



## Valorization of walnut trees in a Belgian agroforestry context

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Walnut trees are a good choice as tree species in agroforestry systems in Belgium. They produce good quality hardwood timber and the healthy nuts are gaining popularity very fast among consumers. When planting walnut trees in an agroforestry system the choice is usually made to produce either timber, or either nuts. Although it is more complex in terms of profitability, a combination of both goals is possible with certain varieties. Prices for timber (often used as veneer wood) in Flanders of these walnut double aptitude varieties (timber/fruit) range between 250 and 500 € per m<sup>3</sup> and this requires a minimum growth period of 50 years in Belgium. Stems need to be at least 3 m high for processing. When combining wood and nut production, take into account that for each 50 cm of height you add to the branch-free stem length by pruning in the first years, the first profitable nut production is delayed 1 year. Higher stems also mean higher tree crowns, increasing the labour intensity and hence labour costs for harvesting nuts. The walnuts can be used for a whole range of different products and with a well-considered marketing strategy, hardly any part of the walnut is left unused; significantly increasing profitability. As soon as early July non-ripe green nuts can be harvested in their husks. These nuts and their husks are the perfect ingredient for walnut liquor or walnut flavoured Lambic beer, since a lot of flavour is in the husks themselves. Around 500 kg of nuts is enough to produce about 10000 liter of liquor. Afterwards and starting from the end of September until early November, walnut fruits for direct consumption can be harvested. This can be done by shaking and picking up the nuts using a sweeper with a capacity of 3000 kg nuts per day. After scraping off the husks and sorting them by size, nuts can be shipped almost directly to the store to be sold as fresh walnuts or they can be dried. The fact that fresh walnuts don't require a lot of processing and storage room, that they are heavier than dried ones (drying causes 60% of weight loss) and that they are a niche product with high prices per kg makes them very interesting in terms of profitability. Dried walnuts in Flemish stores are nearly all

imported from France, mainly the Lara cultivar (a fast and highly productive cultivar). However, empirical research by a Flemish nut producer in cooperation with several (small and big) retailers has shown that consumers prefer the Flemish walnuts because of their excellent taste. Smaller and/or damaged walnuts can be dried and sold as peeled dry nuts, but this requires more time and equipment increasing the processing cost. They can also be used for walnut oil. Prices for cold pressed walnut oil (press efficiency of 60% using an adjusted olive oil press) go up to € 40 - 50 per liter. The remaining press-cake can again be sold as an ingredient for foods like cookies or chocolates and the nutshells can be pressed to briquettes. However, more research on the possibilities and marketing of these waste-products is still needed.



Figure 1: Walnut harvest. Source: Buxusberg.

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