



INTRO

NyIAF & LillnAP  
OVERVIEW & OBJECTIVES

SUCCESSIONAL  
AGROFORESTRY

DESIGN

FUTURE PROSPECTS

THANK YOU!



Agroforestry  
i Nyland



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AGENDA | 11.02.2026

Joshua Finch introduces our successional  
silvoarable agroforestry pilot project's  
objectives and design

# **FOREST GARDENING AND AGROFORESTRY IN THE NORDICS**

## AN ADAPTATION OF SUCCESSIONAL AGROFORESTRY PRINCIPLES FOR NORDIC CONDITIONS

# Agroforestry i Nyland (NylAF)

**Project owner:** Novia University of Applied Sciences

**Duration:** 2024 - 2026

**Total budget:** 282 487,69 €

- 60% Public, 40% Private

## Funders:

- European Agricultural Fund for Rural Development (EFARD) 2023–2027 (Uudenmaan ELY-Center),
- Svenska kulturfonden,
- Novia University of Applied Sciences,
- Stiftelsen Finlandssvenska Jordfonden



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# Agroforestry i Nyland (NylAF)

## WP1

### Agroforestry Exploration Program & Nyland Agroforestry Design Teams *(farmer focused)*

Lower the threshold of adoption of agroforestry by facilitating the **design** and **decision making** process

- Complete Process for Design Brief
- Regional Design Team
- Extra support for Nyland farms
- Analysis & Design, Analogue & Digital Tools, Business side
- *Community effort*

## WP2

### Agroforestry for Advisors & Consultants

Involve agricultural professionals from outside the farm to aide in the development of robust agroforestry systems for Finland

- Increase awareness about agroforestry
- Dispelling misconceptions
- Spotlighting points of improvement
- *Integrating the whole community*

## WP3

### Lill-Nägels Agroforestry Pilot Project

Continue management and data collection from the successional silvoarable system in Kirkkonummi; Living lab

- Next generation system
- Documentation of plant & soil health
- Continued analysis of inputs/outputs
- First fruits and alley crops in 2026
- *Skin (and knees) in the game*

# Lill-Nägels Pilot Site (LILLINAP)

[Original] project objectives are *sequential*:

1. **Bioremediate** degraded agricultural soil: restoring fertility for viable cash cropping *through biology*
2. Investigate how **successional agroforestry** can improve farm profitability *(if conditions improve- 1)*
3. Direct marketing to increase farmer **profitability and engage citizens** with agriculture *(if they produce, how to sell?)*
4. Implement novel systems to **attract new talent to agriculture** *(whether it 'works' or not, new farmers like new things)*



Views from 2023 and 2025, counterclockwise from top right: intern preparing sap analysis; biodiversity after summer drought; garlic crop emerging; an intensive production set in 2025

# Changing Objectives

## Original primary project objective:

1. **Bioremediate** meant seeing whether plant + soil biology diversity was sufficient – *only 1 x outside fertility input direct to soil!*



Sap analysis reveals acquisition trends from soil

Of 107 non-garlic plant samples (2023-2024): **Phosphorus** was optimal or excessive 97 - 100% of the time; in contrast, **Calcium** was optimal or excessive just 58-74% of the time

## New project management in late 2024:


1. **Removed artificial limits on soil-applied fertility**
  - a. Decision to change based on **direct observation** of plants and soil as well as extensive **laboratory sampling** of soil and plant sap
  - b. **Autumn 2025** first large scale application of **calcium, sulphur, potassium, and magnesium**
  - c. Autumn 2025 first **fertigation** begins to the tree lines



Applying 2,25 t/ha calcium carbonate, late 2025

# Successional Agroforestry

	Crop	Strata	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>Apple</b>		<i>Canopy</i>							
<b>Pear</b>		<i>Canopy</i>							
<b>Alley Crop</b>		-	<i>Crop</i>	<i>Rotation</i>			<i>Improved soil conditions</i>		



= yield strength

# 'Nordic' & Specific Design Challenges <sup>7</sup>

## General for Nordic conditions:

- **Exceptionally few models this far north**
  - Not much to base the design off of, therefore very much a first draft
  - Finding balance in light levels & needs
- **Weather**
  - Highly variable growing seasons
  - Night time temperature: cool summer nights can pose challenges
- **Socioeconomic systems**
  - Labor intensive = costly
  - Mechanization not always practical (yet)
  - Access to markets - low population density (generally)
  - Subsidy context varies quite a bit

## More specific to our site:

- **Species Selection**
  - While many species are available, do they have markets?
- **Nature of project work**
  - No time to advance soil health before starting
- **Degraded conditions + objectives**
  - No aggregation, few earthworms, almost no fungi, seriously imbalanced nutrients (Dolomitic lime...)



Protecting trees from **rodents** is also a challenge: long winters and snow cover offer ample opportunity for rodents to evade protection measures, though rock mulch is promising

# Design: Site Analysis

Multi-factoral:

crosses multiple scales, and  
incorporates natural,  
socioeconomic, and  
practical considerations



# Design: Partner Needs

- **Silvoarable**
  - Mechanization
  - 15 m headlands
  - 12 m alleys
  - *Not closing canopy*
  
- **Microcosm** of a system that could scale (if it works)
  - Yes, functional diversity
  - No, anything and everything –
    - Not a market garden

This second point is often overlooked and explains why we have **a relatively small cash crop cash list** (particularly on the annual side)



Alleys designed for strip cropping



Repeating patterns, support species diversity

# Design: Field-Scale Pilot

## Lill-Nägels Agroforestry Pilot Project

*Three-quarters Plan View*  
Photo: Johan Ljungqvist,  
Multifoto AB/Oy, June 14, 2024

North



Sheet

1



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### LEGEND

- - - Shallow soil
- - - Bedrock
- Stream
- Fencing
- Gate
- Irrigation line
- Sand filter
- 6 m equipment rock buffer
- Pipeline exclusion zone
- - - Work staging area
- 2 m wide tree line
- Planned perennial systems
- 12 m wide alley

### Field Context

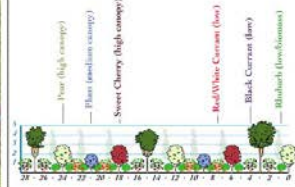
- Estimated around 8 000 m<sup>2</sup> (0.8 ha)
- East - west measure ±125 m
- 4% or 2,29 degree slope - gentle grade
- Soil depth depends on proximity to rock outcrops (black dashed lines)
- Soil type clay loam with larger clay content towards bottom of slope
- Shallow areas >2x sand content
- At initiation field was completely under perennial grass because field has been unproductive for cash crops

### Agroforestry System Info

- **Main Tree Lines (TL):** 2 m wide beds provide space for perennial roots to access topsoil
- Main Tree Line length: 365.5 m
- Area under main tree lines: 9%
- Longest tree line 82.5 m, shortest 15.5 m
- Proposed number of production woody species > 200
- Production species: cherry, plum, pear, apple, grape, black elder, red/black/white currant, apricot, honey berry
- Drip irrigation for whole tree bed supports successional cash cropping as perennials mature
- Additional proposed lines (P1-P5) would add 145 m, increasing length by 40%

### Thumbnail Cropping Pattern

STRATIFIED RELIABLE CASH CROPS WITH FUNCTIONAL DIVERSITY

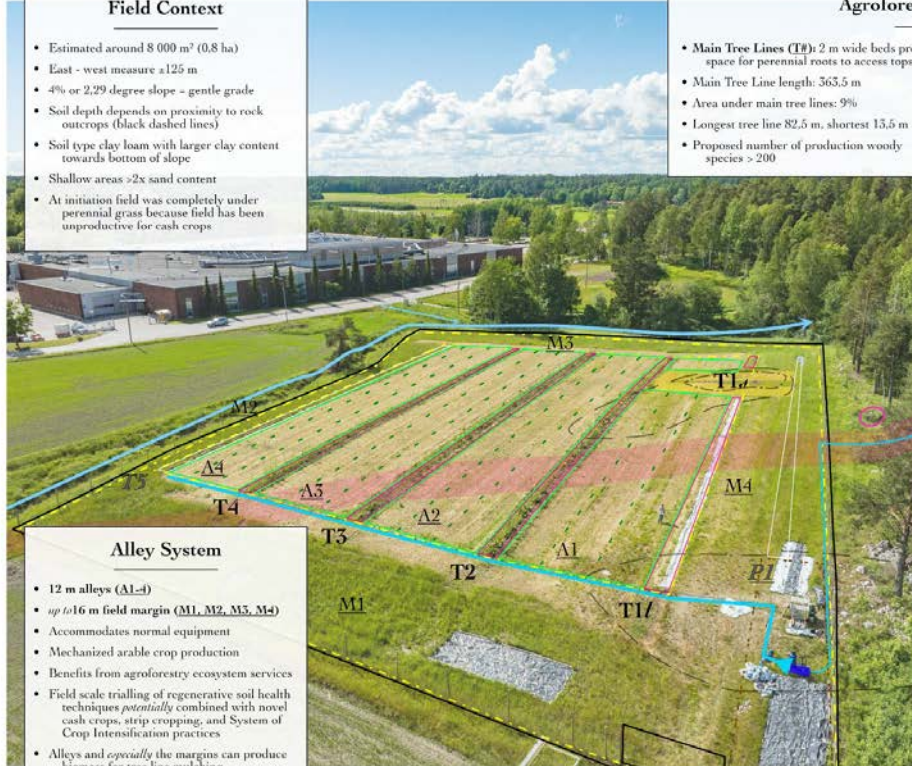


### Alley System

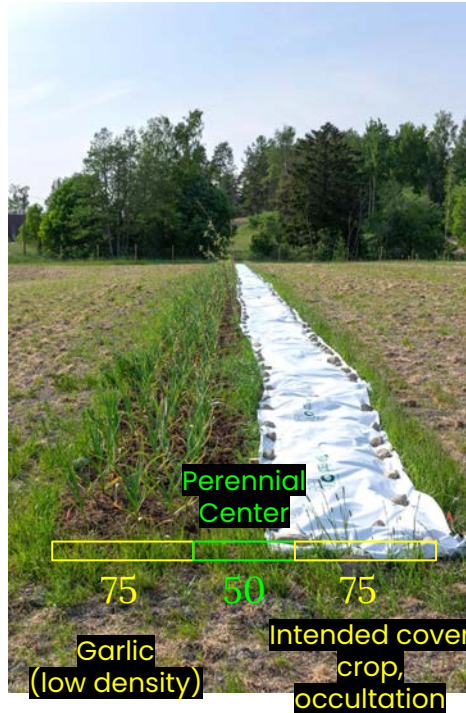
- 12 m alleys (A1-A)
- up to 16 m field margin (M1, M2, M3, M4)
- Accommodates normal equipment
- Mechanized arable crop production
- Benefits from agroforestry ecosystem services
- Field scale trialling of regenerative soil health techniques *potentially* combined with novel cash crops, strip cropping, and System of Crop Intensification practices
- Alleys and especially the margins can produce biomass for tree line mulching

### Tree Line Goals

- T1: Largely experimental on shallow soil - cold hardy grapes
  - T2: Primary production row focused on cherry, pear, and plum in the canopy
  - T3: Primary production row
  - T4: Primary production row with more apples
  - T5: Riparian buffer with wet soil trials
- \*Note: species are clustered across alleys to increase species density for improved pollination



# Design: 2 m Wide Tree Lines



Not just plastic! 4+ plant family cover crops



Testing Pellenc electric tools (courtesy Hautala Service Oy)

# Design: Tree Line Planting Patterns

## Two basic sets of plants:

### Red:

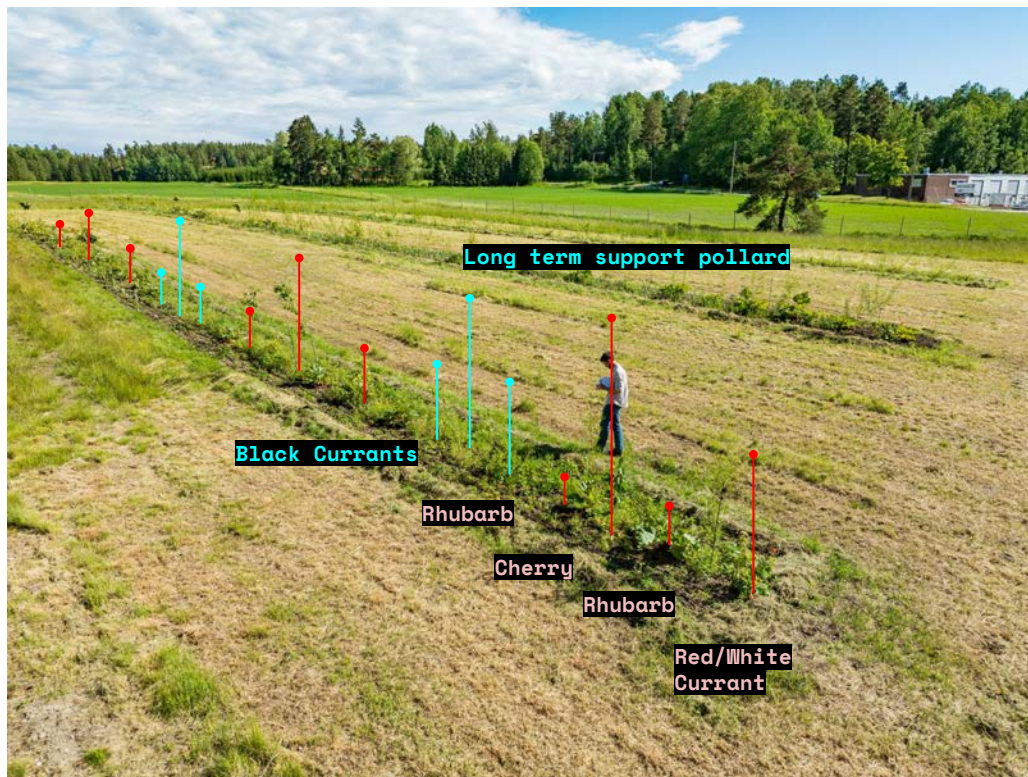
Intensive Production Sets

### Blue:

Black Currant Breaks

## Alternating pattern:

- Physical obstacle to pest movement
- Serves as a light well for the rear of each red set



# Design: Intensive Production Sets

## Red Intensive Production Sets

### Led by High+Low paired species

High: Cherry/Apple, Plum, Pear

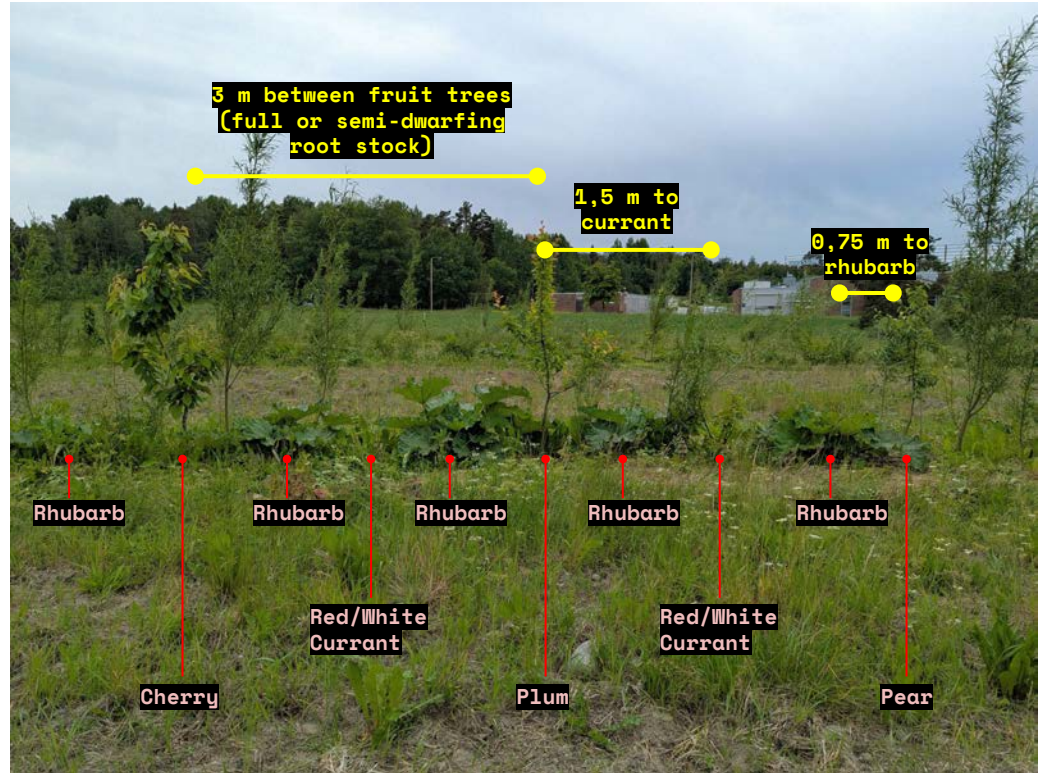
Low: Rhubarb

### Halfway between each pair:

Either red or white currant

### Biomass support:

Mainly willow from cuttings; from seed: oak, elm, ash, maple, rowan, plus other self-sowed like birch and pine



# Design: Black Currant Breaks

## Black Currant Breaks

### No high strata production crop

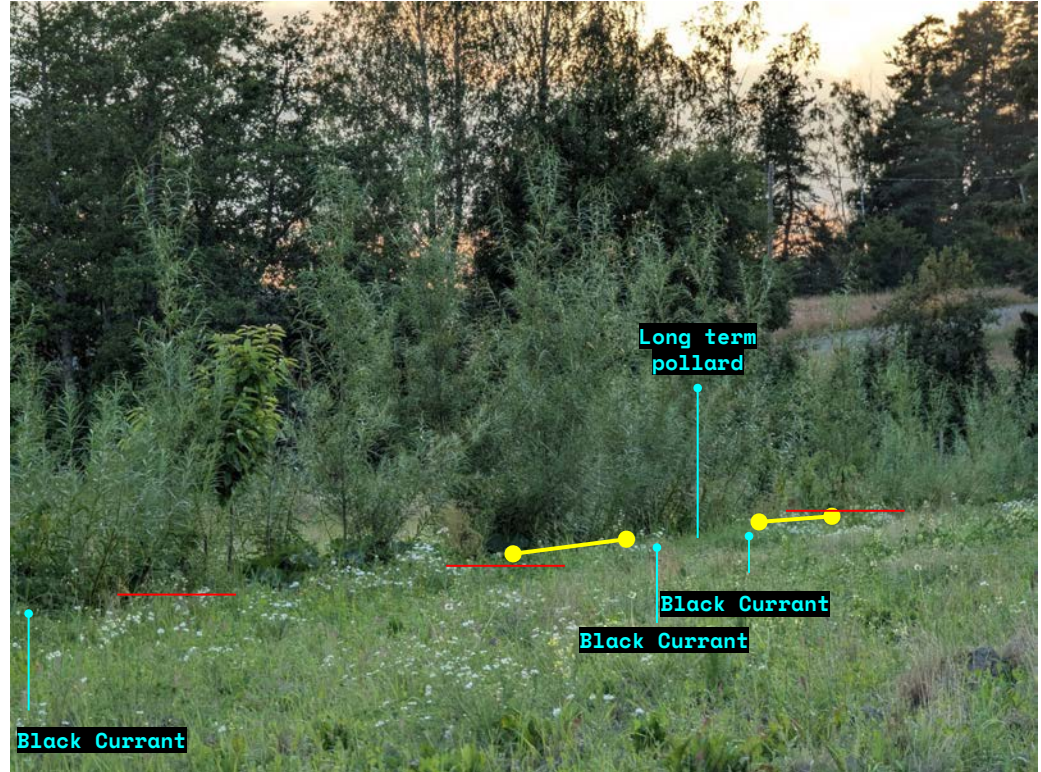
High / Emergent occupied by biomass species

### Black Currant Pair

Black currants require more light than red/white, so these are the main production species

### Biomass support:

Same as before, but halfway between each pair of black currants will be a long-term production species such as pollarded oak or linden



# Design: Support Species

## “Woody Perennial Cover Crops”

Coppicing and pollarding to manage sunlight and soil microbiome in addition to biomass

## “Forest Species”

Not considered production species even if they have edible parts

## Mycorrhizal Diversity

Ectomycorrhizal associations, no known benefits to having AMF/EMF in same space, but perhaps there are?

## “Normie” Cover Crops too :)



# Perspectives on the future



Despite problems the system is largely alive!  
11% losses, half of which are experimental types



Soil formation has begun, aggregates and earthworms are increasing, early success with foliars



Incorporation of more inputs: lime prills, Polysulphate, bioferments, etc

# Recommendations for others



Utilize timeline extension so you *start* with beds like this (without the grass on edges too)



Use inputs wisely so *your* garlic looks better than this



Understory & niche partitioning with covers (solar utilization)

# Finnish Agroforestry Summit 2026



PELTOMETSÄVILJELYVERKOSTO

## NylAF Website:

<https://www.novia.fi/en/nylandagroforestry>

## WP3:

<https://www.novia.fi/en/lill-nagels/>

## Contact:

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**Finnish Agroforestry Summit 19.03.2026,  
Novia's campus Ekenäs / Tammisaari**

<https://www.novia.fi/en/nylandagroforestry/agroforestry-summit>

AGROFORESTRY IN NYLAND (NYLAF)



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