APPROPRIATE VARIETIES FOR FRUIT OR NUT PRODUCTION IN AGROFORESTRY

Which criteria and options?

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THE WHAT AND WHY

Fruit and nuts in agroforestry systems: a valid option

When establishing agroforestry plots, quite often a combination with high standard fruit or nut trees is chosen these days. Think of apple, pear, cherry, peach, apricot, medlar, almond nut, walnut, hazelnut, chestnut and so many other options. The economic added value of these trees is not the wood production but the added value the fruit or nuts can offer. The harvested fruit is often processed into fruit juice, cider, syrup, wine, jelly, or jam. Also, nuts can be either sold fresh or processed before selling as walnut oil or chestnut flour for example. However, making the most suitable species and variety choice when establishing a new agroforestry plot with this type of trees is not an easy thing to do. Various factors play a role in this decision process, and the right choice determines the success of the outcome. In this factsheet, we briefly list the options and most important criteria.

Fruit and nut tree variety choice: a wealth of options.
Bert Reubens - ILVO

Improved fruit or nut trees generally are grafted onto a rootstock of another variety or species. For high standard trees in between the rootstock and the selected variety there is often also an intermediate stock.
Bert Reubens - ILVO

HOW IS THE CHALLENGE ADDRESSED

Picking the right tree for the right place and goal: which criteria to consider?

For fruit and nut trees, various factors play a role in the selection process. These are important ones to consider:

- The benefits of more diversity (biodiversity and genetic diversity);
- The economic added value of the future harvest of these fruit and nut trees, largely determined by how the farmer intends to market the fruit, nuts or processed products;
- Soil and microclimate conditions, which help to determine which types of fruit or nut trees you should (not) plant on the plot;
- The individual properties of the different varieties (taste, harvesting time, properties for storage, processing, pest and disease resistances, etc.);
- The timing in the harvesting and consumption season according to the objectives of the harvest;
- The mutual (necessary) cross-pollination.

Finally, when you have to make a choice between different, equivalent varieties, it is best to opt for regional varieties.
Improved varieties generally are grafted onto a rootstock (and often also intermediate stock) of another variety or species. Properties of these, such as growth speed, resistance, soil preferences, are also determining the outcome.

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HIGHLIGHTS

- High standard fruit or nut trees are a valid option when establishing agroforestry.
- Success is determined by the right species and variety choices for your place & objective.
- Important criteria to consider are taste, flowering & harvesting time, properties for storage, processing, pest & disease resistances, soil preferences, etc.
- The characteristics of rootstock and intermediate stock are also important.

Walnut varieties: besides taste, colour and size, also budding and harvesting time, properties for storage, processing, pest and disease resistances, and soil condition preferences are important selection criteria.

Bert Reubens - ILVO

FURTHER INFORMATION

More information (in Dutch) on fruit and nut trees in agroforestry systems can be found at

https://www.agroforestryvlaanderen.be/NL/Kennisloket/Boomspecifiekeinfo/tabid/9776/language/nl-BE/Default.aspx

For Belgium, several lists with traditional and regional varieties exist, such as this “brochure hoogstamfruitbomen” for West-Flanders and the “fruitfiches” for Limburg. Also the variety list of Gembloux is worth checking.

Interesting English websites are the National Fruit Collection and Orange Pippin, respectively for Wallonia and the UK.

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ADVANTAGES AND DISADVANTAGES

Late budding walnut: a variety choice example for temperate zones

In the last few years, walnut trees have become a popular choice for agroforestry systems because of their highly valued timber and fruits. Variety choice is often solely based on nut production properties of the tree, especially quantity and quality. The importance of budding, blooming and leafing period in temperate climates like Belgium is often overlooked. Most Southern European varieties are not suited for temperate climates. Until 15th of May, spring night frost is not unusual in the whole of Flanders. Bud breaking and blooming of every commonly used cultivar in France occurs well before half May and bud growth of nearly all commonly used cultivars used in Belgium (Broadview, Buccaneer, Coenen, Rita, NO.16, Plovdivski, Proslavski, Axel, Hansen) starts before the risk of frost is gone. In Flanders, on average you must take substantial losses (due to frost) into account once every 2 years when using very early cultivars (March) in temperate climates, once every 4 years using early cultivars (beginning of April), once every 10 years using middle cultivars (end of April – beginning of May) and once every 15 years using late developing (half May) cultivars. With very late cultivars (late May – early June) this risk is reduced to zero, allowing a more consistent nut production throughout the years (of great importance for marketing). On top of that, a late leafing period also has some interesting implications when used in alley cropping agroforestry system. Intercrops, like winter wheat, get maximum light during most of their growth period as tree leaves are still absent. Drier growing conditions could also make the intercrops less vulnerable to fungal diseases. First observations also indicate that the late budding walnut varieties are less vulnerable to walnut blight and chestnut weevils. Hence, late budding varieties open up a lot of opportunities for smart combinations in alley cropping systems. Very late varieties are relatively rare, but they exist. About 2% of seedlings fall into this category. Optimal growing conditions and management are crucial for these varieties due to the short growing season. Knowledge on them (nut production, pollination, resistance, shape) is however still limited and they are not yet commercially available, but more research on this promising topic has been initiated in Belgium by local walnut experts cooperating with research institutes.