profitable than the existing arable system, largely because of existing policy regarding farm payments. This result suggests that minor modifications of the grant system could make silvoarable systems a viable alternative for farmers. Such modifications could be justified by improved soil erosion control.

Outlook

The results will be extended to the other LTS in Spain, France and the Netherlands in which other tree species will be taken into account. The integrated environmental and economic assessment will then be conducted using multicriteria analysis for an overall interpretation of silvoarable uptake within an European context.

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Modelling Backstage

