



Bio-economy products: alternative uses of trees

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Trees are one of the two possible types of the woody perennial component of the agroforestry systems. When introducing trees in an arable land within silvoarable agroforestry practices framework, one of the main concerns is related with the possible use of the tree products, either coppiced, either managed as a high stand. Independently of the tree plot frame, either even or unevenly distributed within or in the borders of the plots, trees should be managed which is usually associated to either the pruning or the thinning, therefore, to the production of woody biomass. The use of this woody biomass could be one of the main reasons to include all the benefits of agroforestry in agricultural plots linked to the bioeconomy concept described by the Global Bioeconomy Summit in 2015: "the knowledge-based" production and utilization of biological resources, innovative biological processes and principles to sustainably provide goods and services across all economic sectors". The current broadly use of the trees, timber, pulp and paper should be expanded to other uses such as textiles, bioplastics chemicals, among others. The textile use could be linked to the production of viscose fibers associated with the tree cellulose component that will probably replace non-renewable source of fibers such as Polyester or cotton that represents the 55 and 27% of the global consumption fibres in 2015. Tree-based bioplastics production and use should be increased to replace non-biodegradable plastics

by extracting organic chemicals from lignin for their manufacture. Tree-derived chemicals to be used in different types of industries such as flavanoids, terpenes phenols, alkaloids, sterols, waxes, fats, tannins, sugars, gums, suberin, resin acids and carotenoids are among the most used compounds from woody perennials associated to the development of pharmaceutical, adhesive and preservatives compounds. So, the tree-based product potential is clearly there but a strong agriculture infrastructure support should be developed to firstly increase the production of these compounds and secondly to develop a market and sustainable value chain that makes the introduction of trees in agricultural lands a profitable source of income for farmers.



Figure 1. Pruning in a silvopastoral system with pines.

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