

Agroforestry demonstration plot at Herent, Belgium

Praktijkpunt Landbouw Vlaams-Brabant (<https://praktijkpuntlandbouw.be/>) is an agricultural research center located in Flemish-Brabant, Belgium. Our field of expertise spans a range of arable crops such as endive, grains, rapeseed,... and innovative crops such as quinoa, soy, sunflower etc. Our research and advisory and extension services focus on sustainable agriculture. A young agroforestry system is cultivated since 2020 to demonstrate this form of land use and to achieve more insights in the bottlenecks and opportunities of managing an agroforestry system.

General info on location

The agroforestry research plot is situated on the grounds of Praktijkpunt Landbouw, located in Herent near Leuven. The plot is a bit smaller than 1 ha. Between the tree rows an arable crop rotation is maintained.

Goals

The agroforestry plot functions as a demonstration plot for farmers and other stakeholders. We organize demonstrations (e.g. tree pruning) and collect insights on practical management bottlenecks and opportunities. The plot is a representation of how an agroforestry system functions on a small Flemish field. It also raises awareness about agro-ecological principles and possibilities for a more sustainable agriculture.



Design of the agroforestry system

The research plot is an alley cropping system of about 0,9 hectares. Four tree rows (oriented as much on the North-South axis as possible) were planted with differing row widths (ranging from 2-5m wide).

The field is not designed as a real life example. As a demonstration plot, a lot of different tree species and planting options are included to show the possibilities.

- 36 walnut trees (*Juglans regia*) were planted with an in-row spacing of 5m and inter-row spacing of 15m. They are part of a specific trial to compare different varieties of walnut trees and their potential. Some varieties are late budding walnut trees, a factor that can be important for the productivity of an agroforestry system. These trees are intended for nut production. A grass-flower mixture is sown in the tree rows, benefitting pollinating and other useful insects. A rotation of arable crops is cultivated between the tree rows. The timing of budding and flowering is monitored and twice a year the diameter of the trees is measured. The trees are pruned during spring.
- As part of a tree row, 5 oak trees (*Quercus petraea*) and 5 poplar trees (*Populus* spp.) are alternately planted for wood production. In this part of the tree row, the cultivation of an extra agricultural crop is tested. During 2022 we cultivated oilseed pumpkins next to and under the trees. The main question is whether an extra crop yield is feasible. The experience of the management of the extra crop are recorded and yield is monitored.
- In another part of a tree row, young trees were planted very close together in small groups. Each group consists of 12 trees of a particular species. There are 2 groups of apple trees (*Malus domestica*), 2 groups of wild service trees (*Sorbus torminalis*) and 2 groups of true service trees (*Sorbus domestica*). The young trees compete for light and nutrients and are forced to grow straight with less branches. In time, trees will be selected to receive more space to grow. A grass-clover mixture was sown as ground cover.
- In another part, small trees are planted to grow out as a hedge and windshield. This includes a mixture of elderberry (*Sambucus nigra*), common dogwood (*Cornus sanguinea*), aspen (*Populus tremula*), wild service tree (*Sorbus torminalis*) and common hazel (*Corylus avellana*) with a total of 45 young trees. A grass-clover mixture is sown under the trees.
- In the fourth tree row, bigger trees were planted. This includes 5 black cherry trees (*Prunus serotina*), 5 sweet chestnuts (*Castanea sativa*) and 5 Turkish hazel (*Corylus colurna*) are planted. Left and right of these trees, strokes of 5m miscanthus were planted.. This is a fastgrowing crop which may stimulate the trees to grow straight with less branches.

Monitoring

The main focus is to study and demonstrate the **direct and indirect impact of trees on crop production and management**.

The diameters of the trees are measured yearly.

More info?

Rutger Tallieu, researcher agroforestry at Praktijkpunt Landbouw Vlaams-Brabant

rutger.tallieu@vlaamsbrabant.be