

## ***'GLOBAL APPLICATIONS OF FAST-GROWING TREES IN AGROFORESTRY SYSTEMS'***

### **Tree Alley Cropping with Novel Hybrid Poplar Clones on Alluvial Soils of Southern Europe**

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#### **Overview**

The intercropping of crops with poplar trees for timber production was largely practiced in Southern Europe during the twentieth century until the late 1970s. This practice was then almost abandoned because tree canopy spraying for pest/disease control often hindered the management of intercrops. Nowadays, tree alley cropping is again studied for its important environmental and productive values for mitigating climate change and the environmental emergencies of modern agri-monoculture (Figs. 1 and 2).



Figure 1. *Populus* alley cropping systems in Italy.

<sup>1</sup>The International Commission on Poplars and Other Fast-Growing Trees Sustaining People and the Environment (IPC)

## Outcomes

In Europe, public institutions provide funding for the establishment of tree alley cropping. Particularly, in Italy, new poplar clones are now available that do not require canopy spraying: Maggiore Sostenibilità Ambientale (MSA) clones. A network of three experimental sites was recently established in Italy with the aim of optimizing the tree alley cropping system according to the criteria of modern agriculture. Research is currently in progress; however, the first experimental results of one site (10 ha) established in 2014 are very encouraging in terms of tree growth, intercrop yield, and financial profitability.



Figure 2. *Populus* alley cropping systems in Italy.

Tree rotations are expected to be 10 years. The key element for financial profitability is the final timber quality of the harvested trees. In the context of a modern market economy, the final timber produced should have very high standards for plywood transformation and should be able to fulfill the requirements of the furniture industry. Thus, trees that do not require canopy spraying, and that exhibit fast growth rates and produce high-quality timber, are essential for successful management of tree alley cropping in areas of Southern Europe with intensive agriculture.

**Keywords:** *Populus*, alley cropping, MSA clones, productivity

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