SUCCESSIONAL SILVOARABLE AGROFORESTRY AND COMMUNITY SUPPORTED AGRICULTURE

1. A newly established tree line with crops during the first harvest season in 2023 2. Newly established tree lines and alleys during the first harvest season in 2023 3. A tree line with crops during the second harvest season in 2024 4. Tree lines and alleys during the second harvest season in 2024 (Photos: Tanja Kähkönen)

WHAT AND WHY

Lill-Nägels Agroforestry Pilot project (picture 1) was established in Kirkkonummi, Southern Finland, in 2022. It is a successional silvoarable agroforestry system where cash crops such as garlic are grown together with fruit trees and berries, rhubarb and some other vegetables in a relay cropping system. The system was planned primarily around bioremediation of the degraded soil through biodiverse plant communities and their associated microbiomes/soil fauna. At the same time, this system serves as a pilot project aiming to explore the application of successional silvoarable agroforestry to Finnish bioregional and socioeconomic contexts in terms of agroforestry and a relationship between farmers and consumers. The planned community supported agriculture (CSA) model for the pilot project is a farmer-led model in which consumers could make advance purchases of farm products for each harvest season. The pilot project has produced a harvest since its first full growing season in 2023. The marketable crops will vary in the used relay cropping system as the system develops.

HOW THE CHALLENGE IS ADDRESSED

At Lill-Nägels Agroforestry Pilot project both stratification and succession are considered when designing the successional silvoarable agroforestry system. Succession, the process by which species composition in an area changes over time – human designed in this system, supports the agroforestry system to change soil properties and produce different marketable crops at different temporal stages. In the system plan for succession, suitable niches are created for each plant in conjunction with other plants over time and space. Stratification is a key design principle in which niche requirements of each species over time and spatial layers are considered in the agroforestry system design. There are four strata based on the light requirements of plants in this system. The design of the system resembles a market garden.

Keywords: Community supported agriculture, return on investment (ROI), short value chains, successional agroforestry

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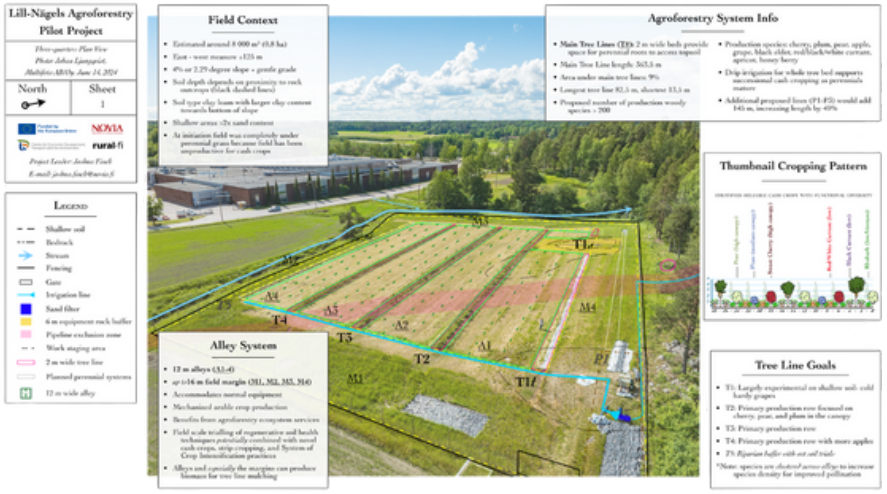
ADVANTAGES

Successional silvoarable agroforestry, at its every development stage, can benefit the farmer from farm economics point of view. Although the implementation costs are, in general, greater in a successional silvoarable agroforestry system than in a monocultural system for instance due to diversity of the plants and greater amount of labour needed, the revenue generation may also potentially be greater. This is due to the possible shorter lag time between the establishment of the system and the first harvest of marketable crops, and continuous production potential of different marketable products during succession. Due to the shorter lag time between the establishment and the first marketable harvest, the return on investment (ROI) period might be shortened, which can be beneficial from a farm economics perspective. Plants in different strata in tree lines can intercept more of the incoming light than in monocultural systems, and they can be designed to create shade where needed for other plants. The patterns of light and shade can increase productivity of the crops, for instance, due to decreased sun stress and increased moisture in the soil.

Successional silvoarable agroforestry system at Lill-Nägels Agroforestry Pilot project is an experimental system both in terms of agroforestry production and a relationship between farmers and consumers. The system has been designed as a CSA, but it is not currently running as one as the project is publicly funded. Once the system matures and there is more to harvest, citizens will be invited to harvest for free, in the exchange of participation in data collection where each tree/bush harvest is tracked separately from the others to produce detailed yield maps of the polycultures. One of the main ways the CSA will help in sharing economic risks between producers and consumers is through the "self pick" nature of the program. The labor and infrastructure costs for picking, packing, storing, further marketing and delivering - all the picking and post-harvest costs - are eliminated or greatly reduced when the customers harvest themselves. As CSA establishes a direct relationship between farmers and producers, the pilot project can also serve as a pilot for both farmers and consumers to learn about alternative food production models toward more democratic food systems.

HIGHLIGHTS:

- **Community-supported agriculture establishes direct relationships between farmers and consumers.**
- **Economic risks and benefits of food production are divided between producers and consumers in community supported agriculture.**
- **Short value chains of community-supported agriculture support local economy and circulation of economic resources within a community.**



Successional silvoarable agroforestry at Lill-Nägels Agroforestry Pilot project (picture: Joshua Finch)

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