



## AGROFORESTRY SYSTEMS: SILVOARABLE



<b>Year of foundation</b>	1st generation in 1950, Rémi's installation (4th generation) in 2011
<b>Specialization</b>	12 crops in rotation: wheat, rapeseed, alfalfa, faba bean, rye, buckwheat, camelina, hemp... Cereals are processed into flour for bakery and oleaginous in high-value oils and seedcakes.
<b>Farm area</b>	125 ha
<b>Number of employees</b>	1
<b>Year of starting agroforestry practices</b>	2014
<b>Location</b>	France, Lumigny-Nesles-Ormeaux
<b>Web page</b>	<a href="https://www.terredeliens-iledefrance.org/operation-lumigny/">https://www.terredeliens-iledefrance.org/operation-lumigny/</a>

The Sables de Lumigny farm, is a 125 hectares farm located in the Brie county, close to Paris, in France. The farm is managed by Rémi Seingier since 2011 but it has been in his family for 4 generations. Rémi decided to take over the farm from his parents in several steps, beginning with **38 hectares of silvoarable agroforestry. Lines of diversified trees are planted between strips of crops, grown organically.**



Before the installation of Rémi Seingier and his wife in 2011, the farm was owned by his parents, who were managing it in a conventional way: monocultures with 3 or 4 rotations. Rémi decided to install agroforestry after a trip in Brazil where he discovered this practice. **The main reasons for the adoption of agroforestry were mainly to mitigate the water scarcity and land-fertility loss, and to recover biodiversity.** Another challenge was conversion to **organic agriculture**, which was an indispensable step for Rémi.

The farm is 125 hectares but the agroforestry part of it is only 38 hectares yet, the rest is in conversion for organic agriculture. This 38 ha plot is planted in a **silvoarable design, with lines of diversified trees spaced by 30 meters, with crops in between.** Rémi's vision is to gradually introduce back trees into the whole farm, not obligatory in the same design as the 1st agroforestry plot, because it's very labor intensive, but at least with hedges to put in place a true agroforestry meshing, close to the French bocage.



- For now, trees are still young since the agroforestry plot was planted in 2014. According to Rémi Seingier, there are no clear impact yet on the yields or the microclimate of the plot.
- The whole system created by Rémi (rotation of high-value crops, organic certification, integration of the processing, commercialization through short circuits...) allows him **to pay himself at minimum wage with his 38 ha**. In the region this is normally only achievable with 100 ha.



Map of the agroforestry plot of the Sables de Lumigny farm, with the different pedoclimatic zones.

The agroforestry design of the Sables de Lumigny farm was mainly chosen for its ecosystem services (shade, soil regeneration, resources for biodiversity, pollinators, etc.), especially important since the agricultural system is managed organically. Hence, it was not created for its economic value, focusing on high species diversity, low inputs and management requirements. **The plot was divided in 4 microclimate zones to adapt the tree species mix and spacing to the soil conditions. 6 criteria were used to select the species: period of flowering and importance for pollinators, fruit valorization and season of fructification, biomass and timber production.** The design was made by Rémi Seingier himself and his wife, after an extensive work of bibliography and research.

Being a professional gardener, Rémi Seingier had already extensive knowledge about plants biology and designing. **He created the design of his agroforestry plot by himself**, however he still decided to complete his academic training with a degree in biology. His wife also completes a master degree in microbiology and a thesis in agroforestry.

## DESCRIPTION OF USED TECHNIQS DURING ESTABLISHING OF AGROFORESTRY SYSTEMS

**Lines of trees inside the plot are spaced approximately by 30 meters. On the line, spacing of trees ranges from 4 to 10 meters, depending on the species and the soil. Around the plot, 800 m of windbreak hedges were also planted with spacing of 1 meter between each tree. The total density of the plot reaches 54 trees/ha. 17 species are planted (locust, oaks, linden, ash, maple, hornbeam, willow...). Before planting, soil was sub-soiled and amended with manure. Trees were planted manually during a collective workshop, mainly with cuttings, with classical tree protection (1-meter metal net around the tree).**



## THREATS/CHALLENGES

- The main challenge of the system is the **management of the trees (pruning) when they begin to reach a certain height.** This is a laborious operation that requires equipment, knowledge and a lot of time. For example, Rémi is already 1 year late on his pruning schedule because he is overwhelmed by the other operations of the farm.
- Another challenge, which is directly linked to the 1st is **the impact of shade on the crops.** If pruning isn't properly and timely done, foliage of the **trees could over-shade the crops, decreasing yields.**

The agroforestry design of the Sables de Lumigny farm is representative of many silvoarable systems in France. However, in this case the farmer, Rémi Seingier, took a special care of building a **smart economic system where agroforestry is included but as a “frame”**.

The main lesson here is the fact that the **Sables de Lumigny farm followed a realistic transition plan, from conventional to organic agroforestry**. Rémi Seingier took his time to build a system that makes sense to him and that he can manage. **However, even with this special care he admitted that he is still quite overwhelmed by the size of his system and the management that require trees. This must be taken in consideration and underlines the need of putting up a pilot before scaling-up an agroforestry model.**

## FUTURE PLANS

Rémi Seingier aims now to take over the **whole 125 hectares and to re-install a bocage model into the farm**. He hopes to hire an employee in the coming years to help him manage the farm. His wife is also managing **3 hectares of the farm through another agricultural company dedicated to production of aromatic and medicinal plants**.



## FINAL RECOMMENDATION

It is recommended to **gather around oneself good experts and knowledgeable people and organizations to help in the designing and implementation of the agroforestry model**. It helps taking a step back and see the big picture of the system, especially the size of it and the workload that it will require. Rémi chose to divide his plot in terms of soil condition to adapt the design, hence a good land study is needed. Also, to follow trainings about tree management will eventually be needed.

On one hand, Rémi Seingier thought agroforestry as a “frame” for his farm. He considers that it needs to be pleasant for him to work and for the biodiversity to settle in. On the other hand, **in terms of economic vision of the whole model, he applied a diversification and verticalization strategy by integrating processing of higher-value products (he produces flour and oil himself or with a partner)**. This way he can capture more added-value and draw full benefit from his organic certification and his agroforestry model (on the packaging of the final product for example).

## KEY WORDS

Silvoarable, crops, cover crops, organic, flour, alley cropping



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